

# Sanitation for Millions' Approach towards Menstrual Waste Management

## SANITATION FOR MILLIONS APPROACH TO MENSTRUAL HEALTH

### Background

Approximately 25% of the world population are females aged 15 - 49. Ensuring that women and young girls are able to address and manage their menstruation in a safe and hygienic manner is of utmost importance for public health and safe hygiene. However, the prevailing lack of awareness, persistent tabooization of the topic, socio-cultural beliefs and traditional hygiene practices, as well as missing access to menstruation products and infrastructure can result in poor menstrual health management (MHM). The absence of the topic in school curricula, limited access to information and the scarceness of adequate facilities result in girls missing school days during menstruation or even dropping out of school across the globe.

While there is no specific goal for MHM in the SDGs, safe menstrual health management is an indicator to achieve access to safe sanitation and hygiene (SDG 6.2) and MHM-related issues are implicitly addressed in SDG 4.a (education). Furthermore, safe MHM contributes to the achievement of SDG 3, 4, 5, 6, 8 and 12.

### Approach

*Sanitation for Millions* applies a bottom-up approach to generate direct and tangible impacts. Accordingly, *Sanitation for Millions* gathers important on-site experience and generates best practices. This approach complemented with target-oriented assessments and policy tools are the base to dialogue with relevant stakeholders at different policy levels in order to catalyse the design and application of a favourable policy framework.

Sanitation for Millions complies with the SDG indicators for adequate and equitable MHM, thus creating access to:

- Accurate and pragmatic information about menstruation and menstrual hygiene
- Menstrual hygiene materials to absorb or collect menstrual blood
- Facilities that provide privacy for changing materials and for washing the body with soap and water
- Water and soap within a place that provides an adequate level of privacy for washing stains from clothes and drying reusable menstrual materials
- Disposal facilities for used menstrual materials

To ensure adequacy and quality of the programme's MHM interventions and to monitor the outcomes, *Sanitation for Millions* adheres to the following indicators and quality safeguards:

- *Gender sensitiveness*: Issues of puberty and menstruation are equally addressed to boys and girls and are a part of school curricula
- *Target group oriented*: target groups are addressed with the adequate didactical tools and culturally appropriate messages
- *Cultural appropriateness*: Social beliefs, religious norms and customary laws are sensitively addressed, and societal sentiments are not violated
- *Social acceptance*: target groups and all relevant stakeholders endorse and follow the programme's approach and jointly work on achieving the common programme goals

- *Safe in terms of Health and Hygiene:* Health risks related to menstrual hygiene are mitigated and safe hygiene practices are applied
- *Adequately budgeted:* schools and public institutions are provided with the necessary financial means to cover the expenses of MHM
- *Ownership with the respected bodies:* political support by the concerned authorities and no objection of any political, societal or religious agency
- *Environmental soundness:* used sanitary pads are safely disposed and do not cause any environmental harm. Furthermore, the introduction of safe and appropriate goods and products for MHM is fostered

## MENSTRUAL WASTE: DEFINITION AND PRODUCTS

### Background

At the core of menstrual health is the use of sanitary products, an issue directly linked with waste disposal practices. The sanitary materials used need to absorb or collect menstrual blood safely, comfortably and discreetly. Affordability, socio-cultural norms, individual awareness, and variation in menstrual flow influence women's and girls' practices of using sanitary products such as pads, cloth or other absorbents. Modern lifestyle, rising incomes, expanded availability and distribution of consumer goods such as sanitary pads, and increased mobility have led to an exponential increase of wastes from sanitary products and an increasing waste management problem especially in developing countries. Globally over 12 billion disposable menstrual products are annually disposed of, creating more than 6% of the sewage-related debris around rivers and beaches<sup>1</sup>. Estimates from high-income countries indicate that around 30 products are used per cycle per woman. Estimations carried out in low-income countries indicate an average of ten products used per cycle.

### Menstrual Waste: Composition and Classification

Menstrual waste is composed of used menstrual absorbents, including cloth, disposable sanitary napkins, tampons and other substances or materials.<sup>2</sup>

Commercially marketed disposable pads are the most commonly menstrual product disposed of. A typical commercial disposable pad is composed of bleached cellulose, super absorbent polymers (SAPs) and non-biodegradable synthetic fibres. The vast variety of sanitary pads leads to a challenge of how to collect, treat and dispose menstrual waste.<sup>3</sup>

Classification of menstrual waste can differ between products used and country specific policies. In most countries it is classified as municipal solid waste and defined as sanitary waste. Menstrual waste is not classified as medical waste or as toxic and hazardous substances though implying certain health risks.

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<sup>1</sup> WOMENA FAQs: What is the environmental impact of menstrual products?

<sup>2</sup> [https://menstrualhygieneday.org/wp-content/uploads/2018/06/WaterAid\\_Arundati-Muralidharan.pdf](https://menstrualhygieneday.org/wp-content/uploads/2018/06/WaterAid_Arundati-Muralidharan.pdf)

<sup>3</sup> Elledge, M. F., et al., 2018. Menstrual Hygiene Management and Waste Disposal in Low- and Middle-Income countries – A review of the literature.

## Products

Menstrual wastes are mostly commercial disposable products such as pads and tampons<sup>3</sup>. Disposable products consist of a mixture of materials, including polythene, cotton, rayon, polyester, cellulose and super absorbent polymers (SAPs). Biodegradable materials are estimated to take a minimum of six months to degrade; plastics take several hundred years. Most commercial products are bleached and scented, thus containing chlorine and other chemicals which have a detrimental ecological impact if not disposed safely.

Reusable products such as cups, cloths, reusable pads or period panties, create significantly less waste, since their lifespan ranges between 1 and 10 years.

**Table 1: Advantages and disadvantages of different MHM products<sup>4</sup>**

MHM Product	Afford-ability	Amount of Waste generated	Cultural Appropri-ateness	Hygiene	Availability	Absorbency	Need for privacy, water and soap
Natural Materials (e.g. Mud, cow dung)	Green	Green	Yellow	Red	Green	Red	Green
Cloth (e.g. sari, kanga)	Green	Green	Green	Yellow	Green	Yellow	Yellow
Commercial disposable pads	Yellow	Red	Green	Green	Yellow	Green	Green
Tampons	Red	Red	Red	Green	Yellow	Green	Green
Commercial Reusable Pads	Yellow	Green	Green	Green	Red	Green	Red
Locally made, biodegradable, disposable pads	Green	Green	Green	Green	Yellow	Yellow	Green
Locally made reusable pads	Green	Green	Green	Green	Yellow	Green	Red
Period Panties	Red	Green	Green	Green	Red	Green	Red
Menstrual Cup	Yellow	Green	Red	Green	Red	Green	Yellow

Green: Advantage / This factor does not act as a barrier but supports the usage of product

Yellow: This factor could be a slight barrier for usage of this product

Red: Disadvantage / This is a clear barrier for the usage of this product

<sup>4</sup> WaterAid (Sarah House, Thérèse Mahon, Sue Cavill) 2012: Menstrual Hygiene Matters: Module 3

## DISPOSAL HABITS AND ENVIRONMENTAL IMPACTS

### Disposal habits

Women and girls face different constraints during menstruation depending on region, age, socio-economic situation and access to waste disposal systems that determine how and where they dispose of menstrual absorbents. The most common disposal habits are the disposing of menstrual waste in the open, in latrines, through routine waste disposal systems and through burning and burying. These habits are often influenced by deeply embedded socio-cultural norms and taboos regarding menstruation and menstrual blood. This leads girls and women to hide or remove all traces of blood, through washing absorbents, smearing them with mud, wrapping them in paper or plastic and keeping them (sometimes for days) until they can be discarded discreetly.

Menstruators habitually choose discrete disposal options over open disposal, e.g. discarding menstrual waste in latrines rather than open bins or incinerators, resulting in additional challenges. Furthermore, used menstrual products are frequently being wrapped in plastic or paper before disposal, due to shame or promotion on the packaging.

Especially in areas, where waste collection systems are deficient or non-existent, menstrual waste is mostly disposed of in the open or in latrines, creating exposure risks and environmental pollution, particularly in dense urban areas.

### Specific problem of menstrual waste disposal in latrines

A specific problem caused by menstrual waste is the disposal of menstrual hygiene products in sewerage systems which can lead to blocked sewage pipes and significant costs for the responsible entities. In non-sewered sanitation facilities, such as pit latrines, the non-biodegradable material of sanitary napkins compromises the aerobic and anaerobic digestion process of the organic material (i.e. the faecal waste). Menstrual waste not only accelerates the filling up of a pit latrine, but fundamentally prolongs the process of pit emptying and cleaning, making it inefficient and expensive.

## DISPOSAL HABITS IN *SANITATION FOR MILLIONS* PARTNER COUNTRIES

### Pakistan

School girls in Pakistan use either commercial disposable pads or reusable cloths depending on product availability and the socio-economic situation of the respective household. Disposable pads get predominantly discarded in schools in the provided bins. Clogging of latrines due to the disposal of menstrual waste is sporadically a problem. Collected menstrual waste is usually mixed with other solid wastes, collected and transported to open collection points. Due to the poorly managed local municipal solid waste management system, sanitary wastes often remain in the open for up to several months before being finally disposed of. This represents a serious health and environmental risk. Incinerators are used for sanitary waste (and medical waste) in basic health units and hospitals, where menstrual waste gets burned alongside medical and hazardous wastes.

### Uganda

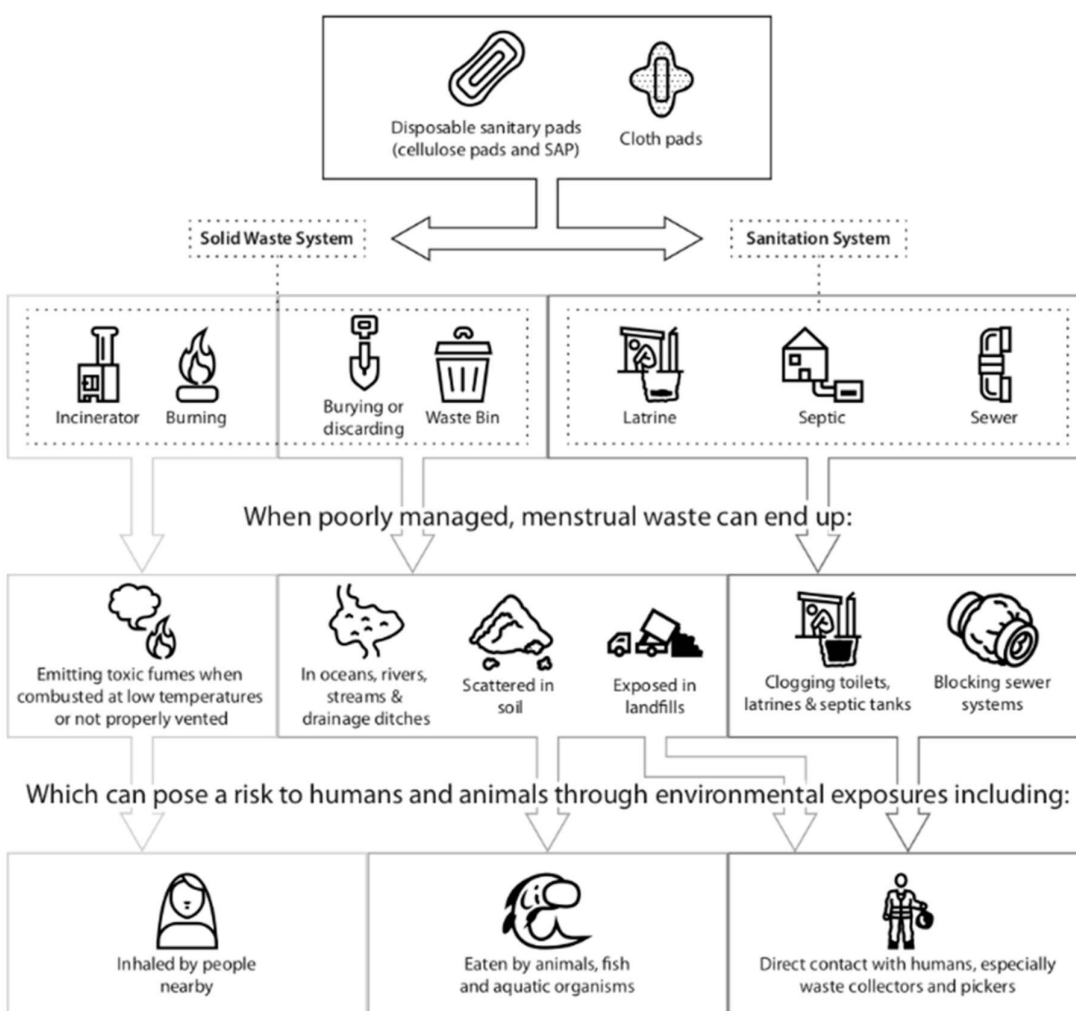
In Uganda, a well-managed waste collection and disposal system is absent. Paired with the lack of safe disposal options, menstrual waste is predominantly disposed of in latrines. If menstrual waste gets collected at schools and there is no incinerator provided, the waste is mainly burnt in the open or sporadically dumped in latrines. Where incinerators with a discreet disposal option (i.e. a chute in the cubicle) are installed, burning is the preferred option of disposal though many incinerators are not functional, creating severe disposal problems.

## Health and environmental risks of menstrual waste

Reliable data and analysis on health and environmental impacts of the unsafe disposal of menstrual products such as tampons and pads is not available. To date, scientific research assessing the health and environmental impacts of disposing of different menstrual health products has not been conducted.

When burned improperly toxic gases are emitted polluting the atmosphere, soil and water bodies, and thus affecting the food chain (see also: Incineration of Menstrual Waste). When menstrual waste is not burned, it often accumulates in open dumpsites and pollutes the local surroundings. It is estimated that menstrual waste causes 6.3% of sewage-related debris along rivers and shorelines<sup>5</sup>. Just as other plastics this can lead to acidification and in case of inland waters to eutrophication. Eutrophication, the gradual enrichment of nutrients in a freshwater body, leads to increased algae production, ultimately resulting in extremely low oxygen levels in deeper waters. Eutrophication is one of the leading causes for aquatic ecosystem degradation.

Disposing of menstrual waste in the sewage system can lead to the clogging of toilets, latrines, septic tanks or sewer systems, which ultimately leads to the direct contact of menstrual waste with humans, creating serious health risks.



**Figure 1: Waste disposal pathways and potential environmental and health hazards.**

Source: Elledge, et al., 2018. Menstrual Hygiene Management and Waste Disposal in Low and Middle Income Countries – A Review of the Literature. In: International Journal of Environmental Research and Public Health 2018, 15, 2562.

<sup>5</sup> Womena, 2019. Womena FAQs: What is the environmental impact of menstrual products?

# SANITATION FOR MILLIONS' APPROACH TO SAFE MANAGEMENT OF MENSTRUAL WASTE

## Reduction of Menstrual Waste

Commercial disposable pads often are not affordable to consumers which currently is a barrier for its global distribution. Sanitary napkins globally generate the largest amount of menstrual waste of all products and hence need to be safely managed. Locally manufactured alternatives are usually biodegradable, cheaper and offer the same advantages as commercially available disposable pads and are therefore promoted by *Sanitation for Millions* if feasible. Yet, there is often little awareness amongst the user in our partner countries regarding waste and pollution caused by these products and hence awareness creation of reducing menstrual waste is an important task of our technical assistance.

Reusable menstrual products such as reusable pads or period panties are another culturally accepted option to reduce menstrual waste but require relatively large amounts of water and soap to wash and a place in the sun to dry. Particularly in urban settings this is a hinderance. The market and distribution of locally made pads, either disposable or reusable, needs to be supported and expanded to increase availability.

*Sanitation for Millions* proposes menstrual products in the implementing countries according to an assessment based on table 1.

## Safe Disposal

Safe disposal of sanitary wastes comprises of collection, transport, treatment and reuse or final disposal of the refuse. Safe waste disposal requires a dustbin or a collection point with a lid or cover to avoid bad odour close to the place absorbents are changed. The bins or containers shall be emptied regularly by responsible staff and transported to solid waste containers or waste collection points. In case incineration is the final disposal technology, sanitary wastes are to be transported to the incinerators.

The waste disposal chain needs to be safely managed which means regular emptying and transport and safe operational practices (e.g. usage of gloves and adequate safety equipment). For the waste disposal system to work sustainably, people need to be made responsible for the operation of each stage. Privacy is of great importance throughout the system, particularly at the initial point of collection.

Safe disposal means ensuring that the process of obliteration of used and spoiled materials is done without human contact and with minimal environmental pollution. Unsafe disposal means throwing used cloth or pads into ponds, rivers, or in the fields exposing others in the area to this decaying material. Offsite disposal can be organized with the communal or town solid waste collection and management system.

Options for on-site disposal include disposal deep burial, composting, pit burning and incineration. The right option depends on key factors such as amount and type of materials, the available budget (investment and O&M costs) and environmental considerations. Burning in open heap should be totally avoided.

In areas without a functioning communal or town waste management system, incineration is an option if the incinerator fulfils certain criteria (see below). If menstrual waste is only composed of compostable materials a secluded composting facility can be implemented.

## Incineration of Menstrual Waste

Properly maintained and located incinerators may provide a discrete way of disposing of menstrual absorbents if they fulfil certain criteria.<sup>6</sup> In areas where there is no municipal solid waste management system, wastes need to be treated safely at the site by burying or incineration. When connected directly to the toilet cubicle, menstrual waste does not need to be handled (e.g. collected, transported) and girls and women can dispose of their absorbents discreetly. The chute needs to be designed in such a way, that clogging is impossible, and cleaning is easy. When built detached from the sanitary facility, the incinerator should be best placed outside the view of people and covered bins should be installed within the cubicles for privacy. Regular emptying and cleaning of the bins needs to be ensured to maintain a hygienic and convenient situation.

Due to the composition of menstrual absorbents, in particular commercial disposable pads, the incineration of menstrual waste emits toxic fumes, smoke and bad smell.<sup>7</sup> Many sanitary napkins contain chlorine bleach, which emits dioxins (a human carcinogen with developmental and reproductive effects) when burned improperly.

Hence before installing an incinerator, following criteria are to be assessed and fulfilled:

- The incinerator needs to best fulfil the WHO standard to burn in a temperature of at least 850°C (or 1000°C) for a minimum of two seconds though locally manufactured incinerators allowing temperatures up to 500°C (WSSCC recommendation) might be alternatives due to costs and availability of such technologies
- Incinerators always need a chimney which is at least 4m tall.
- The smoke and odour should not reach classrooms or premises where people are staying.
- A trained operator must be appointed and be responsible for the safe operation of the incinerator e.g. appropriate start-up and cool-down procedures, achievement and maintenance of a minimum temperature, use of appropriate loading/charging rates (fuel as well as waste) and proper disposal of ash.
- The operator must be equipped with the necessary safety gear.
- Sufficient budget needs to be allocated for implementation as well as operation (e.g. fuel) and maintenance of the incinerator.

When choosing an incinerator, the following factors need to be taken into consideration:

- Types of materials to be burned
- Amount of materials
- Operating frequency (e.g. daily, weekly, monthly)
- Maximum burning efficiency
- Maximum emission control (how feasible is this when it comes to monitoring?)
- Available funds (implementation, operation and maintenance)
- Operation requirements (skills of labour, additional fuels, costs)
- Site specifications and land availability
- Budget and costs

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<sup>6</sup> Elledge, M.F., et al., 2018. Menstrual Hygiene Management and Waste Disposal in Low- and Middle-Income Countries – A Review of the Literature.

<sup>7</sup> UNICEF India: Menstrual Hygiene Management. Technical Guide 2: Safe Disposal and Incinerators. [http://unicef.in/CkEditor/ck\\_Uploaded\\_Images/img\\_1513.pdf](http://unicef.in/CkEditor/ck_Uploaded_Images/img_1513.pdf)

## Emission control

Most locally build, cost-efficient incinerators do not allow high temperatures, resulting in high emission of toxic gases. Electric incinerators that allow safer incineration, generally cost around ten times as much as locally made fuel/charcoal-based incinerators and are preferable if budget is available.

Other options for on-site menstrual waste management are deep burial or pit burning (not recommended for commercial disposable pads).

## Dioxins

Dioxins are emitted in all combustion processes in the presence of chlorine and organic carbon between 300°C and 900°C. When burning above 900°C dioxins get destroyed. Dioxins are classified as persistent organic pollutants.

The half-life period of dioxins ranges between seven and 20 years, thus accumulating in soil, water and the atmosphere. Due to their lipophilic nature, dioxins also accumulate in the food chain. Acute toxicity in humans is only an issue in high quantities. Long-term exposure can lead to skin damage as well as disorders of the immune system, nervous system, hormone balance and reproductive functions. Dioxins are classified as human carcinogens.

## Feasibility of incinerators

Experiences from different GIZ sanitation and MHM projects have shown that incinerators often do not provide a sustainable solution. Especially in schools, incinerators are frequently out of use due to a lack of operation and maintenance management and resources. Locally build incinerators as well as other incinerators require constant maintenance and regulated operation procedures in order to function in a safe and hygienic manner. Detailed guidelines on operation and maintenance of incinerators are scarce. With the technologies and procedures available at this point of time, incinerators do not offer a feasible long-term solution.



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