Interactions between menstrual hygiene management and sanitation systems: Landscape analysis of menstrual hygiene products and a waste-loading model

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BACKGROUND
To ensure successful integration of modern menstrual hygiene products (MHPs) with sanitation systems, it is important to understand what is currently done with menstrual waste in urban and peri-urban settings. This is particularly true in light of global trends towards urbanization and the increasing availability of disposable sanitary pads in these settings. The overall Menstrual Management & Sanitation Systems Project is led by the University of Maryland. To support this larger project and address the lack of existing research on women’s menstrual hygiene management (MHPM), PATH conducted two case studies in South Africa and India from March–December 2012.

OBJECTIVES
The primary goals of the case studies were to determine the impact of MHPs and practices on multiple sanitation systems (system-focused) and, conversely, determine the impact of the sanitation systems on MHPM experiences, product choices, and practices of women and adolescent girls (user focused). In support of the system-focused study, tools were developed to project the potential impacts of MHPs and practices on sanitation systems and solid waste streams.

METHODS
A myriad of MHPs were gathered from sites globally. PATH personnel calculated surface areas and volumes using calipers and graph paper and massed each MHP on a balance. Assumptions were collected from literature and anecdotal use preferences. PATH developed two tools from these data: 1) A landscape analysis of MHPs that includes attributes and properties and 2) An interactive model for constructing menstrual waste-loading scenarios. These tools allow stakeholders to understand the attributes and properties of those products. We captured some of the attributes affecting sanitation system and MHM sectors may benefit from consideration of key product attributes in selecting types of MHPs to introduce into various settings.

LANDSCAPE OF MENSTRUAL HYGIENE PRODUCTS
The landscape analysis of MHPs is intended to introduce private-, public-, and civil-sector actors to the myriad of product options, as well as the attributes and properties of those products. We captured some of the attributes affecting product acceptability, access, and ultimately usage which influence the loading upon sanitation systems and/or other waste streams. Key actors in the sanitation system and MHPM sectors may benefit from consideration of key product attributes in selecting types of MHPs to introduce into various settings.

EXTERNAL WEAR
The landscape of MHPs also includes a brief summary of key product properties: number of uses per unit, dry volume, weight (cm3), dry mass per unit (g), and annual dry loading rate (cm3/female/year)

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PROJECT PARTNERS:

For example, a decision-maker may be tasked with promoting both an environmentally friendly and a culturally appropriate MHP for young girls in a location where vaginal insertion is not acceptable for unmarried females.

MENSTRUAL WASTE-LOADING MODEL
The model was made with Microsoft Excel software and includes a list of assumptions. Loading refers to the volume (cm3/female/year) or mass (grams/female/year) of menstrual waste that enters a sanitation or solid waste management system per year from menstruating females. The model (Version 2.0) was developed for the following purposes:

- Permit actors engaged in sanitation, waste management, and MHM to make data-based decisions regarding the potential impacts of MHPs upon sanitation systems and other waste streams by developing scenarios and modeling projected menstrual waste load.
- Allow decision-makers to effectively plan for disposal requirements of sanitation facilities, including design of facilities, waste containment methods, transport, final disposal, staffing, training, protective equipment, and education materials.

The annual dry loading rates included in the landscape are derived from the loading model. Disposable sanitary pads contribute the largest mass and volume of menstrual waste, as noted in the bar graph below.

CONCLUSION
Two attributes in the MHP landscape—type of use and type of materials—have the greatest impact upon sanitation systems. Type of use compares single-use MHPs against reusable products. The number of uses possible for each product impacts the volume/mass of waste produced, which requires containment, hygienic handling, and final disposal. Such questions as the following are relevant:

- Should national government campaigns limit females to one MHP option?
- Are disposable sanitary pads the most appropriate MHP for national government campaigns?
- What educational messages are needed to support the correct use and disposal of each MHP with the sanitation systems locally available?

All actors within the sectors of sanitation and menstrual hygiene management may be best positioned to address the needs of female users and sanitation systems if both the product attributes and properties are assessed for the local context of use.