

# Review on Sanitary Waste Disposal using Cost Efficient Incinerator

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**Abstract** - India is a country of 1.3 billion people living in different regions and under different circumstances; some live a lavish lifestyle while some struggle for food. However, one thing is common for every individual all over the country is their generation of waste, which generally makes solid waste management a crucial issue in India. The effect is more pronounced due to the methods of neighborhood set, disposal and solid waste control and transport networks in villages and towns. Further, one big problem of sanitary waste has ever been their categorization, i.e, while its plastic or bio-medical waste.

The absence of concern for waste control in our nation is reflected from the fact that there's not any statistics on the top. A women menstruates between puberty (age 11-24) and menopause (age 45-55) for an estimated 459 cycles during her lifetime. With rapid urbanization, rising incomes, expanded product availability and distribution and increased mobility, the use of disposable sanitary napkins is increasing rapidly. A PATH study estimated that the annual solid waste load of disposable sanitary napkins was higher than any other menstrual hygiene product- i.e, 44,254cm<sup>3</sup>/ female/year (2018).

This paper examines peer-reviewed and grey literature about menstrual waste disposal, with the end to inform the water, sanitation and hygiene programming on better facility user designs and waste management practices to support to menstrual hygiene needs of women and girls, and the environment. The paper does not attempt to review the broad topic of municipal solid waste management, but maintains a narrow focus on menstrual hygiene waste and waste management. This paper addresses topics of menstrual absorbent use, and brings unique focus on disposal practices, waste treatment strategies such as incineration, the health and environmental risks associated with disposal, and policy guidance on menstrual waste management.

**Key Words:** Menstrual Waste, Incinerator, Napkins and Heating.

**1.1 A study to Assess the knowledge, Attitude and Practices regarding reproductive health among Adolescent girls from secondary school student of Karad Taluka. - 2015**

A study on Adolescent women was carried out in Karad Taluka. The sample was chosen from the state government

schools Vithamata High Schools Karad. The women interviewed consisted of 60 adolescent women from age group of 13-16 years. Non-probability purposive sampling technique was used. In study, they found that girls with no previous knowledge about menstruation fell more scared and negative feelings associated with menstruation.

A questionnaire was prepared and study was done by noting the sample characteristics in terms of frequency and percentage.

It was also observed that use of sanitary napkin is higher among adolescent girls. There is a need to equip girls from this age group regarding safe and hygienic practices and to make appropriate choices for their health. Spread awareness to lead them to healthy reproductive life and prevent the risk of reproductive tract infections.

**1.2 A decentralized and sustainable solution to the problems of dumping menstrual waste into landfills and related health hazards in India. - 2018 - Gautami Bhor, Sayali Ponshe.**

Case study or survey was conducted on the waste pickers living in the city of Pune. Study gave the broader perspective towards the waste collection and segregation mechanism and how the sanitary waste or menstrual waste enters the MSW (Municipal Solid Waste). Study proposed an incinerator which can be installed in individual household for disposal of sanitary waste generated in the houses. This will eventually reduce the load on waste pickers and will lead to betterment of the community health. The incinerators was called Qahini Solution to this overgrowing problem was required to be practical, economical and convenient. Their solution is capable of overcoming almost every difficulty and thus promises healthier and cleaner solution. Problems faced by waste pickers can be handled efficiently if this solution is extensively implemented.

**1.3 A community-based study of menstrual hygiene practices and willingness to pay for sanitary napkins among women of a rural community in Northern India. - 2013**

Stated a cross-sectional study in villages under comprehensive Rural Health Services Project (RHSP) situated in Ballabgarh, Haryana. They interviewed total 995 women from random 9 villages. They stated that 62% were unaware of the reasons for menstruation. They aimed to

nullify the knowledge gap, document existing hygiene practices during menstruation and assess willingness to pay for low cost sanitary napkins among woman in reproductive age group. Their finding under-line the need to establish mechanism to ensure easy availability of sanitary napkins at a low cost in villages.

Healthcare workers should play a proactive role in the delivery of such information. It is important that sustained public health program by involving the key stakeholders for community.

#### **1.4 Menstrual Hygiene Management and Waste Disposal Practices and Challenges faced by girls/women of developing countries. - Feb 2018 - Rajanbir Kaur, Kanwaljit Kaur, Rajinder Kaur.**

Stated that menstruation and menstruation practices still face many problems like social, culture and religion restrictions. They have also mentioned the taboos related to menstrual hygiene in various parts of community. Stakeholder like teachers in school, universities also play a vital role in guiding and spreading awareness about menstruation. Instead, we come across some situation where girls were harassed and bulleyed by the school or college staff for the same which is very in-descent and shameful.

Open discussions must be conducted in school, colleges regarding puberty, menstruation etc that would clear their queries and misconception about it. Menstruating products should be made available for women in all parts of the community. They should also know the need of disposing it in a proper way. Teachers indeed should be educated and guided to equip the student with proper knowledge.

#### **1.5 Review Article on Hygiene Practices in Adolescent Girls. - Jan 2017**

The aim of this study is to review the literature on hygiene practices in Adolescent girls with respect to certain surveys done in the areas like Bangalore, Karnataka and Pondicherry. Many studies have shown poor menstrual hygiene practices during adolescence. Improper use of menstrual hygiene materials may associate with the risk of developing toxic shock syndrome (ISS), UTI and PID. For proper menstrual hygiene, mothers should be taught about the menstruation and hygiene practices and to break their inhibitions about discussing with their daughters about menstruation much.

Thus, there is need to bring the girls out of traditional beliefs, misconceptions and restrictions. Menstruation should not be treated as dirty and it should not be hindrance to daily activities. Facilities such as clean toilet facilities, water facilities and facilities to dispose sanitary pads should be made available at schools, homes and in public places.

#### **1.6 Menstrual Hygiene, Management and Waste Disposal: Practices and Challenges faced by Girls/Women of Developing Countries. - Feb 2018 - Kajabir Kaur, Kanwaljit Kaur, Rajinder Kaur.**

Menstruation and menstrual practices still face many social, cultural and religious restrictions which are a big barrier in the path of menstruation hygiene management. In rural areas, women don't have access to sanitary products or they know very little about the types and methods of using them or are unable to afford such products due to high cost. So there should be a need to educate and make them the environmental pollution and health hazards associated with them. Implementation of modern techniques like incineration can help to reduce the waste. Also, awareness should be made to emphasize the use of reusable sanitary products or the natural sanitary products made from materials like banana fibre, bamboo fibre, sea sponges, water hyacinth and so on. In various ways implementation of menstrual hygiene can be carried out such as with the help of teachers, social and electronic media, nongovernmental organizations and providing subsidies on menstrual products. This study reveals that lack of privacy is a major both in household and in school.

#### **1.7 Manufacturing of Cost-Efficient Sanitary Napkins Incinerator Machine.**

- May 2019 - Chourasia Sandhya Bhagawat, Dr. Tambolishabanam, Satish Mali, Jamdadeamar.

Sanitary waste is problematic for many reasons, and disposal of menstrual waste is one of them. Heaps of napkins using lots of disease-causing germs pose danger. Use of Incinerator system is among the very best method to dispose waste that would bleach napkins utilizing fire, without letting the procedure generated in, big smoke established burner. Every month 353 million women and adolescent girls across India need to dispose their sanitary napkins. The aim of this study is to analyze challenges and opportunities linked to wellness goods and its advertising.

This research focuses on designing and developing a smart, cost effective, portable sanitary napkin Incinerator which reduces the time cycle required to burn the napkin. Hence this project gives a solution for destroying napkin waste in very hygienic way.

#### **1.8 Disposal of Menstrual Waste, Trends, Laws and Solutions.**

This research paper has covered the after usage as per of sanitary napkin \_\_\_ and disposal system and other social aspects attached to menstruation affects the menstrual waste disposal behaviour of women in our country they have also \_ the various techniques used for the disposal of menstrual waste methods of disposing also affect from person to person which required according to various aspects of community. Better way of sanitary waste disposal mentioned which will not completely solve the problem of sanitary waste disposal will surely in reducing the load on disposal. An article regarding unsafe disposal of sanitary napkin is given published by INDIAL EXPRESS in year 2013. The article is about the question titled as chuck de , the right way by SWACH NGO. They large the problem faced by the

waste pickers. Various laws regarding municipal solid waste are also included in the same. The collection, segregation storage and disposal theory of waste is also explained. As the menstrual waste comes under the category of biomedical waste various laws regarding is are also explained in it. In the way they're covered all line aspects related to disposal of solid waste.

### 1.9 Menstrual Hygiene Management and Waste Disposal in Low and Middle Income Countries—A Review of the Literature. - 15 November 2018

Menstrual hygiene management (MHM) has gained some attention and several literature reviews have been published. However, both original papers and reviews tend to focus on absorbent access and use and not on the disposal of menstrual waste. This review aims to fill a gap in the water, sanitation and hygiene (WASH) sector by bringing a focus specifically on menstrual hygiene safe disposal in low- and middle-income countries (LMIC). We reviewed published literature since 2002 on menstrual hygiene with a focus on menstrual waste management and menstrual absorbent disposal in LMIC. Database searches were conducted of both peer reviewed literature and grey literature, in addition to hand searching of references of relevant earlier literature reviews. In total 152 articles and reports were identified and 75 met the inclusion criteria and was included in the final review. Existing polices on MHM was also reviewed with a focus on India and South Africa. The review showed that disposal of menstrual waste is often neglected MHM and sanitation value chains, leading to improper disposal and negative impacts on users, the sanitation systems and the environment. Findings call for further research to gain better understandings of MHM waste streams, disposal behaviours, absorbent materials and waste management technologies to deliver health, safety, mobility and dignity for women and girls.

### 2.0 Design of Domestic Incinerator for the Safe Disposal of Menstrual Waste in the Rural Areas. - March 2019 - Maheshwaran Periyasamy, Karthik Shamugavel.

The principle of heat being generated when current is passed through a resistance is employed in various household appliances like electric iron, water heaters. Hence for burning sanitary napkins in incinerator, the most commonly used heating coil made up for Nichrome alloy is used. The sanitary napkins primarily surrounded by papers will have an ignition temperature of around 250-300°C, then it is reduced to ashes. This design is mainly concern with the incorporated materials, which requires low maintenance. This design is rigidly constructed with heat resistant and corrosion resistant material to ensure the longer life of the product, hence it is sustainable. It is ensured that the proposed model does not degrade at any circumstances and it will not affect the environment. It has also developed with simple in construction and low-cost materials are selected with the intention that, this proposed setup is to overcome the tremendous hazard of disposal of this waste.

### 3. CONCLUSION

Menstrual waste and its impact on the environmental and society have always been given lesser eminence as compared to the rest of the municipal solid waste. A women's hygiene and sanitation should always be given higher priority as also to the basic dignity of millions of waste pickers who handle and segregate. Thus, a solution to this ever growing problem, was required to be practical, convenient and economical. This issue has been addressed by an incinerator machine. This project gives the solution for destroying napkin waste in a very hygienic way. This is portable system to destroy napkin waste, using incinerator.

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