

Plastic Pads: Are Women Safe?

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Received Date: September 18, 2025 **Accepted Date:** September 26, 2025 **Published Date:** September 29, 2025

Citation: : Hira Iqbal Naviwala, Syeda Iqra Qadri, Maheen Kausar Siddiqui (2025) Plastic Pads: Are Women Safe? J Womens Health Gyn 12: 1-4.

Letter To The Editor

Menstruation is one of many physiological processes a woman undergoes during puberty. On average, women begin menstruating at 12.4 years, with flow lasting three to ten days and recurring approximately every ~28 days in healthy cycles [1]. During menstruation, women use a variety of hygiene products, including commercially available sanitary pads, homemade cloth pads, tampons, and menstrual cups, with sanitary pads reported as the most widely used overall [2]. Another study states that sanitary pads are the most common method in urban areas [3].

It is crucial to consider the material composition of sanitary pads as they come into direct contact with the female's external genitalia. In recent years, sanitary pads have been made of synthetic plastic materials as liquid absorbents to improve their absorptive property [5]. The two types of plastics are Polyethylene and polypropylene fiber. However, certain types of plastic release chemicals that are

hazardous and perilous to females. These are volatile organic compounds, known as VOCs, along with specific chemicals that interfere with human endocrine function. Among these, the substances that pose the greatest potential harm are those that are readily absorbed through the skin of the external genitalia, as the vulval skin is characterized by increased permeability compared to the rest of the body [4, 11].

In Korea and nearby nations, women faced menstrual issues after using certain brands of pads. These pads were later discovered to contain elevated levels of phthalates, even exceeding the concentrations found in plastic items like plastic cups, packaging films, and cereals [5].

Certain phthalates, including Di (isobutyl) phthalate (DiBP), bis (2-ethylhexyl) phthalate (DEHP), and di-n-butyl phthalate (DnBP), are identified as highly hazardous substances. Consequently, they fall under category 1b and are considered harmful to reproductive health. These low molecular weight phthalates penetrate the outer layer of the



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skin due to their ability to dissolve in fats and are easily taken up into the bloodstream. Therefore, contact with the skin represents a more significant form of exposure [6].

The structure of phthalates determines whether they undergo biotransformation through hydrolysis or conjugation. DHEP undergoes hydrolysis because of its complex branched chain structure, leading to several metabolites that can also be detected in the serum. [7]. As a result, these low-molecular-weight phthalates are banned from being utilized in the manufacture of medical devices, cosmetics, and children's toys. Their use is restricted to specific authorized situations, not only in Europe but also in countries such as Canada and the United States [8].

Phthalates are hazardous not only to female reproductive health but also equally harmful to men and even fetuses. Studies reported that male infants born to women exposed to Phthalates have an increased incidence of Testicular dysgenesis Syndrome (TDS) with manifestations of cryptorchidism and hypospadias, indicating an abnormality in the androgen-dependent process [9, 10]. DHEP also crosses the placental barrier and is expressed in breastmilk, posing an increased risk to the fetus and infant, respectively.

Menstrual hygiene products, particularly disposable sanitary pads, are essential for women's health and daily comfort. However, the widespread use of synthetic materials and harmful chemicals like phthalates raises serious health and environmental concerns. These sanitary pads contain up to 90% plastic, contributing substantially to plastic waste. Given the evidence of endocrine disruption, reproductive toxicity, and transgenerational effects, it is crucial to regulate their chemical composition. Promoting safer alternatives such as bamboo fiber-based pads, which offer natu-

ral antibacterial properties, high absorbency, and biodegradability [12] - can help mitigate these risks. Enhancing public awareness, enforcing transparent labeling, and encouraging the adoption of eco-friendly menstrual products are essential steps toward ensuring that a basic necessity does not become a hidden health hazard.

Conflicting Interests

The Authors declare that there is no conflict of interest.

Funding

This letter received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Informed Consent

Not Applicable

Ethical Approval

Not Applicable

Acknowledgement

None

Idea and Initial Draft Formulation

Hira Iqbal Naviwala

Revision and Editing

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Reference:

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