Association pour la santé environnementale du Québec
Environmental Health Association of Québec

ECO-JOURNAL
May 2023

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Toxins in Feminine Hygiene Products: What Research Says & Does Not Say

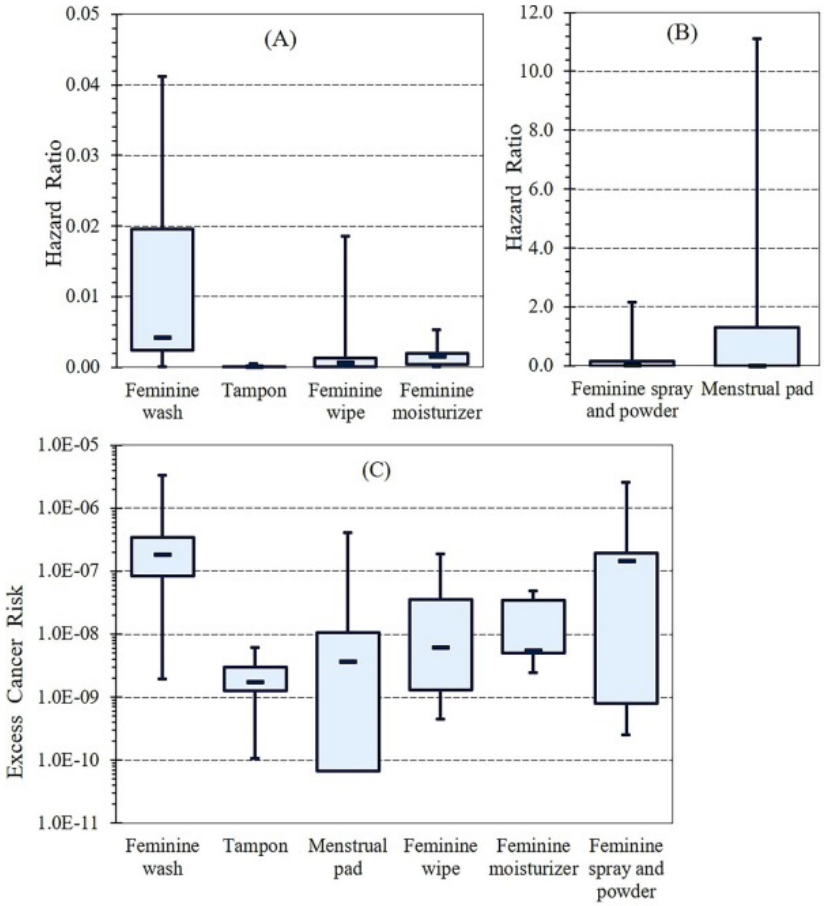
Many women of reproductive age regularly use feminine hygiene products (FHPs). Such products most often include menstrual products (e.g., pads, tampons, cups, etc.) as well as topical and wash products (e.g., creams, powders, sprays, etc.). Although we have come a long way since the invention of the first feminine hygiene products, there is still much to cover in meeting user needs and addressing their health concerns.

Many recent news articles identified the presence of toxic chemicals in FHPs that are harmful to both human health and the environment. Unfortunately, research in the area of feminine health is lacking, and as such, despite the identification of a dozen plus chemicals in our products, causal links remain unestablished. The following article covers the available scientific evidence and the topic of feminine health research.

Scientists Find Toxic Chemicals in Feminine Hygiene Products

A study from the United States evaluated best-selling store-brand feminine hygiene products available in Michigan like tampons, menstrual pads, feminine wipes, and feminine moisturizers, sprays, and powders (Lin et al., 2020). Each product was analyzed to detect the presence of volatile organic compounds (VOCs). The results showed that 100% of the selected feminine products contained 35 or more VOCs in varying concentrations. Researchers also looked for VOCs known to be carcinogenic (e.g., chloroform, benzene, and 1,4-dioxane) and found that these were present in more than 50% of products.

Following these findings, the research team calculated the health risks of such VOCs at their respective concentrations in what they labeled as the "hazard ratio," or HR. Menstrual pads presented the highest HR, followed by feminine sprays and powders. Other products had much lower HRs which indicates negligible health effects.



Source: Lin, N., Ding, N., Meza-Wilson, E., Manuradha Devasurendra, A., Godwin, C., Kyun Park, S., & Batterman, S. (2020). Volatile organic compounds in feminine hygiene products sold in the US market: A survey of products and health risks. *Environment International*, 144, 105740. https://doi.org/10.1016/j.envint.2020.105740

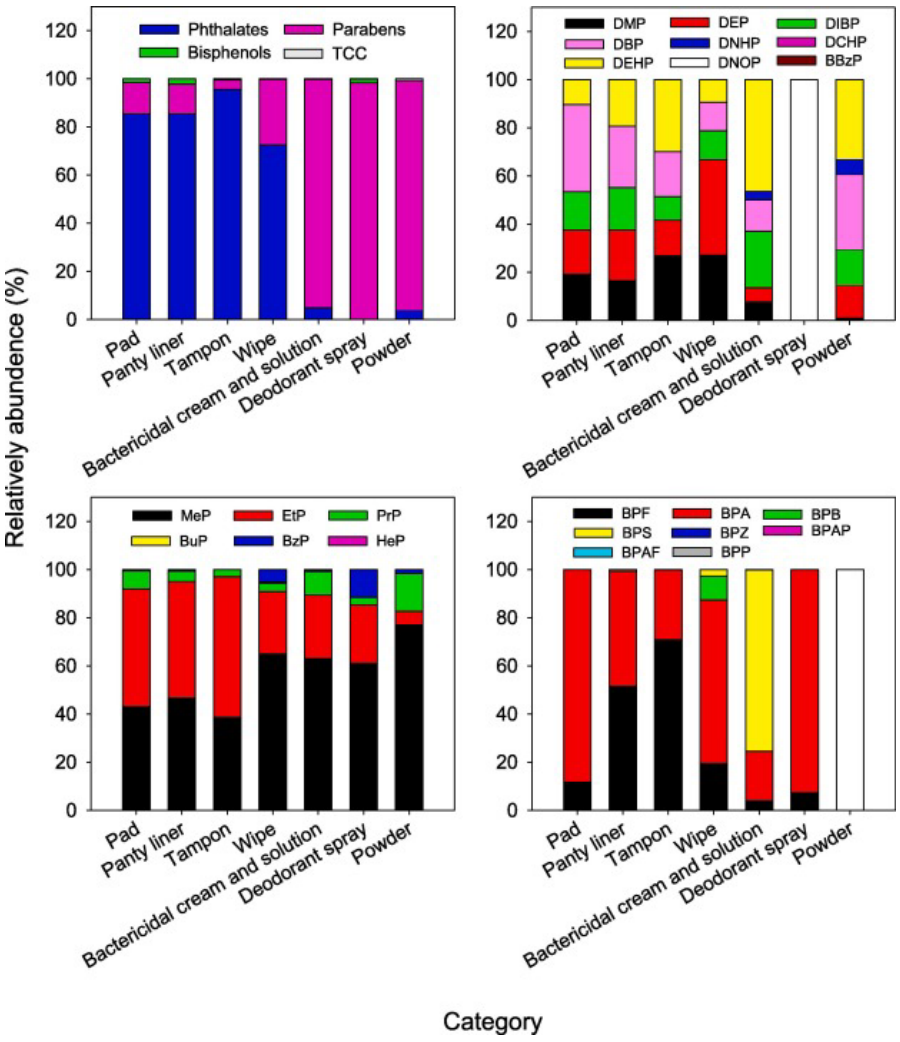
Products were also analyzed for cancer risks, revealing that feminine washes, sprays, and powders presented the highest risk. Other products posed significantly lower risks.

Another interesting finding from this study is that many of these products did not disclose the list of chemicals contained in them. Furthermore, researchers observed that non-store-brand items were more likely to contain toxic chemicals than their store-brand counterparts.

This study raises concerns regarding feminine health and prompts us to gain awareness of what is present in our products.

More Studies, New Findings, and Emerging Health Concerns

In 2020, another study from the United States identified the presence of over 24 endocrine-disrupting chemicals (EDCs) in multiple feminine hygiene products taken from stores in New York (Gao and Kannan, 2020). At first glance, the health risk calculations revealed negligible risks from exposure to these chemicals; however, these calculations used the dermal absorption rates for normal skin, which questions the validity of their results. When accounting for different and higher absorption rates than normal skin, the EDCs found in feminine hygiene products showed higher toxicity.



- **TCC:** Triclocarban
- **DMP:** Dimethyl phthalate
- **DBP:** Dibutyl phthalate
- **DEHP:** Di(2-ethylhexyl) phthalate
- **DEP:** Diethyl phthalate
- **DNHP:** Di-n-hexyl phthalate
- **DNOP:** Di-n-octyl phthalate
- **DIBP:** Di-*iso*-butyl phthalate
- **DCHP:** Dicyclohexyl phthalate
- **BBzP:** Benzyl butyl phthalate
- **MeP:** Methylparaben
- **BuP:** Butylparaben
- **EtP:** Ethylparaben
- **BzP:** Benzylparaben
- **PrP:** Propylparaben
- **HeP:** Heptylparaben
- **BPF:** Bisphenol F
- **BPA:** Bisphenol A
- **BPB:** Bisphenol B
- **BPS:** Bisphenol S
- **BPZ:** Bisphenol Z
- **BPAP:** Bisphenol AP
- **BPAF:** Bisphenol AF
- **BPP:** Bisphenol P

Source: Gao, C.-J., & Kannan, K. (2020). Phthalates, bisphenols, parabens, and triclocarban in feminine hygiene products from the United States and their implications for human exposure. *Environment International*, 136, 105465. https://doi.org/10.1016/j.envint.2020.105465

It turns out that many studies that examined feminine hygiene products did not consider the sensitivity of vaginal tissue and hence its higher absorption rate. Further research is needed, but in the meantime, multiple reviews confirm evidence for carcinogens, endocrine disruptors, allergens, and other harmful chemicals existing in various feminine products used regularly by women (Bae et al., 2018; Hait and Powers, 2019; Nicole, 2014; Upson et al., 2022).

With more studies will come causal evidence. For instance, investigations like the one reported in the *Journal of Women's Health (2022)* that analyzed urine samples from women at different time points (a longitudinal study) can produce riveting findings. In this study, researchers found that women who used tampons had significantly more VOCs in their urine than menstrual pad users. These results are intriguing, but what do they mean? Only future research can tell us.

Women's Health: Why Isn't There More Research?

Feminine health is an underfunded area of research. In Canada, a report published by B.C. Women's Health Foundation (2019) revealed that between 2009 and 2019, only eight percent of Canadian Institutes for Health Research (CIHR) grants went towards women's health. Amongst those who receive grants, the total funding amount is lower compared to grants that go towards other areas. Contiguous with this data, an analysis conducted by the Ontario Medical Association (2020) found that female physicians obtained 13.5% smaller pay cheques than their male counterparts: this mirrors the inequities in research funding. The gender pay gap in medicine exists across Canada and varies per province, but on average, Canadian female physicians earn 9.3% less than their male counterparts shedding further light on current problems (Kralj t al., 2022).

Few Human Studies. An epidemiologic review from Upson and colleagues (2022) summarized that nearly all studies that investigated the presence of environmental toxins in feminine hygiene products confirmed the presence of such toxins. Unfortunately, the review also highlighted that the conclusions about exposure risks are unsatisfactory and necessitate further research. It was pointed out that, thus far, only three human studies examined menstrual product use—a number too small to make any firm assumptions.

Direct Quotes from Scientific Literature on the Lack of Research on Feminine Health

"Detection of environmental chemicals in menstrual products, in combination with challenges of exposure assessment, **scarcity of human studies**, and the exceedingly common occurrence of menstrual bleeding, motivates the need for further research. **We provide recommendations to move this field forward.**" – Upson et al., 2022

"Although it is well known that the vaginal ecosystem is more sensitive and more absorbent than typical skin, **there is surprisingly little research out there on feminine care products**." – Alexandra Scranton, Director of Science and Research for Women's Voices for the Earth, extracted from Wendee Nicole's 2014 Review

"Feminine hygiene products, a category of daily necessities, can be a source of exposure to plasticizers and antimicrobial agents in women. Nevertheless, **studies on the occurrence of chemicals in feminine hygiene products have received little attention**." – Gao and Kannan, 2020

"A study by the non-profit organization for women safety and academic research have reported that feminine pads include several chemicals of concern which are not identified by manufacturers. However, **very limited data are available** to confirm this claim or to demonstrate the effect of cumulative chemical exposure to health. **More research and testing are clearly needed** to better characterize and understand the potential health impact by the exposure. In addition, **it is critical to establish the rigorous and effective post-market surveillance to monitor the product defects and health effects**." – Bae et al., 2018

Closing Thoughts

As research on this topic grows, we will undoubtedly be able to make better conclusions about what is good for us versus what is bad for us. However, this does not mean that women must expose themselves to unknown health risks. Products that limit toxic chemicals are better options, and we should advocate for them. Furthermore, awareness on this issue must continue to rise to protect women across the entire socioeconomic range (which can affect the products available to them, and hence, the risks).

Be a part of the change. Please share this article with your network and stay tuned for the following parts. These will dive into current regulations around feminine hygiene products and actions you can take to protect yourself and others.

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