Reviewer’s report

Title: Tampon Use, Environmental Chemicals and Oxidative Stress in the BioCycle Study

Version: 0 Date: 16 Nov 2018

Reviewer: Alexandra Scranton

Reviewer's report:

Comments
First sentence of abstract: Page 3, Line 7

"Tampons are widely used by up to 86% of women and are a rarely considered potential source of pesticide and metal exposure."

This statistic is true of the United States - but largely untrue of many other countries around the world where tampon use may be quite rare. Given the international readership of Environmental Health - it should be specified here in the abstract that this statistic refers specifically to the U.S.

Page 4, line 23
"Therefore, if tampons do contain harmful chemicals, tampon use may be a potentially important source of these chemicals via the vaginal route given the rapid absorption that occurs in the vagina and the cumulative exposure to tampons over a women's reproductive life."

Rapid absorption and systemic exposure as a result of vaginal exposure are certainly important concerns that have largely been overlooked. Also, however, vaginal exposure to harmful chemicals can also have local effects on vaginal and cervical tissue. The best example of this is the antimicrobial nonoxynol-9. Vaginally applied Nonoxynol-9 was studied as a promising candidate to help prevent HIV transmission, but instead caused a 2-fold increase in HIV transmission due to the detrimental changes in cervical and vaginal epithelial integrity caused by the chemical.
Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3519674/

Thus, in addition to the potential for significant systemic exposure from the vaginal route, it would also be worth mentioning the potential risk harmful chemicals found in tampons could have on epithelial integrity of vaginal and cervical cells, and the adverse health impacts that could result.

Page 4 line 28
"Most tampons are made of cotton or cotton blends"

Rayon should also be specifically mentioned here as a very common component of tampons. (This may be what is implied by "cotton blends"). However, it is important to note that some leading U.S. brands of tampons are made solely of rayon, containing no cotton at all.
Examples:
Kotex:
Online ingredient listings for these three products, U by Kotex® Sleek® Tampon, U by Kotex®
Click®, and U by Kotex® Fitness indicate no cotton fibers are used. Source: https://www.kimberly-
clark.com/en-us/brands/ingredients/consumer/kotex

o.b.
Online ingredient listings for all o.b. tampons state they are made solely of two types of rayon.
Source: http://www.ob-tampons.com/faq/about-ob-tampons

Tampax is the only major brand that currently manufactures a tampon that is 100% cotton (Tampax
Pure and Clean - a new product which was introduced in 2018). Most of their products are listed as
including "rayon and/or cotton". Source: https://tampax.com/en-us/tips-and-advice/period-health/tampon-ingredients

Mercury has been used in the rayon manufacturing process historically - leading to legacy mercury
pollution at rayon manufacturing plants. Source: https://www.ecowatch.com/dupont-mercury-pollution-
virginia-2150827849.html This could be worth mentioning as a possible source of mercury in
tampons.

It is also worth noting the significance of this paper as it reflects a first of its kind to attempt to
investigate exposure to heavy metals from the use of tampons, and the first to investigate biomarkers of
inflammation and oxidative stress in association with the use of tampons. These are key concerns that
have long been ignored and are worthy of further research, given the significant population of women
in the U.S. using these products regularly throughout their reproductive years.

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An exceptional article

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