

Peer Review

Review of: "PFC/PFAS Concentrations in Human Milk and Infant Exposure Through Lactation: A Comprehensive Review of the Scientific Literature"

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The paper deals with an important issue, and it has collected an impressive number of studies. In the discussion, we learn that this is not the first paper setting out to review the existing evidence of PFAS concentrations in human milk, though [110–121]. Therefore, I wonder what the added benefit of this new review would be.

Mostly, the authors just report concentrations. This is a lot of numbers, making reading difficult. Some of the studies are then also summarized in tables. But these tables do not cover all regions and not even all studies from the regions that they do cover. Again, the tables come with a lot of text that makes it more difficult to see differences or trends at a glance. Maybe a graphical representation of the data would be helpful: Present the results in some kind of forest plots or box-and-whisker plots, one figure per substance, the studies maybe ordered by region and by year, and color-coded whether the samples are from the general public (random sample) or from a hot-spot analysis. This would make it possible to see differences between regions and temporal trends at one glance!

And please, please, stick to one unit of concentration! Some results are reported as ng/L [51, 52...], and some as ng/mL [53]. The daily intake of toddlers is either reported as µg/kg/d [51] or ng/kg/d [55] or as a relative value in comparison to a not defined TDI. Different institutions have established different TDIs at different times. Therefore, it is not informative that an EDI is below a TDI when you are not told which TDI was used. It could be the task of the authors to recalculate each EDI as a percentage of one single TDI, best a TDI that has been proposed rather recently with all the new knowledge. It just does not make sense to report that PFAS “were associated with a decreased infant's length gain rate,”

but that EDIs were below the TDI. If an exposure below the TDI does have an adverse effect, this just demonstrates that the TDI is wrong!

In at least one case, an EDI was reported based on pooled samples [52]. I do wonder if the EDI derived from pooled samples is meaningful. We would learn about the average exposure of an average child of an average mother. But without some expert guesses about the underlying unknown distribution, we would not be able to tell about the more relevant exposures at higher percentiles.

From the discussion, we learn that previous reviews have already examined specific questions like trends in milk concentrations, ratios between blood and milk, regional and personal differences in exposure, etc. Still, the current review could greatly benefit from a similar exercise. With so many studies available, it would be very interesting to see for which factors a meta-regression would be possible and what would be found: For example, do all studies that examined it find the same blood-milk ratios for at least the most often studied substances? And if not, what might be the determinants for the differences? As it stands, the current paper is mostly a difficult-to-read collection of numbers without any easy-to-grasp structure or overall finding, which indeed is a pity given the large number of studies cited.

The authors conclude that there are still regions that lack information. Yes, sure! “More research is needed” is always a reasonable conclusion. And even if there are already sufficient data from certain regions, we would want new studies to see if political interventions and legal restrictions have made an impact on the concentrations.

The authors also conclude that “new studies should be carried out to check whether the EDIs are exceeding the current TWI.” Well, no! We do not need new studies to compare the results of the old ones to the new guideline values. Indeed, this should have been done by the authors in this review!

By the way (minor remark): The authors use the term “range”, but for me, it was not immediately clear if they meant the full range (minimum to maximum) or another range like, e.g., the “interquartile range”. Indeed, the latter would maybe make more sense than some chance values of just two random samples. That brings me back to my wish for a graphical presentation of the results.

Declarations

Potential competing interests: No potential competing interests to declare.