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European Food Safety Authority
Food Ingredients & Packaging Unit
Dr. Eric Barthélémy

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Open letter: EFSA technical report on „ Literature review on micro- and nanoplastic release from food contact materials during their use”

Dear Dr. Barthélémy,

With great interest, we read the recently published EFSA technical report on micro- and nanoplastics (MNPs) that originate from the normal and intended use of food contact materials (FCMs). With the increasing prevalence of plastic FCMs in food processing and packaging, and the heightened awareness related to potential human health impacts of MNPs, this direct source of MNPs in the human diet deserves to receive more attention, because it can be mitigated. Therefore, we are most obliged to EFSA for preparing this report and making it publicly available. In the spirit of peer-review, we would like to take this opportunity to share some additional information and reflections on the report which, to our knowledge, has not been officially reviewed by external experts.

Earlier this year, we published a new resource: Food contact articles as source of micro- and nanoplastics: A systematic evidence map and the corresponding FCMiNo dashboard. Our peer-reviewed article and dashboard had the same scope as the recent EFSA technical report, and we are currently working on an update of this resource. In brief, our findings align with the conclusions of EFSA’s technical report, namely that the normal and intended use of plastic food contact materials and articles can lead to the generation and migration of MNPs that enter foodstuffs, thereby becoming a direct exposure source for humans to MNPs. This finding is novel and important, also if it is not currently aligned with statements by other authorities (such as by the US Food and Drug Administration). But a better understanding of the direct human exposure sources is imperative, as it will inform strategies for reducing exposure and risk. This urgent need has also been emphasized in the recently published CUSP Research Roadmap, funded by the European Commission’s Horizon 2020.

We have several more specific comments on the technical report that we would like to highlight. Firstly, in a systematic evidence map, the eligibility criteria for inclusion (or exclusion) of studies are critical. Ideally, each criterion is objective such that it can

consistently be applied by another research team. However, in the technical report the criteria are not explicitly reported (in Annex B.1. Table 1). Consequently, it is not transparent what criteria led to the inclusion or exclusion of a study, nor can another research team apply them.The report does state that “studies conducted under relevant testing conditions such as temperature, duration, mechanical stress, food type (acidic, fatty, aqueous), or material ageing” were included. This leaves ambiguous whether studies that allow establishing a causal relationship between a detected MNP and a plastic FCM were included and could lead to exclusion of studies that indeed would be suitable for identifying causality or inclusion of unsuitable studies. For example, studies with a kinetic study design, where several measurements are taken over time or at different temperatures can support establishing causality. A spatial study design also allows causality assessment, where MNPs are measured in solid foodstuffs at varying distances from the plastic FCM; findings of decreasing MNP levels with increasing distance from the plastic FCA indicate that the detected MNPs likely would have originated from the plastic FCM.

Secondly, after full-text screening, 122 studies were included in the report but only for 81 “key information was amenable to structured extraction [...]. The remaining 41 publications did not go through the structured but narrative data extraction [...] captured in a single narrative text box”, “because the reporting on particle metrics (e.g. size, shape, concentration), methodological details, or study design was insufficiently detailed (see Appendix C).” It is, however, unfortunate that these 41 publications did not undergo structured data extraction, as they, too, could have provided valuable information. We therefore suggest extracting at least partial information from them.

Thirdly, it is not evident from the report which 81 studies were considered amenable to structured data and information extraction since they are split between “7 References,” which includes all references of the report and “C.1 Publications with structured extraction,” which lists extracted references not cited in the main text. And even though “Table 2 contextualizes the results for the reliable and conclusive studies”, it remains unclear which studies are considered conclusive, as the term “reliable and conclusive” is not defined in the table description. The report does refer partially to what is meant with “conclusive”, stating for example:

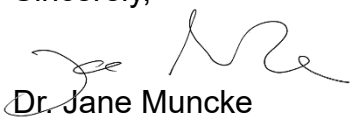
- “incorrect or inconclusive studies **mainly** correspond to reports on ...”,
- “**most reliable studies with conclusive findings** were....”,
- “**most conclusive** concerning generation and release from FCM were....”

However, this still leaves ambiguity and lacks clarity as to how decisions were made.

Finally, the definition of an FCM sample is not entirely clear. In the report (page 7, footnote), it is stated that “A sample is a type of FCM articles (e.g. a bottle) considered in a publication. It does not count the total number of materials and articles that have been tested (e.g. replication of the test).” This definition is imprecise. For example, if a study tested bottles from different brands or made of different polymer types, it is unclear whether these are considered one or several samples.

We hope that our feedback can be useful to you, and we thank you and the entire team of authors for your work.

Sincerely,



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