

To:
Dr. Marcos Orellana
Special Rapporteur on Toxics and Human Rights
Office of the High Commissioner
UNHCR

Food Packaging Forum Foundation

Staffelstrasse 10
CH-8045 Zürich
Switzerland

Dr. Jane Muncke
Managing Director
Telephone +41 44 515 52 55
jane.muncke@fp-forum.org

www.FoodPackagingForum.org

20 April 2021

Call for submission of information on the lifecycle of plastics and human rights

Dear Dr. Orellana,

The Food Packaging Forum (FPF) is a charitable, science-based organization dedicated to raising awareness for hazardous chemicals in all types of food contact materials (FCMs) and articles (FCAs), including plastic food packaging. We welcome the opportunity to provide input from our scientific perspective to the Special Rapporteur's upcoming thematic report on the lifecycle of plastics and their inter-connectedness with human rights. We have recently developed and released a series of open-access publications and databases to help inform stakeholders about the presence of hazardous chemicals in plastic FCMs as well as the responses from stakeholders in the supply chain to address this issue. In this letter, we summarize a set of resources and key findings that specifically address questions outlined within your call for information.

1. Physicochemical drivers of exposure to chemicals in plastic packaging

The chemicals within FCMs and FCAs are known as food contact chemicals (FCCs), and they can contaminate food when they move (migrate) from the materials into the food. Studies on the migration of chemicals from plastic food packaging have shown that chemicals migrate into food from the packaging more quickly and in greater amounts according to: (i) higher heat, (ii) longer storage time, (iii) smaller packaged portion sizes, and (iv) contact with fatty and/or acidic foods (Food Packaging Forum 2016). To limit chemical migration and resulting exposure, the Food Packaging Forum encourages consumers not to heat their food products in packaging made of non-inert materials such as plastic, to be conscious of how long food is in contact with non-inert packaging materials, to avoid food products packaged in small portion sizes (due to higher contact surface ratios), and to avoid storing fatty and/or acidic foods in non-inert packaging materials. Persons in developing and transition countries that have a lack of food storing and packaging options (such as those who can only afford to purchase single-use, small portion sizes i.e.

food and drink sachets) may therefore be disadvantaged and exposed more regularly and to higher amounts of FCCs.

2. Scientists call for reducing exposure to hazardous chemicals in food packaging

As your call for information has noted, plastics can contain thousands of different additives that can continuously expose humans and the environment. In March 2020, a group of 33 international scientists led by the Food Packaging Forum published a consensus statement urging decision-makers in government, industry, and civil society to reduce exposure to harmful chemicals that are present in food packaging and any other food contact materials (Muncke et al. 2020). The peer-reviewed statement highlights seven specific areas in need of improvement, including: elimination of hazardous chemicals in food contact articles, the development of safer alternatives, modernizing risk assessment, consideration of endocrine disruption, addressing mixture toxicity, improving enforcement, and establishing a multi-stakeholder dialogue to find practical solutions.

While there is a great amount of information for some of the most well-studied food contact chemicals (FCCs) found in plastics such as bisphenol A (BPA) and phthalates, the authors emphasize that thousands of reported FCCs across plastics and other material types lack data on their hazardous properties and/or level of human exposure, even though these are critical data for determining human health risks. The statement further explains that there is an unknown but presumably even higher number of non-intentionally added substances (NIAS) present in food packaging (e.g., contaminants, degradation products) that have the potential to migrate into food, especially from recycled materials. The issue of NIAS in plastics requires more attention.

3. Chemicals in plastic packaging and their associated hazards

Together with partners from civil society and academia, the Food Packaging Forum published a study that developed a database of Chemicals associated with Plastic Packaging (CPPdb) and ranked human health and environmental hazards of these chemicals (Groh et al. 2019). The database covers both food and non-food packaging, and it contains over 900 chemicals likely associated with plastic packaging and over 3,300 chemicals that are possibly associated. In addition, plastic packaging can contain impurities, degradation products, and contaminants that cannot be exhaustively compiled because many of these chemicals are not yet identified. Significant difficulties encountered during this study were the lack of transparency and restricted access to industry data, as well as gaps in publicly available information on both the use and toxicity of plastic packaging-associated chemicals.

At least 148 chemicals likely associated with plastic packaging were identified as the most hazardous based on several harmonized hazard data sources. These included the EU classifications for human health and environmental hazards conforming to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), including, for example, classifications assigned by the European Chemicals Agency (ECHA) under the Classification, Labelling and Packaging (CLP) regulation and an EU classification as a persistent, bioaccumulative and toxic (PBT) or very persistent, very bioaccumulative (vPvB) substance. These hazardous chemicals are allowed to be used or present in plastics as monomers, intermediates, solvents, surfactants, plasticizers, stabilizers, biocides, flame retardants, accelerators, and colorants, among other functions.

4. Mapping chemicals present in all types of FCMs

The universe of FCCs that are used to produce the many different types of FCMs and FCAs (including plastics) is complex and largely not well mapped. This is because information on chemical structures, use patterns, and migration potentials of FCCs is often absent or scattered across multiple sources. To help address this, the Food Packaging Forum developed the Food Contact Chemicals Database (FCCdb) to gather and publicly share available information on FCCs across all types of FCMs and FCAs (Food Packaging Forum 2020a). The FCCdb compiles information from 67 lists of FCCs from publicly available sources, including regulatory lists and industry inventories. The current version of the database (version 5.0) identifies 12,285 distinct FCCs that are potentially used worldwide in the manufacture of FCMs and FCAs. It further maps a subset of these chemicals known to be used in plastic packaging and provides an overview of their available toxicity and regulatory data. Following a review of all substances within the database, authoritative sources of hazard information (such as the Globally Harmonized System) were used to prioritize 608 FCCs for further assessment and substitution in FCMs and FCAs (Groh et al. 2020). Our study also found that for over a quarter of all of the chemicals in the database, no hazard information could be found in the sources consulted, which reveals a significant data gap and need to either increase testing on these substances or improve the public availability of these testing data.

5. Chemicals in plastics and the circular economy

As many countries look to move towards a circular economy that keeps materials in their original function for as long as possible, special attention needs to be paid to chemical contaminants that can appear in recycled plastic products. For plastic FCMs, inappropriate recycling processes could lead to contaminated products made out of secondary raw materials. For example, several food contact articles composed of black plastics have been found on the European market to contain brominated flame retardants (BFRs) (Samsonik and Puype 2013; Puype et al. 2017; Turner 2018). BFRs are present in Waste Electric and Electronic Equipment (WEEE), but they are not authorized for plastic food contact and, due to their

hazard properties, should not be present in any kind of food contact article. As a consequence, more controls of imports, especially for the presence of heavy metals and persistent organic pollutants, such as BFRs, should be put in place, and appropriate measures should be taken in response to detection of non-compliance (i.e. removal of these articles from the market). The hypothesis for the presence of BFRs in black plastic food contact materials is that WEEE plastics are illicitly recycled into new articles intended for food contact (Hahladakis et al. 2018).

When working to discontinue the intentional use of hazardous chemicals in plastic packaging and avoid their appearance in recycled materials, any substitution of these chemicals should be done carefully and based on sufficient evidence. One hazardous chemical should not be substituted for another chemical that lacks sufficient information about its hazards, including its toxicity. A recent, peer-reviewed article we published (Muncke 2021) summarizes that “the plastic pollution problem requires systemic thinking that shies away from quick fixes addressing only one symptom of the larger problem. Instead, robust innovations will be built on a thorough, holistic understanding of the plastics problem that must be developed by integrating all available knowledge – including hazardous chemicals – across plastic’s entire life cycle.”

Concern regarding the chemical safety of food packaging is one of the main obstacles in transitioning to a circular economy (Geueke et al. 2018), and more efforts need to be taken to ensure it. Therefore, we urge governments to invest appropriate funds into the research and development of safe recycled food contact articles.

6. Food brand and retailer initiatives to address the issue

In an effort to improve the chemical safety and resource efficiency of FCMs and FCAs, food brands and retailers from around the world have started to go beyond legal requirements by launching and joining hundreds of voluntary initiatives and commitments. However, this information is spread across many different websites and reports, and it can be difficult to find and keep track of. To make this information more accessible, the Food Packaging Forum has set up a Brand and Retailer Initiatives Database that brings together key information about these efforts into a searchable format (Food Packaging Forum 2020b). It features organizations that have taken progressive steps towards improving the FCMs and FCAs they use, many of which are specific initiatives or commitments related to their plastic food packaging. To date, most of the over 400 commitments and initiatives in the database are related specifically to the resource efficiency of the materials used including recycling and recycled content targets. However, only 12% of them somehow specifically address the safety of the **chemicals** present in their packaging. This database helps to identify progressive food brands and retailers that are working downstream in the packaging supply chain to promote a shift towards safer and more efficient plastic

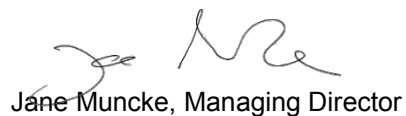


packaging. These companies can also serve as role models for others looking to go beyond current regulations, and they can help to push for truly circular and safe packaging innovations.

Again, we would like to thank the OHCHR for the opportunity to provide input for this highly important report that will affect decision-making in a large range of areas, including food contact materials. Greater and more equal protection of public health for all can be achieved if hazardous chemicals in plastics are addressed based on current scientific understanding and evidence.

Sincerely,


Martin Scheringer, President


Jane Muncke, Managing Director


Justin Boucher, Project Manager

References

- Food Packaging Forum (2016) Food Packaging and Human Health Fact Sheet.
<https://www.foodpackagingforum.org/resources/fact-sheet-en>. Accessed 20 Apr 2021
- Food Packaging Forum (2020a) Food Contact Chemicals Database (FCCdb).
<https://www.foodpackagingforum.org/fccdb>. Accessed 20 Apr 2021
- Food Packaging Forum (2020b) Brand and Retailer Initiatives Database.
<https://www.foodpackagingforum.org/brand-retailer-initiatives>. Accessed 20 Apr 2021
- Geueke B, Groh K, Muncke J (2018) Food packaging in the circular economy: Overview of chemical safety aspects for commonly used materials. *J Clean Prod* 193:491–505.
<https://doi.org/10.1016/j.jclepro.2018.05.005>
- Groh KJ, Backhaus T, Carney-Almroth B, et al (2019) Overview of known plastic packaging-associated chemicals and their hazards. *Sci Total Environ* 651:3253–3268.
<https://doi.org/10.1016/j.scitotenv.2018.10.015>
- Groh KJ, Geueke B, Martin O, et al (2020) Overview of intentionally used food contact chemicals and their hazards. *Environ Int* 150:. <https://doi.org/10.1016/j.envint.2020.106225>
- Hahladakis JN, Velis CA, Weber R, et al (2018) An overview of chemical additives present in plastics: Migration, release, fate and environmental impact during their use, disposal and recycling. *J Hazard Mater* 344:179–199. <https://doi.org/10.1016/j.jhazmat.2017.10.014>
- Muncke J (2021) Tackling the toxics in plastics packaging. *PLOS Biol* 19:.
<https://doi.org/10.1371/journal.pbio.3000961>
- Muncke J, Andersson AM, Backhaus T, et al (2020) Impacts of food contact chemicals on human health: A consensus statement. *Environ Heal* 19:1–12. <https://doi.org/10.1186/s12940-020-0572-5>
- Puype F, Samsoněk J, Vilímková V, et al (2017) Towards a generic procedure for the detection of relevant contaminants from waste electric and electronic equipment (WEEE) in plastic food-contact materials: a review and selection of key parameters. *Food Addit Contam Part A* 34:1767–1783.
<https://doi.org/10.1080/19440049.2017.1332430>
- Samsoněk J, Puype F (2013) Occurrence of brominated flame retardants in black thermo cups and selected kitchen utensils purchased on the European market. *Food Addit Contam Part A* 30:1976–1986. <https://doi.org/10.1080/19440049.2013.829246>
- Turner A (2018) Black plastics: Linear and circular economies, hazardous additives and marine pollution. *Environ Int* 117:308–318. <https://doi.org/10.1016/j.envint.2018.04.036>