Healthy food packaging: Human health and environmental concerns.

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Top 10 Items Collected

1. Cigarette Butts: 2,127,565
2. Plastic Beverage Bottles: 1,024,470
3. Food Wrappers: 888,589
5. Straws, Stirrers: 439,571
6. Other Plastic Bags: 424,934
7. Glass Beverage Bottles: 402,375
8. Plastic Grocery Bags: 402,122
9. Metal Bottle Caps: 381,669
10. Plastic Lids: 351,585

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“SAFE”

no untested chemicals
and no hazardous chemicals
Hazardous chemicals are in food packaging – and they migrate.
Food safety

Chemicals leaching into food from packaging raise safety concerns

Scientists, in BMJ paper, warn of potential long-term damage of exposure to synthetics, including formaldehyde in drinks bottles

Muncke, J., et al. (2014). "Food packaging and migration of food contact materials: will epidemiologists rise to the neotoxic challenge?" Journal of Epidemiology and Community Health 68(7): 592.

Food Contact Chemicals database (FCCdb)

Coming soon!
Migration: chemicals transfer into food

heat  higher temperature increases leaching  

time  long storage time increases leaching

food chemistry  fatty foods, acidic foods, aqueous foods: it depends on food stuff what chemicals migrate from the packaging

packaging size  smaller packaging has proportionally larger surface area, more migration per volume of food

levels in the packaging  higher levels of a chemical in packaging can lead to higher migration
FCM are an underestimated source of food contamination

<table>
<thead>
<tr>
<th></th>
<th>Pesticides</th>
<th>FCMs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Substances</td>
<td>~1500</td>
<td>Possibly 100,000</td>
</tr>
<tr>
<td>Level of food contamination</td>
<td>µg/kg</td>
<td>mg/kg</td>
</tr>
<tr>
<td>Toxicological evaluation</td>
<td>yes</td>
<td>mostly no</td>
</tr>
</tbody>
</table>
Welcome to FSAP

FSAP is the Food Safety Alliance for Packaging, a technical committee of the Institute of Packaging Professionals.

FSAP is a group of individuals from food companies and the food packaging supply chain dedicated to raising food quality and safety awareness for the food packaging industry.

FSAP discusses food packaging topics during a bi-monthly call. In addition, there is a yearly face-to-face meeting.

- FSAP Interim By-Laws (June 2018)

The FSAP brand owners’ working group has published the document: Food Packaging Product Stewardship Considerations. The working group aims to provide a list of product stewardship best practices in a publicly available document for all of the food packaging supply chain to access. For this document, input was given by brand owners including Nestlé and Mars Wrigley Confectionery and packaging supply chain members including, Deceris, Sigework, American Packaging Corp., Henkel and Sun Chemical.

Food companies and members of the packaging supply chain are welcome to use all or parts of this non-binding document as a roadmap for product stewardship considerations.


Food Packaging Product Stewardship Considerations: “a best practice for the formulation of food packaging for consumer products”
<table>
<thead>
<tr>
<th>Packaging part/component</th>
<th>Substance(s) / Topic(s)</th>
<th>Description</th>
<th>Should not use intentionally (where suitable alternatives exist)</th>
<th>Minimize Use</th>
<th>Additional Information/ references</th>
</tr>
</thead>
</table>
| Grease-proof coated paper and board | Perfluoro and polyfluoro compounds:  
- C8 and higher (PFOA and related)  
- C6 polyfluoro, C2 perfluoro ethers and other polyfluoro and perfluoro compounds | - Must not be used.  
- Can be used but consider alternatives if available. | X | | Not allowed by US-FDA  
Consumer interest |
Food processing increases hazardous chemicals in food.
Food processing is a source of hazardous chemicals in food

Figure S1. Overview of unintentional chemical inputs into the food value chain during different stages. Chemical contaminants can also be formed in food during (domestic) cooking.

Susmann et al. 2019. Dietary Habits related to Food Packaging and Population exposure to PFAS. EHP.
Dietary intervention study: set-up

Figure 1. Intervention study design ($n = 20$ individuals from five families). Each participant provided a total of six urine samples (arrows; two per phase). Paired samples collected from each individual during each phase were combined for analysis.

Rudel et al. 2011 Environmental Health Perspectives 119(7):914-20
Dietary intervention study: results BPA

Rudel et al. 2011 Environmental Health Perspectives 119(7):914-20
Solutions must protect human health and the environment.
Two disconnected worlds...

- Chemical safety
- Migration
- Extend shelf life
- Lightweight
- New materials
- Marketing

- Reduce resources and energy loss: environmental issues
- Decouple economic growth, consumption
- Reuse and recycle food packaging
- No focus on chemical safety
(Black) plastics made with recycled plastic


Source: A. Turner, 2018
Conclusions

1. Hazardous chemicals are present in food packaging. Regulations and enforcement are insufficient. Companies are making their own policies and NGOs are raising awareness for the issue.

2. Getting hazardous chemicals out of food packaging is an important task but other sources “upstream” in food processing are also important. Eating homemade, non-processed foods is important for reducing personal exposure to hazardous chemicals.

3. Food contact articles are a source of hazardous chemicals. But packaging waste is also a major challenge and concern. Solutions to plastic pollution and packaging waste’s end of life must address both human health and environmental concerns.
Food Packaging Forum (FPF) Foundation

Science communication & scientific research (desk-based)

Food contact materials, chemicals, migration, human health

2012 in Zurich

Scientists & science communication experts

Donations and project-based funding, incl. BA Glass, Verallia
ALL INFORMATION FREELY AVAILABLE:
www.foodpackagingforum.org
THANK YOU – and please save the date!

• October 22, 2020
• FPF workshop: science-policy interface – a stakeholder dialogue
• Join us for one day of critical thinking and beyond-comfort-zone networking: meet people you’d NEVER interact with!
• Learn about chemicals in food contact articles and health impacts
• Join cutting-edge discussions on a way forward, learn about the newest science and get inspired!
• Alternatively: join by webstream

https://www.foodpackagingforum.org/events/categories/workshops