Fact bite #10

High-density polyethylene (HDPE)

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HDPE is a type of polyethylene plastic. Its durability and lightweight nature make it commonplace in food contact applications such as milk jugs, juice bottles, and reusable food containers.

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In a systematic review, scientists analyzed studies looking at food contact chemicals migrating from different polyethylene (PE) plastics, including HDPE. Across 34 studies, 68 chemicals were found to migrate from HDPE. Seven of these chemicals were found to exceed migration limits at least once.

Gerassimidou et al. (2023)
DOI: 10.1016/j.jhazmat.2023.131422

Migration of hazardous chemicals from HDPE into food has been identified as concerning for post-consumer recycled HDPE products. In one study, scientists found 53 chemicals to migrate from post-consumer recycled HDPE milk bottles into a food simulant, including plastic additives and non-intentionally added substances (NIAS). Only six of these compounds are included in the EU plastic food packaging regulation.

Vera et al. (2023)
DOI: 10.1016/j.fpsl.2022.101020

Contamination of the plastics collected for recycling is a known issue for food contact applications. Another study found that recycled HDPE from well-sorted, decontaminated milk bottles may be clean enough for food contact, but some chemicals still migrated at concerning levels. While there are sorting processes in place, further improvements in decontamination processes during recycling, changes in manufacturing processes, or additional legislation to increase chemical safety might be required.

Su et al. (2021)
DOI: 10.1016/j.resconrec.2021.105640