CHEMICALS OF CONCERN

& WHAT IT MEANS FOR PET BOTTLES

Chemicals of concern in plastics refers to a broad category of substances of potential concern based on their hazardous properties (e.g., carcinogens, mutagens, persistent substances).

PET BOTTLES

PET (polyethylene terephthalate) belongs to the polyester family of polymers, and is a food and medical grade material. PET is well-established for food contact use, approved by health agencies globally, and used for various applications including bottled water.

No phthalates,[7] no BPA,[8] and no PFAS are used in the production* of PET bottles.

COMMONLY REFERENCED CHEMICALS OF CONCERN: **EXAMPLES:**

PHTHALATES

A family of synthetic chemicals commonly used to make certain plastics more flexible and durable

Phthalates have a variety of uses in certain plastics, from consumer goods to industrial products. While not all phthalates are well-studied, research has identified some of them as harmful to human health.[1] The identified chemicals are regulated globally, especially in food contact uses.


Paint


Electronics

BISPHENOL A (BPA)

A chemical compound in the bisphenol family used to create some resins and plastics

Among others, BPA is used to make polycarbonate (PC) plastic and epoxy resins. Epoxy resins are commonly used in the protective coatings for food and beverage metal cans to protect the metal from reacting with the contents inside, increase shelf-life, and avoid transferring the metallic taste to the contents.[2] BPA use in food contact applications is regularly evaluated, as small amounts of BPA can migrate to the contents.[3] European Food Safety Authority (EFSA) experts found dietary BPA exposure to be a human health concern.[4]


Food/Beverage Can Liners


Sports Equipment

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

A class of synthetic chemicals with properties like water repellency and degradation resistance[5]

Due to their strong chemical bonds, PFAS do not breakdown easily and can persist in the environment for long periods of time. Research on how exposure may impact health is ongoing.[6]


Non-stick Coatings


Firefighting Foam

CHEMICAL REGULATION

International collaboration has led to binding conventions (e.g., Stockholm Convention)[9] and mandatory schemes (e.g., Globally Harmonized System of Classification & Labelling of Chemicals)[10] toward chemical assessment and management. There are also federal regulations in place, such as the U.S. Toxic Substances Control Act (TSCA),[11] the Canadian Environmental Protection Act (CEPA),[12] and Europe's Registration, Evaluation, Authorization and Restriction of Chemical Substances (REACH).[13]

*Production refers to the manufacturing of PET material and its conversion into bottles through injection molding and blow molding processes.

FOOTNOTES

1. "Phthalates," *European Chemicals Agency*, https://echa.europa.eu/hot-topics/phthalates.
2. "Bisphenols," *European Chemicals Agency*, https://www.echa.europa.eu/hot-topics/bisphenols.
3. "Bisphenol A in food is a health risk," *European Food Safety Authority*, https://www.efsa.europa.eu/en/news/bisphenol-food-health-risk#:~:text=Dietary%20exposure%20to%20bisphenol%20A%20%28BPA%29%20is%20a,potentially%20harmful%20health%20effects%20on%20the%20immune%20system..
4. Claude Lambré et al., "Re-evaluation of the risks to public health related to the presence of bisphenol A (BPA) in foodstuffs," *EFSA Journal* 21, no. 4 (2023), doi: 10.2903/j.efsa.2023.6857.
5. "Per- and polyfluoroalkyl substances (PFAS)," *European Chemicals Agency*, https://echa.europa.eu/hot-topics/perfluoroalkyl-chemicals-pfas.
6. "PFAS Explained," *United States Environmental Protection Agency*, https://www.epa.gov/system/files/documents/2023-10/final-virtual-pfas-explainer-508.pdf.
7. Patricia A. Enneking, "Phthalates Not in Plastic Food Packaging," *Environmental Health Perspectives* 114, no. 2 (2006): A89–A90, doi: 10.1289/ehp.114-a89.
8. "Debunking PET Myths," National Association for PET Container Resources, https://positivelypet.org/myths-and-facts/; "Debunking myths about PET plastic," *Petcore Europe*, https://www.recycletheone.com/what-is-pet/debunking-myths-about-pet-plastic/.
9. "Overview," *Stockholm Convention on Persistent Organic Pollutants (POPs)*, https://www.pops.int/TheConvention/Overview/tabid/3351/Default.aspx.
10. "About the GHS," *United Nations Economic Commission for Europe*, https://unece.org/about-ghs.
11. "About the TSCA Chemical Substance Inventory," *United States Environmental Protection Agency*, https://www.epa.gov/tsca-inventory/about-tsca-chemical-substance-inventory#whatistheinventory.
12. "Canadian Environmental Protection Act Registry," *Government of Canada*, https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry.html.
13. "Understanding REACH," *European Chemicals Agency*, https://echa.europa.eu/regulations/reach/understanding-reach.