Factsheet on PFASs in Consumer Products: Key Points for Decision Makers (Short Version)

Prepared by the California Department of Toxic Substances Control, Safer Consumer Products Program

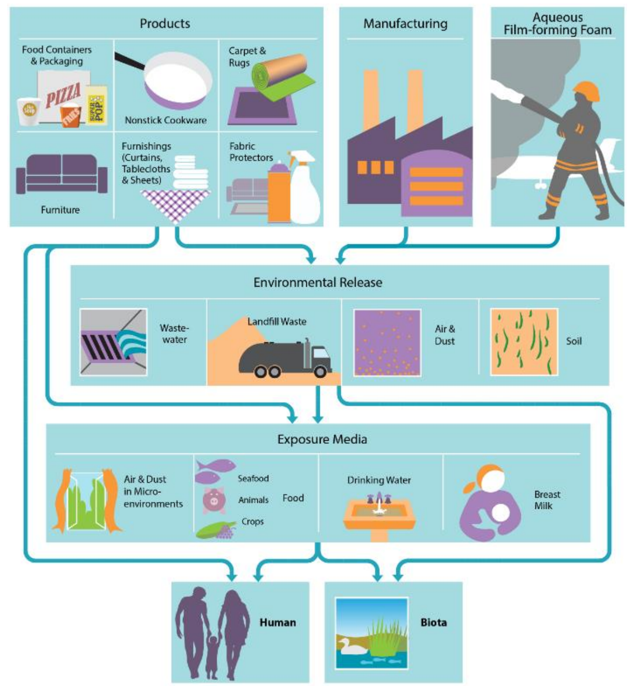
Perfluoroalkyl and polyfluoroalkyl substances (PFASs) have received increasing attention from researchers, policymakers, regulators, and the public due to their potential long-term adverse impacts on humans and the environment. Even if we could stop all PFAS uses today, the widespread contamination and adverse impacts will continue for generations to come.

PFASs are a large and complex class of chemicals. There is no widely accepted definition of what a PFAS is, and not all PFASs are alike. PFASs have various chemical structures and range in size from small molecules to large polymers. However, all PFASs share the presence of bonds between carbon and fluorine atoms, which gives PFASs their useful properties, including their resistance to heat, harsh chemicals, and microbial decay. Certain PFASs known as perfluoroalkyl acids (PFAAs) take so long to degrade in the environment that scientists have nicknamed them "forever chemicals." Most other PFASs are manufactured using PFAAs, contain PFAAs as impurities, or degrade into PFAAs (i.e., they are PFAA precursors).

PFASs have hundreds of uses. A recent study documented more than 200 different uses for PFASs in consumer products and other applications, from rain jackets and non-stick pans to firefighting foam and semiconductors. PFASs are difficult to avoid when purchasing consumer products. Here's a list of some known PFAS-free products and a guide to PFAS-free purchasing.

PFAS contamination has become widespread in the environment, leading to widespread exposures. Due to decades of widespread use and their high persistence, PFASs are found virtually everywhere across the globe and in nearly every living organism, including humans. The California Environmental Contaminant Biomonitoring Program found at least one PFAS in the blood of nearly all study participants from across the state. Babies receive PFASs from their mothers through the placenta and are born with measurable quantities in their bodies.

Reversing PFAS contamination is expensive and complicated. For example, Orange County, California, estimated that it will cost at least $1 billion to address PFAS contamination in the groundwater basin that supplies much of its drinking water. Recent efforts have developed improved methods to destroy the carbon-fluorine bond and safely degrade PFASs. While these destruction technologies may be helpful for treatment of concentrated PFAS waste streams or cleanup of discrete contaminated sites, they cannot reverse large-scale PFAS contamination. Failure to reduce uses of PFASs will ensure many more decades of drinking water and environmental contamination and the associated negative health impacts.



Some PFASs are known to be toxic at low levels, and even those that have yet to be studied for toxicity raise concerns due to their high persistence. Exposure to the most thoroughly studied PFASs has been linked to several adverse impacts, such as increased incidence of thyroid disease, immunotoxicity (e.g., reduced response to routine vaccination), carcinogenicity (kidney and testicular), elevated cholesterol, and reproductive and developmental toxicity. The more these chemicals are studied, the more reasons for concern are found. This warrants a precautionary approach when regulating these chemicals to protect human health and the environment.

Regulations and legislative bans are beginning to tackle some PFAS uses, but more work is needed to prevent future contamination. The high persistence of PFASs and their known health hazards have led to calls for the phaseout of the entire chemical class, especially for uses that are not essential, such as where safer alternatives are already available. Eliminating unnecessary sources of PFASs is more protective and far less expensive than trying to deal with these persistent chemicals after they are already in products and the environment.

Measuring PFASs is complicated, but total organic fluorine tests can identify products made without PFASs. Targeted analytical methods provide an incomplete picture of the PFASs used in consumer products. These methods are skewed toward PFAAs, ignoring most of their precursors and other polymeric PFASs found in consumer products. Total fluorine measurements can be used to verify the presence of PFASs or demonstrate the absence of intentionally-added PFASs. However, even if no organic fluorine is detected, the sample could still contain trace levels of PFAS contaminants. Targeted analysis may be used to detect such trace level PFASs.

For more details, read the full version of the factsheet here.