

AN INTRODUCTION TO PFCS

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Background

Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are members of a chemical group known as perfluorinated chemicals (PFCs), characterized by chains of carbon atoms of varying lengths, to which fluorine atoms are strongly bonded. PFCs are used in a variety of applications such as non-stick pans, stain or water repellents, clothing or furniture, floor waxes and paper coating due to their exclusive properties of being heat stable, extremely resistant to degradation and repel both water and oil.

These properties that make PFCs so effective in consumer products are also the reason why they tend to persist in the environment. Research has revealed that PFOS is now a ubiquitous environmental contaminant bioaccumulating in wildlife and humans. PFCs have been detected at low concentrations in the environment, food, and in human blood in several different countries.

How am I exposed?

PFCs are used in wide array of consumer products and food packaging.

- Grease-resistant food packaging and paper products, such as microwave popcorn bags and pizza boxes, contain PFCs.
- PFOS was used until 2002 in the manufacture of 3M's Scotchgard treatment, used on carpet, furniture, and clothing.
- PFOA is used to make DuPont's Teflon product, famous for its use in non-stick cookware. If Teflon-coated pans are overheated, PFOA is released.
- PFCs are in cleaning and personal-care products like shampoo, dental floss, and denture cleaners.
- Even Gore-Tex clothing, beloved in the Northwest for its ability to shed water, contains PFCs.

Why should I be concerned?

PFCs are very persistent. Even if production were to end today, levels would continue to increase in the environment for many years to come. Researchers are finding serious health concerns about PFCs, including increased risk of cancer.

- PFOA is a likely human carcinogen; it causes liver, pancreatic, testicular, and mammary gland tumors in laboratory animals. PFOS causes liver and thyroid cancer in rats.
- PFCs cause a range of other problems in laboratory animals, including liver and kidney damage, as well as reproductive problems.
- PFOA's half-life in our bodies, or the time it would take to expel half of a dose, is estimated at more than 4 years. PFOS's half-life is estimated at more than 8 years.
- According to research scientists from University of California's Department of Epidemiology, exposure to perfluorinated chemicals such as PFOA and PFOS can lead to increase in infertility for women.



How can I reduce my exposure?

Avoid purchasing or, at a minimum, limit use of products containing PFCs.

Watch for packaged foods. Stay away from greasy or oily packaged and fast foods, as the packages often contain grease-repellent coatings. Examples include microwave popcorn bags, french fry boxes, and pizza boxes.

Avoid stain-resistance treatments. Choose furniture and carpets that aren't marketed as "stain-resistant," and don't apply finishing treatments such as Stainmaster to these or other items. Where possible, choose alternatives to clothing that has been treated for water or stain resistance, such as outerwear and sportswear. Other products that may be treated include shoes, luggage, and camping and sporting equipment.

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Check your personal-care products. Avoid personal-care products made with Teflon or containing ingredients that include the words "fluoro" or "perfluoro." PFCs can be found in dental floss and a variety of cosmetics, including nail polish, facial moisturizers, and eye make-up.

Avoid Teflon® or non-stick cookware. If you choose to continue using non-stick cookware, be very careful not to let it heat to above 450°F. Do not leave non-stick cookware unattended on the stove, or use non-stick cookware in hot ovens or grills. Discard products if non-stick coatings show signs of deterioration.

Reference:

<http://pollutioninpeople.org/toxics/pfcs>

http://greenchicgeek.blogspot.com/2009_02_01_archive.html

Perfluorinated chemicals – (incl. PFOS/PFOA) a document by WWF
