

A NEWLY DISCOVERED REASON TO AVOID FAST FOOD AND POPCORN¹

Dr. Mercola[©]

Perfluoroalkyls, which are chemicals used to keep grease from leaking through fast food wrappers, are being ingested by people through their food and showing up as contaminants in blood. Perfluoroalkyls are stable, synthetic chemicals that repel oil, grease, and water. They are used in surface protection treatments and coatings for packages. The specific chemicals studied were polyfluoroalkyl phosphate esters (PAPs), which are the breakdown products of the perfluorinated carboxylic acids used in coating the food wrappers.

Common Dreams reports (see Addendum #1):

"The researchers used the PAP concentrations previously observed in human blood together with the PAP and PFCA concentrations observed in the rats to calculate human exposure to the chemical perfluorooctanoic acid, PFOA."

You know that eating fast food is not good for you, but now you have a new reason to avoid it as it turns out that even the wrapper used to store the food until you eat it is toxic. You may not realize it, but you and your family are continually exposed to a hazardous class of chemicals called perfluoroalkyls, which include perfluorooctanoic acid (PFOA), and perfluorooctane sulfonate (PFOS).

Common, everyday sources of exposure include:

Drinking water	Air
Dust	Food packaging / Fast food wrappers
Microwave popcorn	Non-stick pots and pans
Cord blood and breast milk	Stain-proof clothing
Carpet and fabric protectors	Flame retardants

According to recent survey results, these chemicals can be detected in nearly all people in the US, including children! And it's not just PFOA and PFOS that show up. The CDC's Fourth National Report on Human Exposure to Environmental Chemicals, 2009 (which is considered the most comprehensive assessment to date of the exposure of the U.S. population to chemicals in our environment), detected a total of **12 different types** of perfluorinated compounds (PFCs) in Americans tested. I've written many articles about one of the most common sources of these hazardous chemicals, namely non-stick cookware. But the study above brings up yet another pervasive source – fast food wrappers!

Regulators' Assumptions Proven All Wrong – Again!

Three years ago, environmental chemists Scott Mabury and Jessica D'eon established that food wrappers are indeed a source of perfluorinated chemicals, specifically polyfluoroalkyl phosphate

¹ Mercola.com, December 01 2010

esters, known as PAPs. PAPs are byproducts of perfluorinated carboxylic acids (PFCAs, which include PFOA), which are commonly used to coat different types of food wrappers. In this study, the pair shows that these chemicals can, and do, *transfer from the wrappers into the food*, and that food wrappers are in fact a source of human exposure to PFCAs, including PFOA.

According to Madbury, our regulators made three assumptions about these chemicals, all of which have now been proven *wrong*:

- (1) the chemicals will not migrate from the paper into the food;
- (2) the chemicals will not become available to your body; and
- (3) your body will not process these chemicals.

The Many Health Dangers of PFCs

These chemicals are part of an expanding group of chemicals commonly referred to as "gender-bending" chemicals, because they can disrupt your endocrine system and affect your sex hormones. But researchers have also linked them to a range of other health dangers. In animal studies, PFOA has been associated with:

- "significant increases in treatment related deaths" in rat offspring at doses that did not affect the mothers;
- serious changes in the weight of various organs, including the brain, prostate, liver, thymus, and kidneys;
- the deaths of a significant number of rat pups of mothers that had been exposed to PFOA;
- damage to the pituitary at all doses in female rat offspring (the pituitary secretes hormones that regulate growth, reproduction, and many metabolic processes; change in pituitary size is associated with toxicity); and
- tumor development after prolonged exposure.

Other studies have linked various PFC's to:

- **Infertility** -- A study published in the journal Human Reproduction last year found that both PFOA and PFOS (perfluorooctane sulfonate), dramatically increased the odds of infertility. PFOS increased the risk of infertility anywhere from 70 to 134 percent, while PFOA was linked to a 60 to 154 percent increase in the chance of infertility.
- **Thyroid disease** -- A study published in May of this year in the journal Environmental Health Perspectives found that PFOA can damage your thyroid function. Individuals with the highest PFOA concentrations were more than twice as likely to report current thyroid disease, compared to those with the lowest PFOA concentrations.

The thyroid contains thyroglobulin protein, which binds to iodine to form hormones, which in turn influence essentially every organ, tissue and cell in your body. Thyroid hormones are also required for growth and development in children. Thyroid disease, if left untreated, can lead to heart disease, infertility, muscle weakness, and osteoporosis.

- **Cancer** -- PFOA has been associated with tumors in at least four different organs in animal tests (liver, pancreas, testicles and mammary glands in rats), and has been associated with increases in prostate cancer in PFOA plant workers. The EPA has ruled

PFCs as "likely carcinogens," and has stated that PFOA "poses developmental and reproductive risks to humans."

- **Immune system problems** -- Several studies by scientists in Sweden indicate that PFC's have an adverse effect on your immune system. As described in a report on PFC's by the Environmental Working Group (EWG), PFOA was found to decrease all immune cell subpopulations studied, in the thymus and spleen, and caused immunosuppression.
- **Increased LDL cholesterol levels** – A recent study in the Archives of Pediatric & Adolescent Medicine implicates both PFOA and PFOS. Children and teens with higher PFOA levels had higher levels of total cholesterol and LDL or "bad" cholesterol, while PFOS was associated with increased total cholesterol, including both LDL cholesterol and HDL or "good" cholesterol.

For more information on the studies linking PFC's with various health problems, please review the Environmental Working Groups extensive report on this topic.

What Can You Do to Protect Your Health?

I strongly recommend avoiding any product you know contains these toxic compounds, particularly non-stick cookware, but also foods sold in grease-proof food packaging, such as fast food. Clearly, if you're eating fast food, PFC's from the wrapper may be the least of your problems, but I think it's still important to realize that not only are you not getting proper nutrition from the food itself, the wrappers may also add to your toxic burden.

Most important of all, however, is *ditching your non-stick cookware*, because they're a MAJOR source of PFC's, particularly PFOA. The moment you heat them, they start to liberate fluoride vapors that are so toxic they will kill small birds! Every time you cook with them, you inhale these chemicals, and the food in the pan absorbs them too, turning every home-cooked meal toxic...

As for identifying other products to avoid, the Environmental Working Group has done an extensive search for common products containing PFC's. You can look through their listings here. Keep in mind that avoiding these products is especially crucial for pregnant women or couples who want to have children, since PFC's can have a serious impact on your fertility, and on your baby's delicate hormonal system.

ADDENDUM #1: CHEMICALS IN FAST FOOD WRAPPERS SHOW UP IN HUMAN BLOOD²

TORONTO, Ontario, Canada - Chemicals used to keep grease from leaking through fast food wrappers and microwave popcorn bags are migrating into food, being ingested by people and showing up as contaminants in blood, according to new research at the University of Toronto. The contaminants are perfluoroalkyls, stable, synthetic chemicals that repel oil, grease, and water. They are used in surface protection products such as carpet and clothing treatments and coating for paper and cardboard packaging.

Earlier research by University of Toronto environmental chemists Scott Mabury and Jessica D'eon, established in 2007 that the wrappers are a source of these chemicals in human blood.

² Environment News Service©, November 9, 2010

Their new study shows that perfluorinated chemicals can migrate from wrappers into food. The specific chemicals studied are polyfluoroalkyl phosphate esters, or PAPs, breakdown products of the perfluorinated carboxylic acids, or PFCAs, which are used in coating the food wrappers. "We suspected that a major source of human PFCA exposure may be the consumption and metabolism of polyfluoroalkyl phosphate esters, or PAPs," said D'eon, a graduate student in the University of Toronto's Department of Chemistry. "PAPs are applied as greaseproofing agents to paper food contact packaging such as fast food wrappers and microwave popcorn bags," she explained.

In their latest study, D'eon and Mabury exposed rats to PAPs either orally or by injection and monitored for a three-week period to track the concentrations of the PAPs and PFCA metabolites in their blood. The researchers used the PAP concentrations previously observed in human blood together with the PAP and PFCA concentrations observed in the rats to calculate human exposure to the chemical perfluorooctanoic acid, PFOA. "In this study we clearly demonstrate that the current use of PAPs in food contact applications does result in human exposure to PFCAs, including PFOA," said Mabury, the lead researcher and a professor in the university's Department of Chemistry.

Elevated levels of PFOA in blood have been associated with changes in sex hormones and cholesterol, according to the U.S. Agency for Toxic Substances. Exposure to PFOA also has resulted in early death and delayed development in mice and rat pups, the agency says. Rats that ingested PFOA for a long time developed tumors. However, based on differences between rats and humans, scientists have not determined for certain whether this could also occur in humans, the agency says. "We found the concentrations of PFOA from PAP metabolism to be significant and concluded that the metabolism of PAPs could be a major source of human exposure to PFOA, as well as other PFCAs," said Mabury. "This discovery is important because we would like to control human chemical exposure, but this is only possible if we understand the source of this exposure," Mabury said. "In addition," he said, "some try to locate the blame for human exposure on environmental contamination that resulted from past chemical use rather than the chemicals that are currently in production."

The study is published today in the journal "Environmental Health Perspectives," published by the U.S. National Institute of Environmental Health Sciences. Research was funded by the Natural Sciences and Engineering Research Council of Canada. "We cannot tell whether PAPs are the sole source of human PFOA exposure or even the most important, but we can say unequivocally that PAPs are a source and the evidence from this study suggests this could be significant," Mabury said.

The researchers concluded that due to the long time that PFOA remains in human blood, even low-level PAP exposure could, over time, result in significant exposure to PFOA. Although humans are exposed directly to PFCAs in food and dust, the University of Toronto researchers said that because of the way the human body processes these chemicals, "PAP exposure should be considered as a significant indirect source of human PFCA contamination."

Regulatory interest in human exposure to PAPs has been growing. Governments in Canada, the United States and Europe have signaled their intentions to begin extensive and longer-term monitoring programs for these chemicals. Regulators have made three assumptions, said Mabury, releasing the results of his 2007 study. "That the chemicals wouldn't move off paper into food, they wouldn't become available to the body and the body wouldn't process them. They were wrong on all three counts."

