

Fluorinated Additives, Disposable Food Containers, and Contaminated Food

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Fluorinated additives are often used to make disposable food containers that are water-and grease-proof.

While these products are convenient, the additives are controversial because they are chemically related to compounds (specifically, PFOA and PFOS) with well documented toxicity and persistence.

Information about both the toxicity of these additives, and their ability to move from food containers into food, is limited. However, the information we have suggests that they are hazardous, particularly with regards to disrupting hormone function, and that they can contaminate food.

Two of the fluorinated chemicals found in disposable food containers are 6:2 FTOH and PFBA. Health hazards of these chemicals, and research showing that they contaminate food, are summarized below.

6:2 Fluorotelomer (6:2 FTOH)

6:2 FTOH is a common component of fluorinated additives used in the U.S. The Food and Drug Administration's food contact notification database identifies 10 fluorinated additives used to greaseproof paper products that contain 6:2 FTOH.¹ Researchers recently reported in the journal *Environmental Science and Technology* that 6:2 FTOH was the major fluorinated compound detected in US disposable dishware.²

California state scientists recently evaluated the toxicity of 6:2 FTOH³ and identified several concerns:

- The California scientists found that “there is very little peer-reviewed information” about fluorotelomers and specifically 6:2 FTOH.
- Our livers seem to be less efficient at removing 6:2 FTOH from our bodies than are rat livers. Since rats are a common test species for chemical toxicity tests, this means that such tests might underestimate toxicity.
- 6:2 FTOH disrupts the normal function of reproductive hormones in fish.
- 6:2 FTOH causes breast cancer cells to grow.
- 6:2 FTOH fits the definition of a “developmental toxicant”; this means that offspring were harmed when their mothers were exposed during pregnancy. Specifically, in laboratory studies, 6:2 FTOH increased the number of offspring that died and reduced the offsprings’ weight.
- 6:2 FTOH also damages the liver, the pancreas, and teeth.
- Exposure to 6:2 FTOH may be particularly harmful to children because of its ability to disrupt hormones and development.

In a study published after the California review was finished, a team of European scientists provided additional evidence that 6:2 FTOH is a hormone disrupting chemical. Using human cells, these researchers showed that 6:2 FTOH increased the production of the hormone estrogen, and also increased estrogenic activity.⁴

Several groups of researchers have documented that 6:2 FTOH moves from dishware or containers into food. This means that when we use items that contain these additives, we are likely to be eating the additives along with our food. Here are some examples:

- Using paper bowls and a variety of what are called food simulants (substances that are not actually food but are thought to be similar to actual food), researchers found that up to 13% of the 6:2 FTOH in a paper bowl moved into the simulated food.²
- German researchers have measured the movement of 6:2 FTOH from wrappers with 6:2 FTOH-containing additives into butter.⁵

Perfluorobutanoic acid (PFBA)

PFBA has also been found in food containers. There is less information about it than 6:2 FTOH, but a Canadian analytical lab measured it in both chip bags and muffin/cupcake liners.⁶

The Minnesota Department of Health recently evaluated the toxicity of PFBA⁷ and identified the following concerns:

- PFBA exposure disrupted thyroid hormones and increased thyroid weights in laboratory tests
- PFBA exposure decreased cholesterol levels in laboratory tests.
- PFBA exposure caused anemia in laboratory test.
- PFBA caused development delays in offspring whose mothers were exposed during pregnancy.

Several groups of researchers have documented that PFBA moves from dishware or containers into food. This means that when we use items that contain these additives, we are likely to be eating the additives along with our food.

For example:

- A Canadian analytical lab showed that PFBA moves from cupcake liners into cupcakes during baking.⁶
- Using paper bowls and food simulants, researchers found that up to 28% of the PFBA in a paper bowl moved into simulated food.²

Conclusion

Based on current evidence, ending the use of fluorinated additives - including 6:2 FTOH, PFBA, and their chemical relatives - will result in more sustainable food containers and healthier food.

References

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