FACT*sheet*

Fluorinated Additives

CEH

Fluorinated Additives, Disposable Food Containers, and Contaminated Food

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Summary

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.

Fluorinated additives chemically related to the fluorinated chemical 6:2 FTOH are scheduled to be phased out by 2025. Other fluorinated additives will continue to be used after that date.

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] IN 2016, researchers reported in the journal Environmental Science and Technology that 6:2 FTOH was the major fluorinated compound detected in U.S. disposable dishware.[2]

The U.S. Food and Drug Administration announced in 2020 that use of additives chemically related to 6:2 FTOH will be phased out by 2025. No phase out is scheduled for other fluorinated additives.[3]

California state scientists recently evaluated the toxicity of 6:2 FTOH[4] and identified several concerns:

- 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.
- 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 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.[5]

U.S. FDA researchers have documented that a breakdown product of 6:2 FTOH persists in blood and fat tissue for up to a year.[6]

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 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.[7]

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.[8]

The Minnesota Department of Health recently evaluated the toxicity of PFBA[9] 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.[8]
- 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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