FDA Studies: 'Short-chain' PFAS Chemicals More Toxic Than Previously Thought

ewg.org/news-and-analysis/2020/03/fda-studies-short-chain-pfas-chemicals-more-toxic-previously-thought

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Monday, March 9, 2020

New studies by the Food and Drug Administration indicate that a common fluorinated chemical in food packaging and stain-resistant carpets and textiles is much more toxic than earlier studies by the chemical industry suggested.

The FDA studies – published in the peer-reviewed scientific journals Toxicology and Applied Pharmacology and Food and Chemical Toxicology – looked at a fluorotelomer alcohol, one of the "forever chemicals" called PFAS. This compound, known as 6:2 FTOH, is one of the most important so-called short-chain PFAS compounds, which the industry maintains are safer than the long-chain chemicals they were designed to replace. ("Long-chain" and "short-chain" refer to the number of fluorine atoms in the compounds.)

The findings indicate that the human health risks of this important short-chain PFAS have been significantly underestimated. And the studies show, once again, that the more we learn about short-chain PFAS, the more concerns emerge.

For decades, PFAS chemicals have been used in products from food wrappers to firefighting foam. Although two notoriously hazardous long-chain PFAS chemicals – PFOA, formerly used to make DuPont's Teflon, and PFOS, formerly an ingredient in 3M's Scotchgard – have been phased out in the U.S., hundreds of newer, short-chain fluorinated compounds remain in use.

One of the new FDA studies shows that 6:2 FTOH accumulates in the fat, liver and plasma of rats and persists for over a year – half of the lifespan of laboratory rats. The second study reviewed industry claims about the compound's safety and found that these claims ignored publicly available information that indicated their products were more toxic.

The FDA reported that PFAS manufacturers tested only one breakdown product of PFAS polymers or plastic. This breakdown product, or metabolite, is known as PFHxA. The manufacturers then said the data from those tests were enough to assess the safety of all

PFAS plastics made with the fluorotelomer compound. But in reality, fluorotelomers and their metabolites and impurities are much more toxic with aggregate exposure than the manufacturers claimed.

When long-chain PFOA and PFOS were phased out under pressure from the Environmental Protection Agency, they were replaced in many products by short-chain fluorotelomers.

The use of fluorotelomers is so important to the industry that a research publication paid for by the industry's trade association to defend continued use described fluorotelomers as the "cornerstone in replacement fluorochemistry."

But the new FDA studies found that testing the parent fluorotelomer, instead of its metabolite PFHxA, leads to drastically different results.

The new studies found that the short-chain chemicals build up in lab animals just as much as the long-chains do. In fact, the study found that lower doses of 6:2 FTOH stayed in the body for longer periods of time than the large doses typically used in short-term toxicity studies.

Environmental and public health advocates have been raising concerns for more than a decade about the inadequacy of industry studies of PFAS in food packaging.

6:2 FTOH is used in most of the plastic coatings on food wrappers and food contact materials. When EWG reviewed the FDA's approvals of new PFAS chemicals from 2008 to 2017, nine of 11 chemicals were plastics based on 6:2 FTOH. These recent FDA approvals included chemicals from Chemours, Daikin, Solvay, AGC and Archroma.

When the FDA tested foods for PFAS, it looked for PFHxA but not for the fluorotelomers. The lack of testing for 6:2 FTOH is very concerning, especially because fluorotelomers readily migrate out of packaging materials and into foods.

Fluorotelemors are also present at high levels in textile coatings, firefighting foam and house dust. A recent study found high levels of PFAS – the majority of it 6:2 FTOH – in dust and nap mats in U.S. child care centers.

EWG has set a health-based standard of 1 part per trillion, or ppt, for exposure to PFAS in drinking water, and we recommend that all PFAS be regulated as a class. We have raised concerns that the chemical industry focuses its toxicity studies on just one compound, when in the real world, people are exposed to a mixture of different PFAS compounds that in combination could be more toxic.

These studies confirm those fears. They indicate that the use of all fluorotelomers, and especially those based on the 6:2 chemistry, should be reassessed. PFAS should not be used in food packing or cookware. Treating PFAS as a class and ending non-essential uses could

have helped avoid this case of “regrettable substitution” – replacing one toxic chemical for another that may be just as hazardous.