

The New York Times<https://www.nytimes.com/2024/09/21/climate/farm-pfas-meat-poison-sewage-sludge.html>

Pastures were fertilized with toxic sewage decades ago. Nobody knew, until the cows' milk was tested.



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By Hiroko Tabuchi

Hiroko Tabuchi reported from Durham, N.H., meeting with the family and examining their test results.

Sept. 21, 2024

Allison Jumper's family was a picture of healthy living. Active kids. Wholesome meals. A freezer stocked with organic beef from her in-laws' farm in Maine.

Then in late 2020, she got a devastating call from her brother-in-law. High levels of harmful "forever chemicals" had been detected on their farm and in their cows' milk, and they were getting shut down.

At first, Mrs. Jumper worried only about her in-laws' livelihoods. But soon, her mind went somewhere else: to her own children's mysterious health issues, including startlingly high cholesterol levels.

"Then it hit me," she said at her home in Durham, N.H. "Could it be the beef?"

Unknown to them, her family's beloved organic farm had been fertilized decades earlier with sewage sludge tainted by a dangerous class of chemicals linked to certain cancers, liver disease and a host of other health problems. Their cattle had grazed on contaminated pastures, making the beef and milk too dangerous to eat. Yet her family had been eating it for several years.

The ordeal has transformed the Jumper family and the Dostie farm into one of the earliest and clearest test cases of the health consequences of eating food that came from farmland contaminated by fertilizer sludge laced with these dangerous chemicals, known collectively as PFAS. The Dosties are now working with the state of Maine on a host of research into how much of the chemicals are getting into farm produce, for example, as well as possible ways forward for farmers affected by PFAS contamination.

The crisis of contaminated sludge fertilizer is starting to raise concerns about the safety of the American food supply as it hits farms and families nationwide. Wastewater treatment plants produce immense amounts of sewage sludge, and for decades the

federal government has encouraged farmers to spread it on millions of acres as fertilizer.

Today, an increasing body of scientific evidence is showing that sludge fertilizer can be heavily contaminated by PFAS, synthetic chemicals that are used widely in nonstick cookware, raincoats, firefighting gear and other products, and that essentially never break down. They can build up over time in the blood and tissue of people and animals that are exposed to the chemicals. The most common way that people are exposed is quite likely by eating contaminated food or water, according to the federal government.

This year, the Environmental Protection Agency said there's no safe level of PFAS exposure for humans, and imposed strict new limits on some PFAS in drinking water.

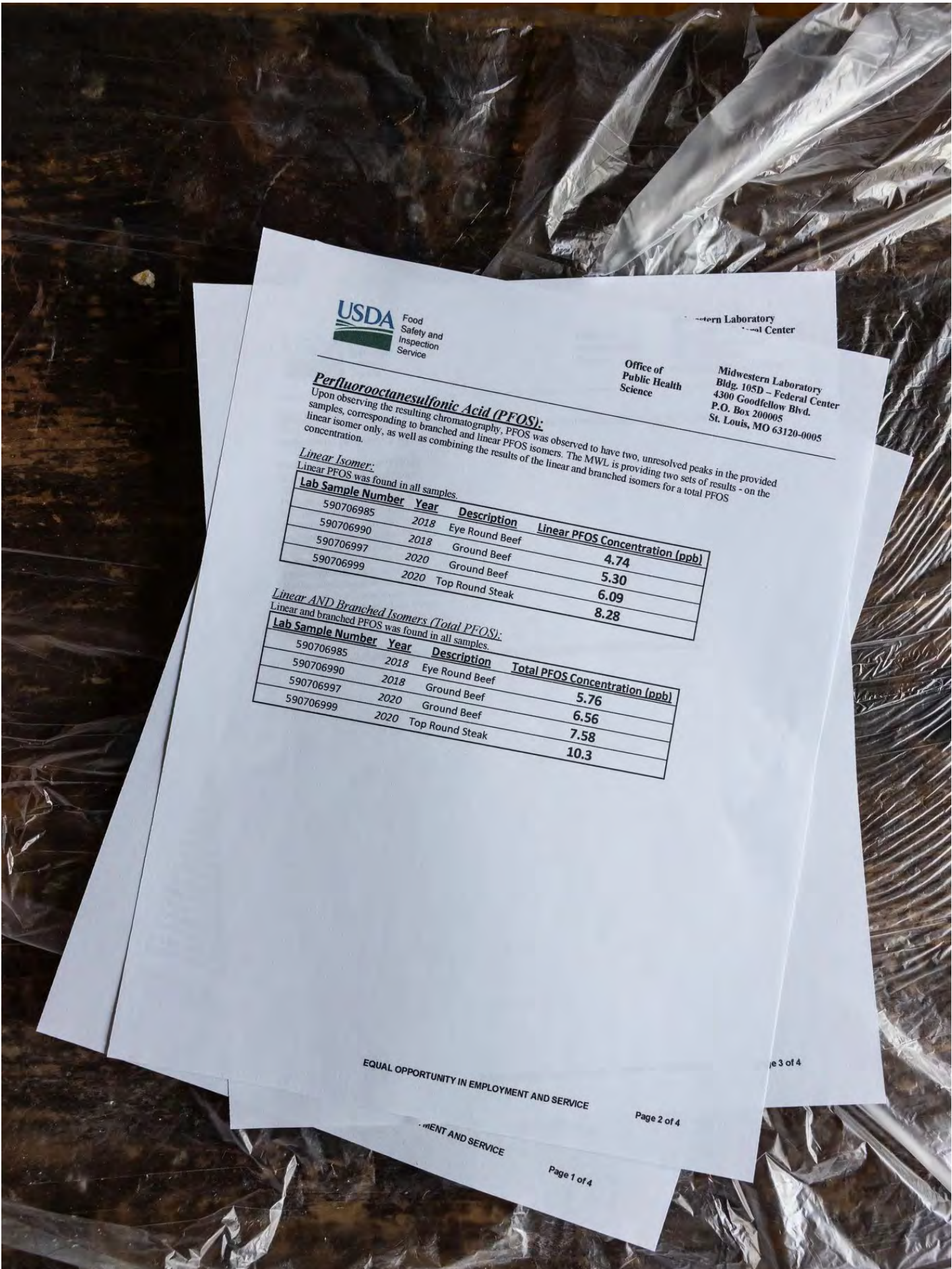
For Ms. Jumper, the discovery triggered a frightening monthslong mystery as she and her husband methodically tried to figure out if the beef from their family farm had been making their kids sick.

She thinks of wider questions, too. "If PFAS was in our beef, and we didn't know, who's out there guaranteeing that PFAS isn't in other meat and food that we buy at the store?" she said.





Contaminated meat in the Jumpers' freezer. They are unsure how to dispose of it. Greta Rybus for The New York Times



USDA
Food
Safety and
Inspection
Service

Midwestern Laboratory
Federal Center

Office of
Public Health
Science

Midwestern Laboratory
Bldg. 105D - Federal Center
4300 Goodfellow Blvd.
P.O. Box 200005
St. Louis, MO 63120-0005

Perfluorooctanesulfonic Acid (PFOS):

Upon observing the resulting chromatography, PFOS was observed to have two, unresolved peaks in the provided samples, corresponding to branched and linear PFOS isomers. The MWL is providing two sets of results - on the linear isomer only, as well as combining the results of the linear and branched isomers for a total PFOS concentration.

Linear Isomer:

Linear PFOS was found in all samples.

Lab Sample Number	Year	Description	Linear PFOS Concentration (ppb)
590706985	2018	Eye Round Beef	4.74
590706990	2018	Ground Beef	5.30
590706997	2020	Ground Beef	6.09
590706999	2020	Top Round Steak	8.28

Linear AND Branched Isomers (Total PFOS):

Linear and branched PFOS was found in all samples.

Lab Sample Number	Year	Description	Total PFOS Concentration (ppb)
590706985	2018	Eye Round Beef	5.76
590706990	2018	Ground Beef	6.56
590706997	2020	Ground Beef	7.58
590706999	2020	Top Round Steak	10.3

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When tested, the meat showed high contamination levels. Greta Rybus for The New York Times

These chemicals have been manufactured in vast quantities for decades, even as evidence of their dangers mounted. It's unclear how much of them are reaching the food supply, whether from sludge or elsewhere, and what that means for public health. The Food and Drug Administration does not set limits on PFAS levels in food. Since 2019, however, the agency has tested nearly 1,300 samples and said the vast majority were free of the types of PFAS the agency is able to test for.

Still, some public health experts and advocacy groups have questioned the F.D.A.'s methodology, and the agency itself warns that "PFAS exposure from food is an emerging area of science and there remains much we do not yet know." This year, Consumer Reports said it had detected PFAS in some milk, including organic brands. Researchers have found the chemicals in products as varied as eggs, fruit juice and seafood.

"We're learning that we've had PFAS in our food supply for a long time and been unaware of it," said Courtney Carignan, an environmental epidemiologist at Michigan State University. "We just haven't been monitoring for these chemicals," she said. "And if you don't look, they're not there."

A freezer full of bad beef

PFAS was the last thing the Jumpers had expected to find in the beef from Dostie Farm, their family farm in Fairfield, Maine. There, Egide Dostie Jr. and his father, Egide Dostie Sr., practiced organic farming, supplying milk exclusively to Stonyfield Organic, the New Hampshire-based dairy company.

They had never used sludge fertilizer on the land.

So in late 2020, when the call came from Stonyfield that tests had found high levels of a type of PFAS chemical in their milk, he couldn't believe it. "We're an organic operation," the younger Mr. Dostie told them.



The Dosties, father and son, in a barn that once sheltered their cattle. Greta Rybus for The New York Times

The Dosties later learned from state officials that the previous owners of their land had used PFAS-contaminated sludge fertilizer decades earlier, in the 1980s and 1990s.

“They shut us down. Said, ‘You guys are done,’” he said.

But in the meantime, Mrs. Jumper immediately stopped using beef from Dostie farm, which they had cooked for the family perhaps once a week. Steaks, hamburgers and Sunday pot roast stews. “I didn’t want my children to eat that anymore,” Mrs. Jumper said. “I knew that for sure.”

She worked with her pediatrician to get specialized blood tests for her children. But even something that basic proved tricky, as only a few labs offer PFAS testing. And she and her husband were largely on their own: There’s no playbook for this kind of health scare.

The test results confirmed her suspicions. Her then-10-year-old son had levels of PFOS, a well-studied variation of the chemical, higher than more than 95 percent of Americans. “My child who always cleaned his plate had the highest levels,” Mrs. Jumper said.

Her two younger children had levels higher than 75 percent of Americans, according to

test results reviewed by The Times, as did she and her husband, Cullen, a urologist.



Allison Jumper with her husband, Cullen Jumper, at home in Durham, N.H. Greta Rybus for The New York Times

Perhaps luckily, she hadn't thrown out the beef in her freezer. So she had it tested for 16 types of PFAS with the help of Maine officials and a Department of Agriculture scientist. Those results, also reviewed by the Times, were clear: The meat was not safe for children to eat because of high levels of PFOS, a type of forever chemical that the government says is likely to be carcinogenic to humans.

Mrs. Jumper also tested their drinking water, which comes from a private well. But there were no detectable levels, ruling that out as a potential source. (One recent government study detected PFAS chemicals in nearly half of the nation's tap water.)

Rachel Criswell, an environmental health researcher and family physician in Skowhegan, Maine, who works with people affected by PFAS exposure, particularly from sludge fertilizer, said she was most concerned about farming communities and families. They were most likely to eat meat from a single cow or herd, for example, putting them at particular risk.

“This is a slow-moving environmental disaster that’s going to turn people’s lives upside down,” she said.

Maine’s unusual strategy

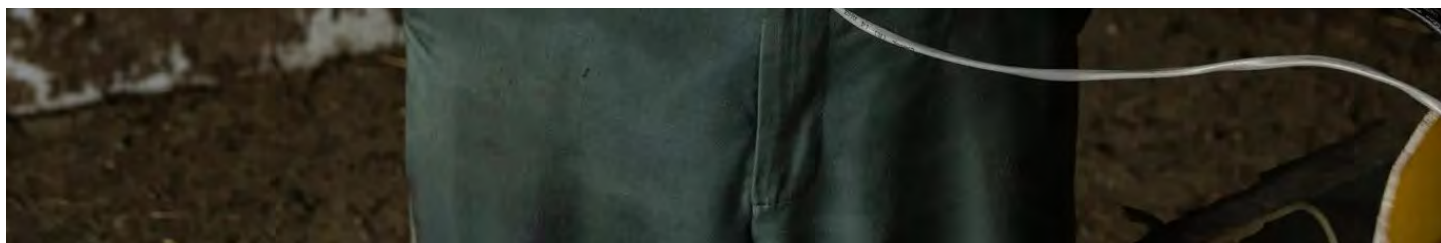
The Jumpers learned of the problem for a simple reason: Maine is the only state that is systematically testing farms for PFAS. It has discovered contamination on at least 68 farms so far under a program that began after the chemicals were found on a dairy farm in 2016.

The picture nationwide is less clear. Industry data shows that more than 2 million dry tons of sewage sludge were used on 4.6 million acres of farmland nationwide in 2018.

Maine officials say that their state is quite likely just the tip of the iceberg. “We’re just the ones doing the right thing and investigating,” said Nancy McBrady, deputy commissioner of Maine’s Department of Agriculture.

Farms like Dostie Farm are now at the forefront of research into how PFAS from contaminated soil and water moved into crops, livestock and the human food chain. Some early findings: Cattle can become contaminated with PFAS if they eat or drink contaminated feed or water. Cows purge the chemicals through their milk.





Egide Dostie Sr. with milking equipment. Greta Rybus for The New York Times





A spot where state toxicologists tested the Dosties' land. Greta Rybus for The New York Times

In plants, PFAS uptake is higher in leafy greens and the chemicals seem to accumulate in leaves and stems more than in the roots, fruits or grains. Still, a 2021 study estimated that eating a single radish grown in soil with elevated PFAS levels could mean surpassing daily exposure guidelines set by the federal government.

The E.P.A. has more recently said that no level of certain kinds of PFAS is safe.

“We’re starting to find out that agricultural soil is a big source of PFAS,” said Samuel Ma, an associate professor of civil and environmental engineering at Texas A&M University who studies emerging contaminants. But regulators “seem to only be focusing on drinking water.”

This year, the E.P.A. started requiring municipal water systems to remove six types of PFAS from their drinking water supplies.

In 2022, Maine banned the use of sludge fertilizer entirely and is offering income support for affected farmers. The state, alongside a group of local organic farmers, is also working to help farmers with contaminated land pivot from dairy or vegetables to flowers or solar installations.

“The positive news is that most of the farms that have had contamination are still in business,” said Sarah Alexander, executive director of the Maine Organic Farmers and Gardeners Association. “It’s still been extremely stressful, especially for the ones that have had contamination levels beyond being able to pivot.”

A new normal

One promising but perhaps contentious line of research showed that livestock could purge themselves of PFAS relatively quickly. So it was conceivable, state officials said, that a cow could still be raised on a contaminated pasture, then sent to a clean environment for the last 6 months of its life to purge the chemical from its body before being sent to market.

“These forever chemicals aren’t necessarily forever in livestock,” said Andrew Smith,

Maine's state toxicologist.



Father and son on land where cattle once grazed. Greta Rybus for The New York Times

In fact, the Dosties managed to avoid culling their dairy cattle using a variation on that technique. They brought in clean feed and water for their cows, and for months dumped their contaminated milk into a manure pit, until PFAS levels in the milk were undetectable, down from an extremely high 800 parts per trillion. They then shipped the cows out of state.

Still, that was a partial solution. The bulk of their pasture remains contaminated, which is far trickier to clean up. They're exploring the possibility of installing solar panels on the contaminated pasture but still don't know whether they can make that work.

Mr. Dostie said it still breaks his heart to look out across his pasture every day knowing he'll never farm on those acres again. "It's just a wasteland now," he said.

In New Hampshire, the Jumpers are adjusting to a new normal. The children go for annual tests for PFAS, which have slowly started to come down in their blood. But two of the three children still have consistently high cholesterol levels, a problem linked to

PFAS. And all three have had weak responses to vaccines, a condition that has also been linked to PFAS.

“I’m just really sad,” Mrs. Jumper said. “This was beef we thought was as safe as it comes.”



The Dosties' few remaining cows, on a small patch of uncontaminated family pasture. Greta Rybus for The New York Times

Hiroko Tabuchi covers pollution and the environment for The Times. She has been a journalist for more than 20 years in Tokyo and New York. [More about Hiroko Tabuchi](#)