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Toxins are found in blades of artificial turf

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GLOBE STAFF

FRANKLIN — For two years, an abandoned pile of artificial turf had decomposed on a bluff here, a few feet above wetlands that are part of the suburb's drinking water

supply. Nearby, ripped bags with the infill of the turf, tiny pellets of shredded tires, littered the embankment.

Public health advocates have long raised alarms about artificial turf pellets, which simulate the

give of natural grass but have been shown to contain benzene, cadmium, and other known carcinogens. Now, for the first time, a new series of tests has found that the blades, and their plastic backing, may also contain toxic chemicals.

The test results showed that the turf contained elevated levels of per- and polyfluoroalkyl chemicals known as PFAS, which have been linked to kidney cancer, low infant birth weights, and a range of dis-

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eases. The findings have raised concerns about the safety of millions of square feet of artificial turf installed in recent years on public fields and playgrounds across the country.

"This is huge. It's the first time that PFAS chemistry used in plastic production has been found in finished consumer products," said Jeff Gearhart, research director of the Ecology Center, a nonprofit environmental research group based in Michigan that tested the turf. "This finding is maybe the tip of the iceberg. We suspect these PFAS chemicals may be found in other plastic building and consumer products."

The concentrations of chemicals found in the wetlands near Franklin's Beaver Field are below current federal and state health guidelines but well above standards some states have recently adopted in light of research suggesting that even low PFAS concentrations in drinking water can be harmful. Concerns about PFAS, called "forever chemicals" because they never fully degrade, have mounted in recent years. Developed in the 1940s, the chemicals have been used in products such as flame retardants, nonstick pans, pizza boxes, clothing, and furniture.

In Franklin, questions about the discarded turf led local environmental activists to send swatches of the turf and water samples for testing. The Ecology Center, working with the New England office of the Pub-

lic Employees for Environmental Responsibility, a Washington D.C.-based advocacy group, found that the swatch of turf from Franklin contained 190 parts per trillion of one of the most common PFAS chemicals, well above federal safety standards for drinking water.

The group recently filed a complaint with state environmental officials about the discarded turf, saying it violated wetland protections. The water samples there contained nearly 10 parts per trillion of the same chemical found in the turf, as well as a combined 40 parts per trillion of two other PFAS chemicals.

Jamie Hellen, the Franklin town administrator, said he had no idea that the old turf was left there or that it was potentially toxic. He said he is waiting for guidance from the state Department of Environmental Protection on how to proceed.

"We will work with DEP to resolve the matter," he said.

He noted there is no definitive link between the chemicals found in the turf and those in the water. After the Globe inquired about the piles of old turf, crews removed the material within hours.

The Ecology Center also tested samples of turf installed this summer at Oliver Ames High School in Easton and found similarly high levels of another PFAS chemical. In addition, they tested eight other samples of turf blades, which they acquired directly from distributors of artificial turf, and found that all contained high amounts

of fluorine, a chemical suggesting the presence of PFAS.

With as many as 1,500 new artificial turf fields installed every year — there are now some 13,000 in the United States, including hundreds in Massachusetts — public health advocates worry the potentially tainted runoff could contaminate water supplies around the country.

"PFAS in synthetic turf should sound alarm bells for all municipalities with these fields," said Kyla Bennett, science policy director of the Public Employees for Environmental Responsibility. "All turf manufacturers should immediately disclose whether they use PFAS in their manufacturing process."

The EPA currently recommends municipalities alert the public if two of the most common PFAS chemicals reach 70 parts per trillion in drinking water, and Massachusetts uses the same threshold for five common PFAS chemicals.

But some recent studies have recommended that children not consume water with levels above 1 part per trillion and states such as New Hampshire and New Jersey have adopted stricter standards. Massachusetts is considering adopting a standard similar to one recently enacted in Vermont, advising residents to avoid drinking water if the concentration of six of the chemicals cumulatively reaches 20 parts per trillion.

A DEP spokesman said the agency is reviewing the wetlands complaint regarding



DAVID L. RYAN/GLOBE STAFF

Kyla Bennett (left) and Tracy Stewart of Medway looked over a pile of turf in Franklin.

Franklin.

Many communities have installed artificial turf fields because they offer clear advantages over natural grass. They don't have to be mowed or watered, require no expensive fertilizers, and allow for substantially more playing time.

Dan Bond, president of the Synthetic Turf Council, a trade group for an industry that earns \$2.5 billion a year, said repeated studies have shown no elevated health risks from artificial turf, pointing to research by the Consumer Product Safety Commission, the EPA, and state agencies.

"I haven't seen any other reports that have shown any of these concerns," Bond said, referring to the PFAS findings.

The owner of one company that produced some of the turf that the group tested was skeptical about the findings.

"We have never heard any

concerns about the chemical composition of our product," said Mike Hall, co-owner of Turf Factory Direct, a Georgia company.

Susan Farris, a spokeswoman for Shaw Industries, another Georgia company that sells artificial turf said, "These chemicals are commonly used by synthetic turf manufacturers as a non-stick agent in the manufacturing equipment."

Given the recent concerns about PFAS, she said, the company has phased out their use in other products, such as flooring and carpeting.

"As new formulations are available to perform the same or similar functions as PFAS chemicals have historically, Shaw has shifted to new ingredients," she said.

Questions about the safety of artificial turf emerged five years ago when Amy Griffin, a University of Washington soc-

cer coach, cited a large number of goalkeepers who play on turf and had contracted cancer. By January 2019, her list included 260 young athletes with cancer.

Federal and state officials have said evidence of the health risks is limited, but evidence of elevated PFAS concentrations may change the calculus.

"That is a big concern, since this turf is in many communities and is designed to drain precipitation off the fields, which can carry soluble contaminants into ground water underlying the turf," said Betsy Southerland, former director of science and technology in the EPA Office of Water during the Obama administration. "Ground water, in turn, can be the direct source of drinking water for private wells and community water systems."

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