Toxic 'forever chemicals' found in pesticide used on millions of Mass. acres when spraying for mosquitos

By David Abel Globe Staff, Updated December 1, 2020, 41 minutes ago

Mosquito spraying in Southeastern Massachusetts in 2018. THE BOSTON GLOBE/BOSTON GLOBE

For two decades, state environmental officials have used a controversial pesticide to kill mosquitos in Massachusetts, spraying millions of acres from the air and ground to reduce the spread of Eastern equine encephalitis.

Now, after years of criticism from environmental advocates who have long raised health concerns about the expensive treatment known as Anvil 10+10, the pesticide has been found to also contain an array of toxic compounds known as PFAS. The so-called "forever chemicals," which are found in a range of commercial products and never fully degrade, have been linked to cancer, low infant birth weights, and a range of diseases.

The amount of some of the chemicals found in the pesticide — which has been used in at least 25 other states — exceeds recent safety limits imposed by the state for drinking water. Given the amount of pesticide used, and how widely it has been dispersed over the years, specialists say it's likely that the chemicals have leached into groundwater and other water sources.

The recent findings came from a series of tests conducted this fall by the state Department of Environmental Protection, which began examining Anvil after testing by an advocacy group found similarly elevated levels of the chemicals in the pesticide.

Towns where state sprayed the pesticide Anvil 10+10, which was found to contain toxic chemicals.

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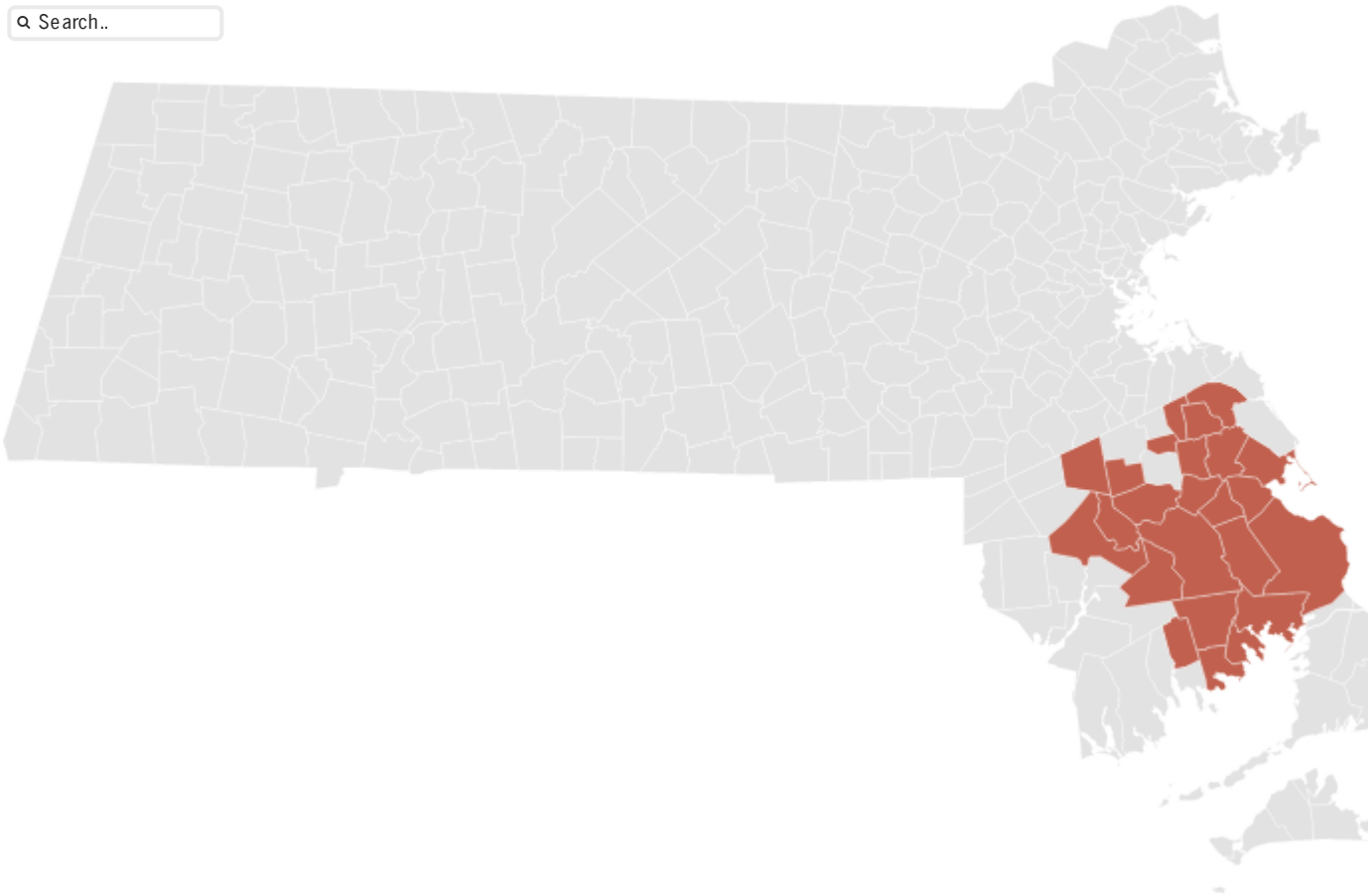

Source: Massachusetts Executive Office of Energy and Environmental Affairs.

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Environmental officials said they’re trying to determine whether it’s safe to continue using the pesticide, which federal regulators have found includes other potential carcinogens. Most of the spraying has been done in the southeastern part of the state, where EEE, a rare but deadly mosquito-borne disease, has been most prevalent.

“We’re taking this very seriously,” said Dan Sieger, the state’s undersecretary for

environmental affairs. "When we figure out the source of the contamination . . . we'll make a decision."

Officials at Clarke, the Illinois company that produces Anvil, said that no PFAS chemicals are used in the pesticide, but acknowledged the possibility they could have been introduced through manufacturing or packaging.

Mark Smith, director of the DEP's office of research and standards, said he has been studying how the chemicals may have been dispersed and whether they present a health danger.

"The reason we're taking this so seriously, and why we're concerned, is that these compounds are so persistent in the environment," he said.

Concerns about PFAS, manmade chemicals invented in the 1940s as water repellants and flame retardants, have risen as a growing body of research links long-term exposure to an array of health problems. In response, an increasing number of states have enacted stricter limits on the amount allowed in drinking water.

So far, Smith's assessments suggest the PFAS in the pesticide haven't "presented significant risk to water supplies, because of the dilution factor," he said. When the chemicals are dispersed, they decline in concentration.

"I've done some worst-case calculations to determine what levels might land in a drinking water reservoir, and the results wouldn't be measurable," he said.

But he acknowledged there are unknowns, given that the pesticide has been used in large amounts for the past 20 years and the PFAS do not break down, accumulating over time.

Since September, the department has tested nine samples from five separate containers of Anvil and detected eight different compounds of PFAS. Of those, three compounds substantially exceeded the state's new limits, in some cases by more than sevenfold. Other unregulated PFAS chemicals were detected in even greater amounts.

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Officials at the US Environmental Protection Agency, which has been criticized for delaying new standards to reduce PFAS exposure, said they were looking into the findings and plan to conduct their own tests of Anvil.

Acreage sprayed with the pesticide

Source: Massachusetts Executive Office of Energy and Environmental Affairs.

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"There are significant unanswered questions about the data currently available," said Dave Deegan, a spokesman for the EPA's offices in New England, adding that the agency is working on "an analytical method" to detect PFAS in pesticides. "EPA will continue to work closely with and support the state on this issue. Aggressively addressing PFAS continues to be an important, active, and ongoing priority for EPA."

Last year, Massachusetts spent more than $5 million to spray Anvil from helicopters and airplanes, dousing more than 2 million acres over 26 days in 100 municipalities. It was the state's most deadly outbreak of EEE since the 1950s, with six deaths among the 12 people who contracted the disease.

This year, with drought conditions reducing the mosquito population, the state sprayed 200,000 acres in 23 municipalities. There have been no deaths this year.

State officials did not provide information about how much of the pesticide was sprayed on the ground.

Officials at Clarke defended their product and said they were awaiting guidance from regulators about how best to conduct their own tests.

"Anvil has played an important role in preserving public health for three decades," said Karen Larson, the company's vice president of government affairs. "Confidence in these

products is critical to achieve public health goals, and we will continue to work closely with the EPA to conduct our own testing."

Larson said it was unclear why the company's pesticide contained PFAS.

"When this was first brought to our attention, we conducted an internal inquiry of our manufacturing and supply chain to ensure that PFAS was not an ingredient in the production, manufacturing, or distribution of either the active or inactive ingredients of Anvil," she said.

"No PFAS ingredients are used in the formulation of Anvil, nor in the production of any source material in Anvil. PFAS components are not added at any point in the production of Anvil," she added.

Some environmental advocates were skeptical of the company's claims, noting that PFAS have been used in other pesticides and can extend their shelf life and help make them easier to disperse.

In a letter to DEP officials, Public Employees for Environmental Responsibility, a Washington advocacy group, noted its own tests of Anvil found the pesticide contained 250 parts per trillion of one of the chemicals regulated by the state — more than 22 times the new limit for drinking water. They found other unregulated PFAS compounds in even greater amounts.

While Clarke doesn't list the chemicals as active ingredients of Anvil, they could be inert ingredients, they said.

Amount of the pesticide used, in gallons

Source: Massachusetts Executive Office of Energy and Environmental Affairs • Gallons do not include small amounts used in calibration prior to spray

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"Pesticide manufacturers usually withhold information from the public about inert ingredients as 'trade secrets' or 'proprietary' information," wrote Tim Whitehouse, executive director of PEER. "Therefore, it is conceivable that PFAS are added deliberately to pesticide formulations."

Larson dismissed the possibility that PFAS were inert ingredients.

"We have reached out to the manufacturers of the active and inert ingredients, and they also confirm that PFAS is not an ingredient in the production, manufacturing, or distribution of the product's ingredients," she said.

Whitehouse noted an increasing number of municipalities in Massachusetts have detected elevated levels of PFAS in their drinking water, and that many of them are now struggling to pay for the expensive equipment designed to filter out the toxic chemicals.

As of this month, 32 of 164 public water systems tested over the past year had more PFAS in their drinking water than allowed, state officials said.

"While it is likely some of the contamination is coming from wastewater treatment plants and consumer goods, it is also possible that some of the widespread contamination is coming from Massachusetts' aerial and ground-based spraying of Anvil," wrote Whitehouse, who urged the state to stop using the pesticide or any others that contains PFAS.

Some scientists and lawmakers echoed his concerns. Laurel Schaider, a research scientist at the Silent Spring Institute in Newton, which has received large grants from the federal government to study PFAS, said she was "very concerned" about the state's findings.

She noted that some of the chemicals the state detected in Anvil are newer "short-chain" PFAS compounds, which she described as "even more mobile in the environment and more difficult to remove from drinking water."

"We already have a public health crisis in this country with PFAS contaminating drinking water, and we don't want to make the situation worse," Schaider said.

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State Senator Jo Comerford, a Northampton Democrat who chairs the Legislature's Joint Committee on Public Health and is an observer on the state's newly created Mosquito Task Force, called the state's findings "significantly concerning."

With the state expecting a bad EEE season next summer — the disease usually spikes in three-year cycles — she said environmental officials should issue a moratorium on Anvil and take steps to protect the public without using such toxic chemicals.

"These findings should be a wake-up call for all of us," Comerford said.

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