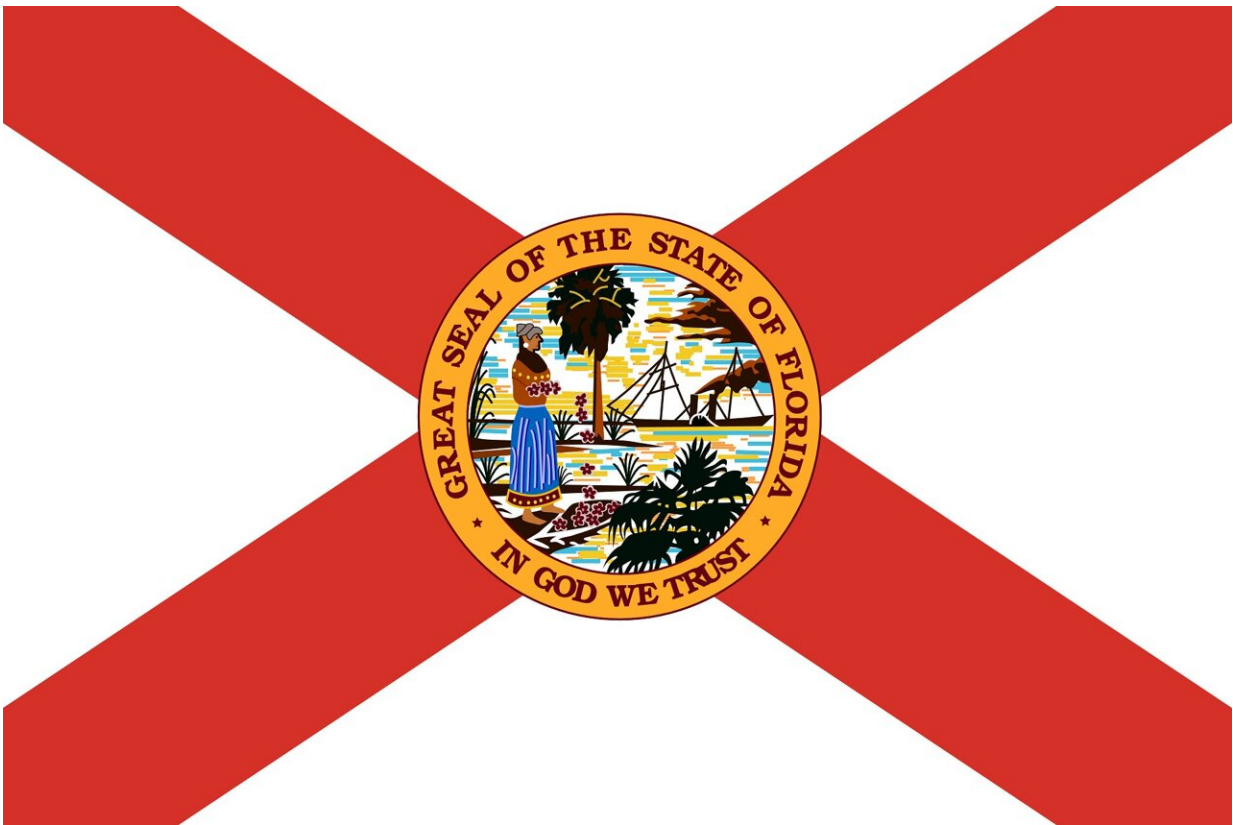


Researchers want to speak with Central Floridians affected by dioxane contamination

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Central Florida's 1-4 dioxane contamination has caught the attention of Yale University researchers.

They want to hear concerns from residents who have been drinking water supplied by public utilities in Lake Mary, Sanford and northwest Seminole County. Groundwater in these areas has been contaminated with 1,4-dioxane, an industrial solvent classified as a likely carcinogen by the U.S. Environmental Protection Agency.

The discussion will take place via a Zoom video chat on Oct. 4 from 6:30 to 7:30 p.m. Eastern time. Those who want to attend can email Barbara.masi@yale.edu to obtain a link.

The hope is that public input will shape future projects from the Yale Superfund Research Center, established in 2022 to investigate the little-researched impacts of 1,4-dioxane and devise solutions. The center's work is funded through 2027 with a \$7.5 million federal grant from the National Institute of Environmental Health Sciences.

If there's significant interest from the community and enough willing participants, Central Florida could potentially become a site for a [case study](#) on this chemical's health impacts, said Vasilis Vasiliou, the center's director. Yale is currently in the process of recruiting several hundred people for one such study in Long Island, New York, which at one point had dioxane in 70% of its drinking wells.

"I want to find out: what are the concerns of the people and what do they want us, as the Department of Environmental Health Sciences, to do to address their concerns?" said Vasiliou, who will lead Wednesday's meeting.

Like many, Vasiliou became aware of Central Florida's situation when he was interviewed for the Orlando Sentinel's "Toxic Secret" series. The four-part investigative series shed light on decades of 1,4-dioxane contamination in the Floridian Aquifer. The dioxane has been linked to a telephone systems factory in Lake Mary that was built in the late 1960s

and closed in 2003.

Sanford, Lake Mary and Seminole County first detected this industrial solvent in their drinking water in 2013 and 2014, though state investigators found evidence of local groundwater contamination as far back as 2001. It's unknown what 1,4-dioxane concentrations were during the decades before that.

Known peak parts per billion a decade ago were 1.3 in Lake Mary, 0.41 in Sanford and 0.58 in Seminole County, all above the EPA's recommended limit of 0.35 parts per billion. Lake Mary's drinking water contained multiple times this advisory level until a new treatment plant was installed in 2021. Sanford and Seminole adjusted flow rates to their groundwater wells eight years ago and data suggests they have kept 1,4-dioxane levels below 0.35 ppb since then.

This concentration equates to an estimated 1-in-a-million increased risk of cancer if consumed for a lifetime. Florida has also chosen to issue an advisory level of 0.35 ppb, though the limit is not enforced by the federal or state government.

Vasiliou has so far been in contact with about a dozen Central Florida residents about this issue, after his information was publicized at a forum hosted by the Orlando Sentinel at Seminole State College's Sanford/Lake Mary campus in August.

Following this Zoom meeting, Vasiliou hopes to arrange a formal site visit to the region with his team.

Efforts to assist the Seminole County, Lake Mary and Sanford area would be funded by a grant that promotes university-community partnerships from the National Institutes of Health. In order to apply for this grant and conduct a study, Vasiliou said he would need, at minimum,

one person to agree to volunteer to represent the community's concerns and collaborate with him. More information about the potential partnership will be made available at the meeting.

"We're looking for some of the community leaders to step up and work with us," he said.

Sydney Evans, a senior science analyst at the Environmental Working Group, praised Yale's engagement efforts. The EWG is a U.S. nonprofit that advocates for stricter regulation of toxic chemicals.

"The Yale Superfund Research Center's potential undertaking of tap water research in Central Florida indicates a commitment to understanding and mitigating the risks of 1,4-dioxane in drinking water, a contaminant for which protective action is long overdue. It's important to keep the affected communities at the forefront of the research so that the program empowers residents, builds trust, includes appropriate cultural sensitivity, and gives the community some level of ownership over the results," Evans said via email.

Dioxane has been linked to liver, kidney, peritoneum, mammary and nasal cavity cancers in animal studies, though there has not been much research done in humans.

This dearth of research is part of what inspired Vasiliou to start the effort that brings together researchers from the schools of Public Health, Medicine, Engineering & Applied Science, and the Environment.

It is one of 25 university-based centers across the country funded by the federal government in an attempt to address contaminated U.S. land and groundwater, an effort known as the Superfund program.

Yale scientists at the center aim to answer questions such as how the

chemical triggers the development of cancer, how it may interact with other substances commonly found in the environment, and whether biomarkers can identify whether someone was previously exposed to dioxane. As of now, 1,4-dioxane is only detectable when it's in the human body, and it leaves within a matter of days, which makes it difficult to link health issues to past exposures.

It's possible that the research done at Yale's superfund center may be used down the line to help inform a federal limit for 1,4-dioxane in drinking water, and other regulatory steps.

Other goals of Yale's center include developing easier and cheaper ways to detect and remove the chemical, which is notoriously difficult to separate from water.

At the moment, at-home treatment systems such as reverse osmosis can remove most, but not all of the chemical from drinking water. However, they aren't a practical option for many households because of their price—several hundred to several thousand dollars for installation, plus the cost of upkeep and filter replacement.

In addition, at-home treatment doesn't destroy the chemical, it separates it and sends it down the drain. This means it could potentially end up in the water supply again.

One of the most dependable ways to actually destroy 1,4-dioxane is a process called advanced oxidation, which combines hydrogen peroxide with ultraviolet light. This process is highly effective but also prohibitively pricey.

Lake Mary installed an advanced oxidation plant in 2021 that reduces the concentration of dioxane to a trace amount. The city estimates it cost about \$40 million, though it was paid for by the telephone factory's

former owners and the price was never directly disclosed to the city or the Orlando Sentinel.

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