

**SAFETY**

# Report shows food poisoning persistent problem

**By Candice Choi**  
*The Associated Press*

As recent illnesses tied to raw turkey, ground beef, cut melon and romaine lettuce suggest, U.S. food poisoning cases don't appear to be going away anytime soon.

The Centers for Disease Control and Prevention said in a report Thursday that the frequency of several types of food poisoning infections climbed last year, but that the increases could be the result of new diagnostic tools that help identify more cases.

Overall, the agency believes food poisoning rates have remained largely unchanged.

Rob Tauxe, director of the agency's foodborne illness division, said the figures show more needs to be done to make food safer. He noted the two most common causes of infection have been longtime problems.

One of the two, salmonella, can come from an array of foods including vegetables, chicken, eggs, beef and pork. The other germ, campylobacter, is commonly tied to chicken. People may not hear as much about it because health officials often can't group cases into outbreaks. Both bacteria are spread through animal feces.

"For some reason, campylobacter is making people sick with lots of different fingerprints," Tauxe said.

The report is based on monitoring in 10 states, but is seen as an indicator of national trends. It highlights the difficulty in understanding food poisoning when so many cases go unreported, diagnostic methods are inconsistent, and production practices and eating habits are constantly changing.

With chicken, for instance, companies have brought down salmonella rates in raw whole carcasses since the government began publishing test results of individual plants. But the U.S. Department of Agriculture only recently began posting similar data for raw chicken parts like breasts and legs, which Americans have gravitated toward over the years.

## GRATIOT

# EPA pilot study could save millions in Pine River cleanup

By Greg Nelson

*gnelson@medianewsgroup.com*

The U.S. Environmental Protection agency has spent tens of millions of dollars cleaning up the former Velsicol Chemical Co. plant and the adjacent Pine River in St. Louis.

With several more years of remediation planned for the contaminated 52-acre site and other nearby locations, the costs will continue to escalate.

However, there is a glimmer of hope.

EPA Region 5 has received a \$30,000 grant from the agency's Office of Research and Development to do a pilot study of carbon-based materials to remove DDT in floodplain soil.

It will be done to evaluate "the pos-

sible use as as a remedy to address ecological risks in floodplains downstream from St. Louis," EPA Community Involvement Coordinator Diane Russel said.

Michigan State University researchers Dr. Stephen Boyd and Matthew Zwiernik, along with Dr. Amanda Harwood, a toxicology professor at Alma College, will be involved in the study, along with other scientists contracted by the EPA, she added.

"The workplan is under development and EPA should to be able to present results sometime in the summer," Russel said.

Harwood recently made a presentation regarding the pilot study to members of the Pine River Superfund Citi-

zens Task Force Technical Committee.

Basically it's testing the feasibility of using activated charcoal to reduce bio-availability of soil contaminants.

The pilot study is taking place on a small tract of land near Madison Road because Zwiernik had previously done a study there in 2016, so the EPA already had some prior data, Task Force Secretary Jane Keon said.

"The before picture shows a distinct lack of soil creatures and insects, and uncharacteristic behavior in the robins that have chosen to nest there," she added.

Harwood's presentation showed that total concentrations of DDT in the soil do not equal the amount of DDT ac-

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# Cleanup

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tually available to organisms. Some DDT has bound tightly with a soil particle, some has come off the particle and is in the open spaces between particles, and some are bound loosely to a particle.

“The ones bound loosely are most likely to be taken up by organisms,” Keon said.

There are four major methods used to measure what can come off the soil particles, which determines how much DDT is bioavailable.

Two of the methods involve using animal exposure, and two use “passive” methods, called solid phase micro-extraction, or SPME, which is the subject of the

experimental pilot study in the local floodplain.

Soil samples from the plot will be taken and analyzed to see how much DDT is bioavailable. Then activated charcoal will be spread over the soil with additional samples taken at several intervals over the next year.

“Other studies have shown that spreading charcoal on the soil greatly reduces the amount of contaminant in the soil that is bioavailable,” Keon said.

At the lab the soil samples will be mixed with a solvent and a SPME fiber, which will consist of a silica core coated with a polymer that is specific to DDT.

In about a month the fiber is then removed, wiped clean and analyzed as a chromatogram, which shows if the DDT available to organisms in the soil has

diminished over time.

The DDT remains in the soil but it binds to the carbon and is no longer bioavailable.

If the process works it could save millions of dollars because the contaminated floodplain would not require excavation, and it would also save wildlife habitat.

Although similar studies have been done for other chemicals such as dioxin, this will be the first for DDT, Keon said.

However, laboratory studies have shown it to be an “effective method for DDT, PBB and other toxic contaminants,” she added.

EPA officials say that initial results from the pilot study should be received within a few months but the entire process will take a year.

# Lakeview Area News

## Thursday, June 27, 2019

### What to do when you have a bat in your house

By Leslie Kinnee, Public Information Officer  
Mid-Michigan District Health Department

While one can't argue that bats are beneficial to our ecosystem, they are pretty creepy and have one big downside: they are one of the most common animals in Michigan to transmit rabies, a disease that is fatal if left untreated. That's why, when it comes to bats, we are wise to keep our distance.

We encounter bats more often between May and September because that's when they are more active, searching for food and rearing their young. They would much rather be outside, but sometimes find themselves in our homes.

The only thing worse than finding a bat in your house is getting bitten by one. If a bite occurs; or if a bat is found near a sleeping person, a child, or someone who is mentally impaired or intoxicated; you should:

- Capture the bat in case it needs to be tested.

Call the Mid-Michigan District Health Department at 989-227-3111 in Clinton County, 989-875-1019 in Gratiot County, or 989-831-3615 in Montcalm County. Communicable Disease nurses at the Health Department will assess your risk and determine if the bat needs to be tested. Please do not bring bats to the health department without calling first.

- Contact your doctor to see if you need treatment.

If a bat is found in the home but poses no threat, it most likely does not need to be tested for rabies. In this situation,

you can capture the bat and set it free outside.

Capturing a bat isn't as difficult as you may think. First, you'll need to gather a few items: a pair of gloves (leather work gloves are ideal), a small box or coffee can, a piece of cardboard and tape. When the bat lands, approach it slowly. Place the box or coffee can over the bat and slide the cardboard under the container to trap the bat inside. Then, tape the cardboard securely to the container. Keep in mind that in order to be tested, a bat's head must be kept intact, so hitting it with any type of object, like a tennis racket, is not advised.

Keep bats out of your home by replacing loose soffits, flashings, eaves and siding. Also, cover roof vents with screens, make sure all doors shut tightly with no gaps, and that window screens are not damaged or torn.

Additional steps you can take to keep your family safe:

- Avoid contact with wildlife.
- If a wild animal appears sick, report it to the Department of Natural Resources online at [Michigan.gov/eyesinthefield](http://Michigan.gov/eyesinthefield) or call 517-336-5030.

Protect your pets by getting them vaccinated against rabies.

Mid-Michigan District Health Department serves the residents of Clinton, Gratiot and Montcalm Counties.

We take action to protect, maintain and improve the health of our community. Advancing innovative solutions to achieve healthier outcomes

# Lakeview Area News

## Thursday, June 27, 2019



Marci Wilnes telling about findings in the Flat River

### Flat River Exploration



Heading to Greenville on the Flat River

By Joe Tilton

A small but enthusiastic group met at McCarthy Park on M-91 Tuesday afternoon for information, some snacks and a kayak trip to Greenville.

Marcy Wilnes, a biologist, Senior Aquatic Biologist for the Michigan Department of Environment, Great Lakes and Energy, was introduced by Dixie Ward, Montcalm County's watershed technician. Wilnes had gathered several small "bugs," which is a sign of the water quality in the river.

The volunteer monitoring program, led by Wilnes, is a success, manned by people who capture water samples for regular testing while the river is officially tested in

five-year cycles.

E-coli has been reported as a problem for Flat River and other waters in the county, but Wilnes indicated the human-sourced virus is not a problem for aquatic insect life (macroinvertebrates) in the river. "The more bugs, the better the water quality," she said. Several trays with shallow water showed many species thriving in the river.

Amber Snow, the Conservation District Manager, was on hand to answer questions.

Dixie Ward told the group before they left for the trip down the river, the "319 Grant" of \$370,000 recently received will help with protection of our waters, education and restoration of certain areas. The grant will also provide

funds for some shoreline installations and assist with septic system management in conjunction with the Health Department, primarily by education. Montcalm, Ionia and Kent counties will be served for the next three years and include other departments such as MSU Extension.

Another topic receiving considerable discussion at the event was Japanese Knotweed. This and other invasive species are receiving attention for eradication, and we learned there are attempts around the county to kill the plant, which has a reputation of coming back twice as strong after eradication attempts.

Water quality monitoring involves volunteers, and they are seeking more help. Michigan Clean

Water Corps provides technical assistance to local units of government and nonprofits for water quality monitoring in wadeable streams and rivers. The group has been working for over 40-years. Training and support is offered to volunteers. The Cooperative Lakes Monitoring Program is administered by the Michigan Lake Stewardship Association. Should you want to assist in monitoring a lake near you, contact Paul Steen at psteen@hrwc.org or Laura Kaminski at laurak@glc.org. Local contact is Dixie Ward at dixie.ward@macd.org.

While fishing is allowed in the Flat River, it's not advised to eat the fish due to the high levels of e-coli.



Hunter Shaver and Anthony Arnold fishing the Flat River

## ST. LOUIS

# Velsicol site cleanup proceeding

**By Greg Nelson**

*gnelson@medianewsgroup.com*

Despite the wet spring weather cleanup at the former Velsicol Chemical Co. plant site in St. Louis is moving along on schedule.

U.S. Environmental Protection Agency contractors are currently drilling holes for the installation of the in-place thermal heating units and extraction wells that will be used on the three-acre parcel known as Area 2.

Due to the size of the project and amount of electricity it will require, remediation will be done in two phases, according to EPA Community Involvement Coordinator Diane Russell.

"The drilling for the heaters and extraction wells for the first phase is about 90 percent complete," she said.

More than 300 holes will be dug for phase one, Russell added.

That should be completed by July 4.

"EPA expects heating of the soil for the first phase to begin in early October and completion is scheduled for June 2020," Russell said.

The process requires the ground to be heated to a temperature of 217 degrees Fahrenheit using more than 8 million kilowatt hours of electricity, which cost about \$125,000 a week for Area 1 that wrapped up last fall.

However, Area 2 is three times larger.

The total estimated remediation cost of Area 2 in \$25 million, Russell said.

"Area 2 is the former location of DDT production



COURTESY PHOTO

EPA contractors are removing debris from the former Velsicol Chemical Co. plant site in St. Louis, including old storage tanks left over from the initial 1980s cleanup.

on the plant site, and it includes DDT-laced NAPL (non-aqueous phase liquid) at 99 feet below the surface," Pine River Super Fund Citizens Task Force Secretary Jane Keon said.

A total of 200 wells were required for the Area 1 cleanup, while phase 1 and 2 of the Area 2 remediation will need up to 700 wells.

Drilling for the second phase, which will require 325 holes for heaters and 70 for extraction wells, will begin in late July with that portion of the project starting in August of 2020, Russell said.

While nearly 30 tons of contaminated soil was removed from Area 1, a total of about 100,000 tons is slated to be excavated from Area 2.

A contractor is currently on site removing debris, including storage tanks left from the initial 1980s remediation, which included installing a three-foot thick slurry wall around the entire perimeter of the 52-acre

parcel in a failed attempt to keep contaminants contained on site.

In the late 1990s a section of the barrier was found to have failed resulting on toxic substances leaking into the adjacent Pine River.

Later this summer the EPA will conduct an investigation using dye to see if the wall is leaking near homes on Watson Street, Keon said.

The agency will look at installing different types of barriers, "ones that can be vibrated into the ground rather than pounded," she added. The EPA is also monitoring groundwater elevation levels in several wells that will provide data for the groundwater model that is currently under development, Russell said.

She noted, however, that riverbank sampling downstream from the high school athletic field has been delayed due to the high water level. That will take place later this summer when the level is expected to subside.

# Daily News

Friday, June 28, 2019

## Ionia County man diagnosed with swine flu

ELISABETH WALDON  
ewaldon@staffordgroup.com

ITHACA — Cases of swine flu in humans are rare, but they do happen.

Ionia County saw its first case of swine flu in a human in a decade on May 30, according to Medical Director Dr. Jennifer Morse who made the report during Wednesday's Mid-Michigan District Health Department Board of Health meeting in Ithaca.

Michigan has seen a handful of human swine flu cases in the past decade: six in 2011-2012, two in 2012-2013, one in 2014-2015, 12 in 2015-2016, two in 2016-2017 and three in 2017-2018. Morse said the recent Ionia County case involved a man who didn't have contact with pigs, and health officials are still looking into contacts to determine the cause.

Ionia County Health Department Health Officer Ken Bowen told the Daily News the Ionia County office was very involved in the situation, specifically interviewing



**These pigs at this week's Montcalm County 4-H Fair are happy and healthy, but the Mid-Michigan District Health Department is cautioning people to take precautions against swine flu being passed to humans, especially at local fairs and festivals.** — DN Photo | Elisabeth Waldon

the patient and working to track down contacts. Bowen said the man went to a local hospital after feeling ill and the swine flu was diagnosed there during routine testing.

"It is an unusual situation," Bowen said. "Since the initial finding and burst of activity, things have been quiet on that front. There are no new cases that I am aware of."

Pig cells are unique as they have receptors for, or can be infected by bird, human and pig influenza strains, according to Morse. When a pig is infected with more than one type of influenza virus at a time, the viruses can rearrange to create new strains.

"Pigs have the joy of getting infected by lots of different flu strains so they kind of mash up and form new flus," Morse said. "When you hear about swine flus now, it's a variation of different strains of flus."

Swine flu can cause a high number of ill pigs, but typically causes few deaths in pigs. Swine flu rarely spreads to humans, and when it does, it is typically related to direct contact with pigs or something or someone that has been in contact with pigs. Most cases of swine flu in humans are

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## Swine flu

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mild.

Morse said a week and a half ago, sick pigs were reported at the Lakeshore Hog Spectacular in Mason County and one of the pig owners also had the flu, but health officials were not able to get samples to determine what type of flu the pig owner had.

"It is the season now with fairs and festivals where we're going to see more people in contact with swine, so we're contacting our fairs to make sure everyone is knowledgeable about taking proper precautions about when they have contact with swine," Morse said.

The Montcalm County 4-H Fair continues today through Saturday, while the Ionia Free Fair is scheduled for July 11-20.

Montcalm County Commissioner Betty Kellenberger of Carson City asked how someone can know whether a pig is ill. Morse said swine flu symptoms in pigs are similar to symptoms in humans — fever, cough, runny nose, lack of appetite, lethargy and even depression and irritability.

"Healthy pigs are happy pigs," summarized Health Office Marcus Cheatham.

Visit [www.cdc.gov/flu/swineflu/prevention](http://www.cdc.gov/flu/swineflu/prevention) for more information about preventing swine flu in humans.

# Daily News

Tuesday, July 2, 2019

## EPA to test new cleanup method for former chemical plant

AP report

ST. LOUIS — The Environmental Protection Agency is planning to test a new method to remove soil contaminants in flood plains downstream from a former chemical plant in central Michigan.

If effective, the process could save millions of dollars in ongoing cleanup efforts at the Velsicol Chemical plant site in St. Louis,

Michigan, which has become one of the country's costliest Superfund sites.

The agency has directed \$30,000 in grant money to study the possible use of activated charcoal as a way to remove concentrations of the chemical DDT in flood plain soil, the Morning Sun reported.

DDT and other volatile organic chemicals, such as polybrominated biphenyls, were left behind at the site when the plant closed

roughly 40 years ago. DDT seeped into the soil and was also found to have leaked into the nearby Pine River, costing more than \$100 million to clean up.

The first phase of the site cleanup was completed last fall, and the second phase is underway. Workers will be inserting metal rods into the ground to remove chemicals from the soil. The rods bring the chemicals to boiling, and then they're siphoned off and destroyed.



# Daily News

Tuesday, July 9, 2019

## Edmore's water tests PFAS free

Staff report

Michigan PFAS Action Response Team's website at [Michigan.gov/pfasresponse](https://www.michigan.gov/pfasresponse).

EDMORE — The village of Edmore's water has tested free of per-and polyfluoroalkyl substances (PFAS).

During Monday's regular meeting, the Edmore Village Council provided residents with a letter that stated the village's water has no traces of perfluorooctanoic acid (PFOA) or perfluorooctane sulfonate (PFOS), which are two different common types of PFAS.

"(The) village of Edmore water supply, WSSN 2070, was tested by Vista Analytical Laboratory, the (state) of Michigan's contractor," the document says. "...The results show that of the PFOA and PFOS tested, none detected PFOA and PFOS levels were found in the water. The level is below the U.S. Environmental Protection Agency's (EPA) lifetime healthy advisory (LHA)."

The test results can be viewed on the

# PFAS testing planned

State to test 11  
properties for PFAS on  
Ionia-Montcalm line

ELISABETH WALDON  
ewaldon@staffordgroup.com

Eleven properties on the Ionia-Montcalm county line will be tested for per- and polyfluoroalkyl substances (PFAS) this week as a precautionary measure.

PFAS are a large group of man-made chemicals that are resistance to heat, water and oil and have been classified by the U.S. Environmental Protection Agency as an emerging contaminant on the national landscape. They have been used for decades in many industrial applications and consumer products and are still being used today, according to the Michigan Department of Environment, Great Lakes & Energy (EGLE).

According to Mid-Michigan District Health Department Environmental Health Director Liz Braddock, five properties in Montcalm County's Bushnell Township and six properties in Ionia County's Ronald Township have been contacted by EGLE requesting permission to test the drinking water wells. Testing will take place Wednesday and Thursday at the residential properties.

Braddock said the Mid-Michigan District Health Department and the Ionia County Health Department are both involved as partners with EGLE.

"PFAS has been found in biosolids from the Ionia Wastewater Treatment Plant," Braddock said. "A farm field located near the homes received biosolids from the Ionia Wastewater Treatment Plant and EGLE would like to test the nearby wells."

Braddock updated the Mid-Michigan District Board of Health about the upcoming testing during the June 26 Board of Health meeting.

"There was historical evidence that it had happened somewhere in the 2000s," said Braddock of the biosolids incident. "These wells may be in sandy soils. There is PFAS in the water, but there is no information right now, this is just out of

## State to test 11 properties for PFAS

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an abundance of caution. If there is an issue, we will be notifying the homeowners and providing bottled water."

Ionia's Director of Public Utilities Chris Kenyon could not be reached for comment for this story regarding the Ionia Wastewater Treatment Plant.

Ionia County Health Department Director of Environmental Health Ken Bowen said his health department is not actively involved in the testing.

"EGLE handles all permitting and enforcement regarding biosolids," Bowen said. "We have no jurisdiction in that particular area, so I can't comment on it with any real knowledge. For our part,

the state agencies keep us informed and ask us for input where appropriate. We are not in the driver's seat unless a public health threat is clearly evident. Right now that is not the case."

EGLE Project Manager Stephanie Kammer did not return repeated messages from the Daily News seeking comment for this story.


PFAS was previously found at Lacks Industry, a former metal plating facility and plastic parts producer, at 6138 Riverside Drive in Ionia County's Saranac. EGLE sampled all municipal water supplies for PFAS, but determined there was no presence of private wells downgrading from the source, nor any drinking water intakes on the Grand River within Ionia

County.

PFAS was also previously found at the Central Sanitary Landfill in Montcalm County's Pierson Township after it was discovered that the landfill accepted tannery wastes from Wolverine World Wide Inc. in Rockford. A total of 26 residential wells were tested by the landfill, three households were provided a filter and filter were offered to any resident in the Phase 1 or 2 investigation area with a PFAS detection as a precaution by the Mid-Michigan District Health Department.

Visit [www.michigan.gov/pfasresponse/0,9038,7-365-86511\\_82704---,00.html](http://www.michigan.gov/pfasresponse/0,9038,7-365-86511_82704---,00.html) for a list of all known PFAS sites in Michigan and additional information.

## Riverdale Area Tackling Septic Issue, But It's a Slow Process

 Posted on Wednesday, July 10th, 2019 and is filed under [News](#). You can follow any responses to this entry through the [RSS 2.0](#) feed. You can skip to the end and leave a response. Pinging is currently not allowed.

**By Rosemary Horvath**  
**Herald Staff Writer**

Seville Township has been given more time to submit a remedial plan to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to correct the problem of raw sewage flowing into a Riverdale storm drain.

In the meantime, township Supervisor Tish Mallory said Monday she has submitted a letter detailing the steps the township has carried out so far. A committee of local residents has been working with the environmentalists through Mid-Michigan District [Health](#) Department.

Mallory said no date has been set to submit a final remedial plan but that the committee has set up another meeting to discuss the issue.

Last year, water samples taken from the Pine River in the Riverdale area registered E. coli bacteria in the water. Health professionals embarked on a mission to locate its sources and discovered residential properties, either occupied or vacated, either didn't have septic systems or had ones that were malfunctioning.

Officials, at the time, were with the Michigan Department of Environmental Quality, now called EGLE under the new administration.

MDEQ ordered a remedial plan last year which the EGLE has taken up, giving the township a July deadline initially.

Environmental Health Officer Liz Braddock with the health department informed the Board of Health at the June 26 meeting her department has been working with community residents and township officials. Notices were mailed to alert residents they either don't have a septic system or have one that is malfunctioning.


Dye poured into toilet drains show up on the ground or in a storm drain to indicate leakage. If this occurs, Braddock explained the homeowner is advised to disconnect the drain and have their septic tank pumped or replaced.

Braddock said properties impacted by faulty equipment will have to "pump and haul" sewage until a reliable remedy is built.

Officials are investigating the possibility of building a community sewer system for the Riverdale area financed with state and federal funds.

The health department has been working with other community systems within its Gratiot, Montcalm, and Clinton county service area.

## Troubled Waters

 Posted on Wednesday, July 10th, 2019 and is filed under [FEATURE](#), [News](#). You can follow any responses to this entry through the [RSS 2.0](#) feed. You can skip to the end and leave a response. Pinging is currently not allowed.



Algae in the Pine River in St. Louis near Michigan Avenue on June 5. (Herald photo – Selmon)



St. Louis residents (from the left) Dora Boody, Pam Amiels, Lorna Robar and Karen Aumaugher, were left with more questions than answers in regard to their inquisition about the Pine River. (Herald photo – Selmon)

### *St. Louis Residents Seek Answers About “Swamp-Like” River*

**By Emma Selmon**  
**Herald Staff Writer**

Karen Aumaugher misses the swans.

And the ducks, the geese, the herons, and the deer.

Aumaugher and her neighbor Dora Boody have seen plenty of St. Louis summers in the nearly 40 years they’ve lived on Michigan Avenue. Their homes overlook the Pine River, and for years, they’ve enjoyed observing the animals that visit the water across from their porches.

But that all changed last year.

Where deer and waterfowl once frequented is now an enormous stretch of algae and aquatic vegetation with hardly any animals at all, Aumaugher said.

“Last year, it was like it is now: more like a swamp than a river,” she said. “It’s all yucky and full of lily pads and slime, and there’s no animal life anymore.”

The neighbors are not alone in noticing the change, said Boody. She, Aumaugher, and their friend Pam Amiels hoped to find answers about the river at the St. Louis City Council meeting last Tuesday. But there, they found out that the problem extends far beyond the city of St. Louis — leaving the women with more questions than answers.

The state of the river comes as no surprise to Murray Borrello, director and chair of the Program of Environmental Studies at Alma College. He and his colleagues have been monitoring and doing research on the Pine River for nearly 20 years. Though much of their study has been focused on the river upstream from the Alma dam, last summer’s research sought to answer the very question that Aumaugher and her friends are asking: what is happening to the river in St. Louis?

### **What’s Going On?**

Like many parts of the Pine River, the stretch of water near the intersection of Michigan Avenue and Cheeseman Road is experiencing an increase in algae and other aquatic vegetation, Borrello said.

This growth is often referred to as an “algal bloom,” which Science Daily defines as “a rapid increase in the population of algae in an aquatic system.” The algal blooms and increases in other aquatic vegetation are caused by an excess of the nutrients nitrogen and phosphorous, Borrello said.

“This is an organic pollutant,” he said. “It’s a natural part of the environment — there’s just too much in the environment.”

Borrello said that there are two major risks associated with algal blooms.

One of these risks is dependent on the type of algae. A Harmful Algal Bloom, or HAB, contains algae that produces microcystins, a toxin that poses serious risk to humans. Though the Pine River’s algal blooms are not HABs, these algal blooms have occurred in the Great Lakes region: in 2011 and 2014, Toledo’s drinking water supply was contaminated by HAB events, Borello said.

Borrello has not seen evidence of HABs in the Pine River, but he said his tests this summer will involve checking for HABs.

The other risk associated with algal blooms is the reduction of oxygen in the water, which results in “dead zones” that occur when the algae dies and falls to the water’s bottom to decompose, Borrello said.

“In the process of decomposition, the microbes and all the little critters that chew on that algae to break it down, they reproduce very rapidly and they consume oxygen,” he said.

With little to no oxygen in the water, fish and other aquatic life cannot survive. Borello said that a compromised population of fish and aquatic life could explain why waterfowl have stopped coming to the river near the blooms, although there are other possible reasons why animal life is staying away.

And the animals aren’t the only ones avoiding the river: excessive algae and aquatic plant growth prevents humans from enjoying the river as well.

“It’s unsightly, and it interferes with recreation,” Borrello said. “It impedes people from enjoying the river like they should have the right to.”

While the presence of some algae is not uncommon in waterways, full algal blooms in rivers are not a common natural occurrence, Borrello said.

“Those are pretty unusual in river systems, and certainly not the extent of algal production that we see in the Pine River, both in St. Louis and in Alma,” said Borrello.

And the fact that these blooms occur “year after year after year” in the Pine River is a “testament” to the fact that human activity is causing them, Borrello said.

“We’ve been doing this every year for almost 20 years, and it’s gotten worse,” he said. “It’s never gotten any better. It’s only gotten worse.”

### **What is Causing the Blooms?**

Last summer, with the support of a grant from the Healthy Pine River Group, Borrello and his team sampled river water from potential sources of the St. Louis algae problem: near the Alma dam, the Alma wastewater treatment plant, and the Sugar Creek tributary near Cheeseman road.

Upstream of the Alma dam is known to have high concentrations of the nitrogen and phosphorous that cause

algal blooms, so the team tested upstream and downstream of the dam to see if St. Louis' issue was simply caused by nutrients coming over the Alma dam, Borrello said.

They found there was actually less nitrogen and phosphorous downstream of the dam, which meant that there must be a different source that is causing the St. Louis algal blooms, he said.

"The algae in the river upstream of the dam are using all that nitrogen and phosphorous, so it's kind of used up by the time it gets over the dam," Borrello said. "And the dam holding the water back doesn't have any chemical affect on the river, so it's not the dam's fault."

The researchers examined two more sites downstream of the dam: the wastewater treatment plant and the Sugar Creek inlet. Borrello said that if the Alma wastewater treatment plant is not properly working, it is a known source of nitrogen and phosphorous; however, the team found "a very insignificant difference" in those nutrient levels between upstream and downstream of the plant.

But when the team sampled from the Sugar Creek inlet, they found a spike in the nutrients that cause algal blooms.

"When we sampled by that one inlet — it's called Sugar Creek, and if you go on Google Maps you'll see where that is — we found a lot of nitrogen and phosphorous, and we found a lot of bacteria, which kind of led us to believe it's a lot of manure that was going in," Borrello said.

Based on the preliminary information from last year's study, Borrello and his team of researchers believe that the agricultural runoff coming from Sugar Creek is at least one major source of the algal blooms in St. Louis. He and his colleagues are continuing their research throughout this summer to back up their results and to investigate another possible source, the communal septic system of Evergreen Village in St. Louis.

### **The Issue of Agricultural Runoff**

According to a federal Environmental Protection Agency (EPA) report based on 2016 data, over 70 percent of Michigan waterways are impaired by agricultural runoff.

"What we're finding in Gratiot County — and what the city of St. Louis is experiencing — is pretty typical of the U.S. and Michigan," said Borrello. "Agriculture runoff is the number one source of pollution in waterways in this country, according to the U.S. EPA. And it's causing algal blooms, it's causing dead zones. The dead zone in the Gulf of Mexico is as big as the state of New Jersey, so it's pretty significant."

Borrello said that the agricultural runoff issue is both "an easy fix" and a "complicated" problem: it is important to strike a balance that will protect the waterways without putting undue burden onto individual farmers, he said. Lorna Robar, a [farm](#) owner near St. Louis, understands both sides of the issue. While she sees the negative effect that agricultural runoff has on the river, she also worries about the "huge impact" that additional regulations could have on production.

But Borrello said that he is "sympathetic" to the plight of local farmers, and that with the government's help, a solution can be worked out that ensures farmers will not be hurt by measures that will help the waterways.

### **Human Waste and Septic Leakage**

While human waste in the river is a serious concern, Borrello said it is "highly unlikely" that it is the cause of the algal blooms. After it was discovered that the plumbing of several homes in Riverdale empties directly into the river, he and his colleagues sampled the river nearby.

"We've sampled upstream and downstream from Riverdale to find out how much of an impact that they've had, and it's pretty minimal for the algal bloom," Borrello said.

That being said, human waste polluting the river is still a huge concern.

"Human waste has pathogens that other animal wastes don't have, and they have viruses and other microbes that are very pathogenic for humans," he said. "And so you always are very wary about any part of human waste impacting to the river, because they carry other risks that animal wastes don't have."

So while leaking septic systems and other sources of human waste may not be the cause of the algae, they still pose serious [health](#) risks and need to be addressed Borrello said, noting that Michigan is currently the only state in the country without a law requiring septic systems to be inspected once they are installed.

### **Moving Forward**

The algal blooms in St. Louis continue to get worse, but Borrello said that there is hope: if the sources are

stopped, the river would be “much, much better” even by the next season.

While organizations like Alma College and the Healthy Pine River Group are researching the issue, there are currently no government organizations officially monitoring the algal blooms in St. Louis. The Gratiot Conservation District (GCD) is monitoring the Upper Pine River Watershed above the dam in Alma with the support of a grant from the Michigan Department of Environmental Quality (DEQ), but they are not monitoring the river downstream. And the EPA’s involvement in the river in St. Louis is dedicated to the chemical cleanup at the Vesicol Superfund site.

Borrello said he is frustrated by the lack of government intervention in this issue.

“Because the government is an extension of us, they have the responsibility to take care of [the waterways],” Borrello said. “And when we have algal blooms year after year after year and we know what the culprit is — we know where it’s coming from — and our government refuses to take action, then I think that’s problematic.” For her part, St. Louis homeowner Aumaugher “absolutely” wants to see state and local governments more involved.

“I think lots of people know there’s a problem,” Aumaugher said. “I just think most people don’t know what to do.”

Borrello said that residents should document and report any unusual algae growth they notice. And Julie Spencer, administrator of the GCD, said that there are many steps individuals can take to minimize their contribution to the problem — and it all starts with getting informed.

“It’s hard to fix a problem if we don’t know one exists,” she said. “Residents need to be willing to evaluate their own practices and actions and improve any places where they need to make changes.”

Septic systems need to be pumped every three to five years and replaced every 25 to 30 years, Spencer said. And if individuals choose to apply fertilizer to their lawns, gardens, or fields, they should make sure they are not applying it “just before a rain event” in order to minimize nutrient pollution.

Residents can also help out financially to support those who may be unable to pay for updates to septic systems and farming practices — and they can let their elected officials know that they want to see their waterways healthy.

“The GCD is desperately in need of base funding and we’re constantly working with local and state governments to allocate permanent funding,” she said. “Anytime an elected official is considering whether or not to support a particular program, they need to know their constituents approve of their support for conservation efforts.”

And the Healthy Pine River Group, a nonprofit based in Alma, provides another outlet for resident involvement. The group, which began in 2015, is always looking for more people to help out, said Chair Gary Rayburn.

“We are finding out the more people we get involved, the more the government pays attention to us,” Rayburn said.

The public is welcome attend the Healthy Pine River group meetings, which take place on the second Thursday of the month in the Alma Public Library. The next meeting will take place on August 8 at 7 p.m. For more information, the group is beginning to put together a website, [healthypineriver.org](http://healthypineriver.org).