

1,4-Dioxane Groundwater Contamination

IN WASHTENAW COUNTY, MICHIGAN

There is an area in Washtenaw County, which includes parts of Scio Township and western Ann Arbor, that has a plume of 1,4-dioxane underground. A **plume** happens when a chemical is moving underground in soil or water. In this case, the chemical 1,4-dioxane is moving through groundwater. This is a concern because wells draw groundwater for use in homes and businesses in this area.

This plume is not a new problem. From 1966 until 1986, Gelman Sciences (now Pall Corporation) used 1,4-dioxane in their manufacturing process. In 1985, 1,4-dioxane was discovered in residential drinking water wells in the area. Unfortunately, 1,4-dioxane does not break down quickly in water. The plume still exists, even after all this time.

The Michigan Department of Environment, Great Lakes and Energy (EGLE) and the Washtenaw County Health Department (WCHD) have been tracking this plume for over 30 years and will continue to track it. Since it was discovered, environmental and public health officials have been working with people who live and work in the area of the plume to make sure they are informed about the situation and are aware of testing results.

For a detailed map of this area, visit www.washtenaw.org/card or see page 5.

Frequently Asked Questions

What is 1,4-dioxane?

1,4-dioxane is a chemical that can be found in paint strippers, glues, pesticides, and many other things. It is also found in some makeup, lotions, detergents, bath products, shampoos, medicines, and foods and food additives.

1,4-dioxane is not always added to these products on purpose, but it may show up in very small amounts in some of the things you use. Ingredients to look for include PEG, polyethylene, polyethylene glycol, and polyoxyethylene. Also, ingredients with the word or syllable “-eth,” or “-oxynol” may contain 1,4-dioxane. Based on current science, the amount of 1,4-dioxane in these products is not likely to be harmful, even if you use them every day.

What can 1,4-dioxane do to my health?

You can be exposed to 1,4-dioxane by drinking it, breathing it in, or getting it on your skin. The US Environmental Protection Agency (EPA) and the US Department of Health and Human Service’s National Toxicology Program have linked drinking and breathing in 1,4-dioxane to the development of cancer based on studies on animals. Being exposed to levels of 1,4-dioxane over a long time is also linked to kidney and liver damage in laboratory tests in rodents. Limited information is available on potential risks to humans from 1,4-dioxane exposure.

How do I know if 1,4-dioxane is in my drinking water?

Are you connected to City of Ann Arbor municipal water?

The City of Ann Arbor tests their water for 1,4-dioxane monthly. 1,4-dioxane was detected one time in the City of Ann Arbor’s municipal water supply, but at a level below the laboratory reporting limit. The laboratory reporting limit is the smallest amount of a substance that can be accurately measured by the laboratory tools. 1,4-dioxane was detected at a level of 0.03 ppb in February 2019, well below the reporting limit of 0.07 ppb. There have been no additional 1,4-dioxane detections in the City of Ann Arbor’s municipal water.

Do you live or work in the plume area?

If you live in the area south of M-14, north of West Liberty Street, east of Wagner Road, and west of the Huron River, you might live in the area called the **Prohibition Zone**. (See map on page 5)

Properties in the Prohibition Zone are connected to the City of Ann Arbor’s municipal water supply and should not be using well water for any reason. EGLE has contacted the property owners in the Prohibition Zone. If you have not been contacted, you’re not likely in the Prohibition Zone or you are already on city water. You can call EGLE or the Washtenaw County Health Department to be sure.

Properties in other areas of the plume or near the plume edges that use drinking water wells are tested for 1,4-dioxane on a regular basis.

Is your well water being tested?

EGLE has contacted you if your property is located directly over the plume or near the edges of the plume. If you have allowed it, your water has been tested by EGLE. The frequency with which your water is tested depends on your location. You will get your results from every test in the mail.

EGLE also has a database of monitoring results on their website, available at <http://bit.ly/EGLEdioxane>.

If your water tests show a level of 1,4-dioxane above the current cleanup criterion set by EGLE, other sources of water will be provided to you. See “1,4-dioxane has been detected in my well water” below.

None of these things apply to me, but I am using well water.

If you have not been contacted or your well water isn’t being tested, but you have concerns, you can call Jennifer Conn at the Washtenaw County Health Department or Dan Hamel at EGLE to talk about where you live or work and if your well water may be at risk.

If you have a well and want to know if your water is affected by the plume, please contact:

<p>Jennifer Conn Washtenaw County Health Department (734) 222-3855 connj@washtenaw.org</p>	<p>Dan Hamel EGLE (517) 745-6595 hameld@michigan.gov</p>
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1,4-dioxane has been detected in my well water. What does the level mean?

In areas around the state where there is contamination, EGLE sets cleanup levels that help protect public health. This level is called a **cleanup criterion**. In the past, the cleanup criterion for 1,4-dioxane in drinking water was 85 parts per billion (ppb). Based on updated science, EGLE changed the 1,4-dioxane drinking water cleanup criterion to 7.2 ppb.

EGLE changed the 1,4-dioxane drinking water cleanup criterion using updated cancer risk estimates determined by the US Environmental Protection Agency (EPA). EGLE used the EPA’s Integrated Risk Information System’s number because it is the best available science and protects everyone – including children – when people drink water with 1,4-dioxane at or below this level.

Water with 1,4-dioxane levels at or below 7.2 ppb – Based on current science, if your test level for 1,4-dioxane is at or below the EGLE drinking water criterion of 7.2 ppb, your risk of having health problems from drinking water is considered low. You may choose to use other sources of water, but these sources will not be provided by EGLE.

Water with 1,4-dioxane levels above 7.2 ppb – If your test level for 1,4-dioxane is above 7.2 ppb, EGLE will contact you to provide bottled water for drinking until city water is available.

Which wells are tested?

Many wells are regularly tested for 1,4-dioxane. To see a map of testing locations, visit www.washtenaw.org/card.

Monitoring Wells

Pall Corporation currently has 257 monitoring wells. Monitoring wells are wells that were put in specifically to track the movement of the plume. Existing residential wells that are no longer used for drinking water are also used for monitoring. Monitoring wells are sampled at various times throughout the year. Some are tested monthly, while others are tested every three months, every six months, once a year or at random. No one drinks the water from these monitoring wells.

Homes and Businesses in the Plume Area

There are over 200 drinking water wells at homes and businesses in the plume area that are tested every six months, once a year, or every-other year, depending on location. A small number of active wells have tested positive for 1,4-dioxane at some point in their monitoring history. Currently, there are no water wells used for drinking that exceed the EGLE drinking water criterion of 7.2 ppb.

The results are available on EGLE's website for the project, available at <http://bit.ly/EGLEdioxane>.

What if I want to test my water?

If your water is not already being tested but you would like to test it, you are responsible for any cost. There are three laboratories located near our community that can run tests for 1,4-dioxane. The laboratories are listed below:

Ann Arbor Technical Services* 290 S. Wagner Ann Arbor, MI 48103 (734) 995-0995 info@AnnArborTechnicalServices.com	Brighton Analytical* 2105 Pless Drive Brighton, MI 48114 (810) 229-7575 bai-brighton@sbcglobal.net	EGLE Drinking Water Laboratory P.O. Box 30270 Lansing, MI 48909 (517) 335-8184 EGLE-RRD-DW-Bottles@michigan.gov
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*Please note that only the EGLE Drinking Water Laboratory provides copies of results to the Washtenaw County Health Department. If you use any other laboratory and you would like your results to be kept on file with Washtenaw County, please contact Jennifer Conn with the Washtenaw County Health Department.

Is there a filter I can put on my faucet to remove 1,4-dioxane?

Unfortunately, filters such as carbon filters and reverse osmosis filters cannot effectively remove 1,4-dioxane.

Can I use my well water for drinking?

If your well water has been tested and is at or below the EGLE drinking water criterion of 7.2 ppb, it is considered okay to use the water for drinking (including making things like tea and coffee). Limited information is available on potential risks to infants from 1,4-dioxane exposure. If 1,4-dioxane is detected in your well water, but is at or below the EGLE drinking water criterion of 7.2 ppb, it is recommended you talk with your pediatrician and use bottled water for preparation of infant formula.

If your well water tests above the EGLE drinking water criterion of 7.2 ppb, you will be provided with bottled water by EGLE until you can be connected to city water.

Can I use my well water for bathing, washing hands, or laundry?

If your well water has been tested and is at or below the EGLE drinking water criterion of 7.2 ppb, it is considered okay to use the water for things like bathing, washing hands, and doing laundry. If your well water is above the EGLE drinking water criterion of 7.2 ppb, you will receive bottled water for drinking until you can be connected to city water. You should contact EGLE or the Washtenaw County Health Department for information and direction on using your water for bathing, washing hands, and laundry.

Should I be concerned about breastfeeding my child if I drink water with 1,4-dioxane?

Not much research has been done on 1,4-dioxane in breast milk. If you are breastfeeding, it is recommended you talk with your healthcare provider and drink bottled water.

Water comes into my basement. Do I need to worry about 1,4-dioxane in the water?

Water coming into basements may come from several things. It is common for surface water, such as rain or snow melt, to enter basements. Surface water is not likely to be contaminated with 1,4-dioxane. If you live in an area with a high water table, groundwater may seep into your basement. Research has not been done to determine what risk there might be in this situation.

Can I use my well water in a humidifier?

Using well water in a humidifier is not recommended. Most manufacturers say to fill your humidifier with distilled water. Distilled water is cleaner to breathe and will also slow the build-up of scale in your humidifier, possibly making it last longer.

What if I want more information about the 1,4-dioxane plume?

Since 2006, the Washtenaw County Health Department has participated in a community group called the Coalition for Action on Remediation of Dioxane (CARD). CARD is a partnership of local governments and citizens that develops strategies to address the groundwater contamination from the 1,4-dioxane plume. The group meets monthly, and meetings are open to the public. In addition, there is an email listserv you can join to stay updated on this issue. For more information about CARD or to sign up for the listserv, please visit www.washtenaw.org/card.

If you have additional questions or concerns about 1,4-dioxane, please contact:

<p>Jennifer Conn Washtenaw County Health Department (734) 222-3855 connj@washtenaw.org</p>	<p>Dan Hamel EGLE (517) 780-7832 hameld@michigan.gov</p>
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References

Agency for Toxic Substances and Disease Registry (ATSDR). 2012. Toxicological Profile for 1,4-Dioxane. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

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https://clu-in.org/download/contaminantfocus/dioxane/1,4-Dioxane_Fact_Sheet.pdf

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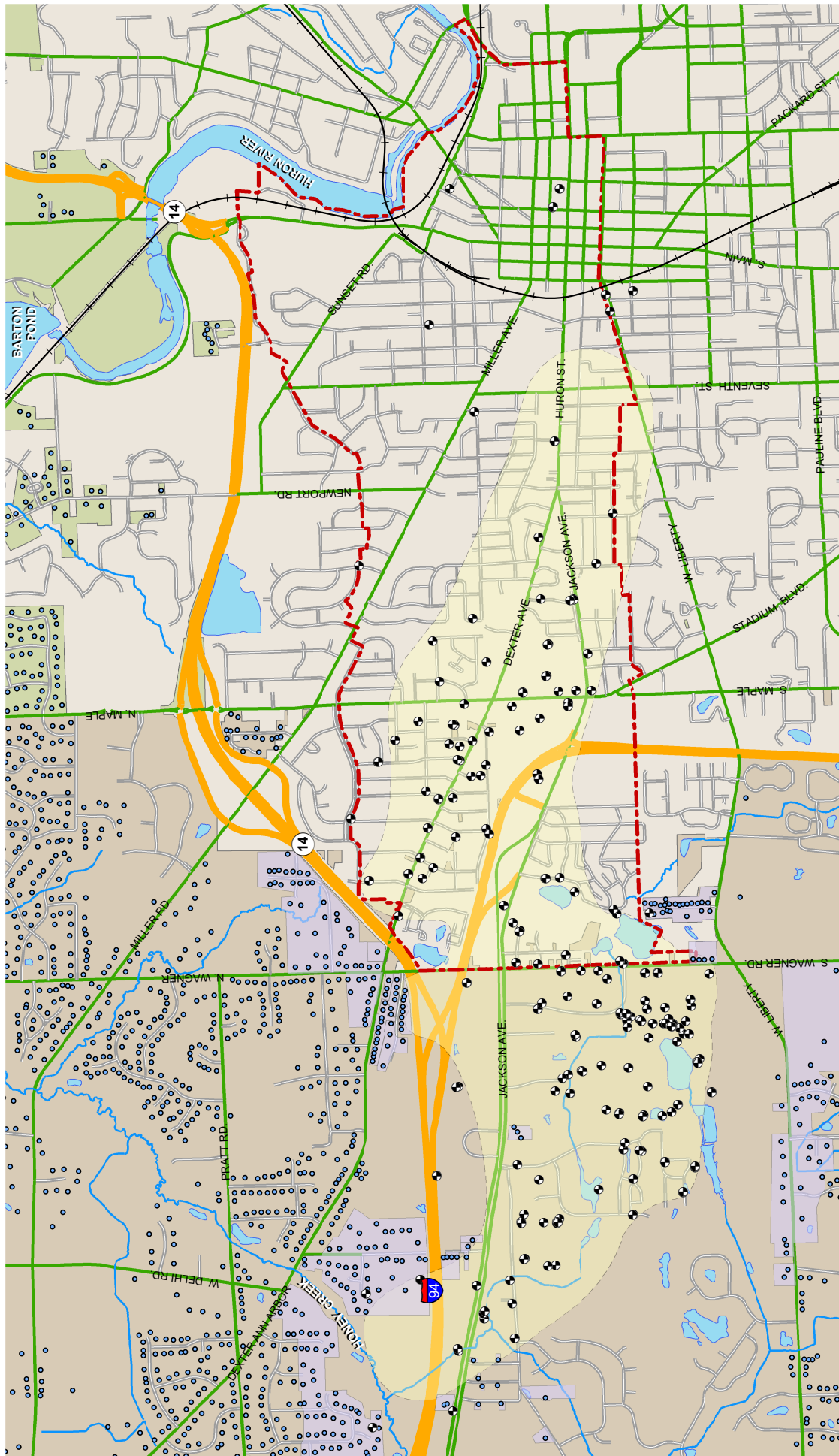
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1,4-Dioxane Plume Map Washtenaw County, Michigan



KEY

- Monitoring Well
- Home/Business Well
- Prohibition Zone*
- City of Ann Arbor
- Scio Township
- Estimated plume greater than 1 part per billion (ppb)**
- Ann Arbor Township / Barton Hills Village
- Drinking Water Well Sampling Area

* Court-ordered area where the consumption or use of groundwater or installation of water supply wells is prohibited.
 ** A plume is a 3-dimensional distribution of contaminants in groundwater. Plume shape is affected by source spreading, geology, hydrology, and biological activities. The estimated plume boundary on this 2-dimensional map is unable to show the depth to contamination or thickness of the contaminated zone.

MAP PRODUCED BY:
 Washtenaw County Health Department
 Washtenaw County, Michigan

SOURCES:
 MDEQ Database
 Washtenaw County GIS
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