May 2023 Update

North Pole Refinery Contamination Response

At A Glance

Alaska Department of Environmental Conservation

This update discusses recent project milestones for North Pole residents and others interested in the state's response to contamination remaining on the former North Pole Refinery and in the groundwater to the north-northwest of it.

- All eligible and willing property owners were connected to the City of North Pole's expanded piped water system by 2020.
- DEC's Groundwater Advisory remains in effect to inform affected community members about impacts from the remaining groundwater contamination.
- Annual groundwater monitoring, under DEC oversight, continues to track movement and concentrations of the **sulfolane** plume both on and off the former refinery.
- On the national level, the National Toxicology Program continues research regarding the toxicity of sulfolane.
- A multi-year investigation is underway to evaluate the sources and extent of per- and polyfluoroalkyl substances (**PFAS**) on the former refinery property.
- DEC received the U.S. Environmental Protection Agency (EPA) June 15, 2022, update on drinking water health advisory for PFAS and the March 14, 2023, proposed national drinking water standard for six PFAS.

New to Town?

- DEC encourages you to see where you live relative to the sulfolane plume. If you live within it, you are urged to find out the source of your water supply (see map, last page)
- Check out the DEC website for updated FAQs, maps, and detailed information about the contamination dec.alaska.gov/spar/csp/sites/north-pole-refinery/
- Go to the city utility website for information about the municipal water system www.northpolealaska.com/utilities

Brief History

The North Pole Refinery operated from 1977 until 2013. During that time, many spills and leaks of industrial chemicals and wastewater contaminated the soil and groundwater on the refinery property. Spilled substances included petroleum products, sulfolane, and per- and polyfluoroalkyl substances (PFAS). Over time, **sulfolane** and **PFAS** in the groundwater migrated off the refinery property, eventually extending 3.5 miles to the north-northwest.

In 2009, sulfolane was detected in drinking water wells north of the refinery. Under DEC oversight, then-owner of the refinery, Flint Hills Resources Alaska (FHRA), provided new water wells for the city of North Pole and alternative water supplies to affected residents. They also completed intensive characterization activities to investigate the source and extent of the sulfolane contamination.

In 2017, FHRA, the City of North Pole, and the State of Alaska agreed to expand the city's water system to allow city water connections to properties impacted by the sulfolane contamination.

In 2018, PFAS were detected in water wells north of the former refinery. In drinking water wells tested, the treatment systems provided by FHRA for sulfolane removal also removed PFAS.

In 2020, the Fairbanks superior court issued a decision holding Williams Alaska Petroleum, Inc., a previous owner of the refinery, liable for releasing large quantities of sulfolane into the groundwater. The Court also found that FHRA was responsible for contamination but had responded appropriately to the State's demands for action. Williams is appealing the decision. As a result of the court action, however, Williams took over some of the sulfolane monitoring and began PFAS characterization activities on the former refinery.

In the Know!

Sulfolane – specialized industrial chemical used by the refinery to make gasoline. The health effects of long-term exposure to sulfolane are not known and are currently being studied by the National Toxicology Program (NTP).

PFAS – a large and complex class of human-made chemicals. They are found in firefighting foams and many consumer products. PFAS have a wide range of toxicities; the most well-studied PFAS include PFOS and PFOA.

Piped Water Expansion Complete

In 2018-2020, the City of North Pole expanded its water system to include properties impacted by the sulfolane plume, within and outside the city limits. Properties in the Garden, Riddle Estates, Poodle, Pine Stream, Steelhead and Sorores subdivisions were included in the expansion.

By the end of 2020, all eligible property owners were offered connection to the service and able to phase out the use of contaminated groundwater wells. Most property owners were eligible to connect at no cost, depending upon the land's location and improvement status. Connection was not feasible for some properties, for example those without winterized buildings, and some owners declined connection.

- 739 eligible properties
- 652 connections made

With the water system expansion, the alternative water supply program previously provided by FHRA was phased out.

The piped water system is a comprehensive way to eliminate exposure to sulfolane in drinking water. The City of North Pole's public water system is regulated by the State's Drinking Water Program, which requires compliance with state and federal drinking water regulations. The Program reviewed and approved the design of North Pole's water expansion project. ■

Groundwater Advisory

In November 2018, DEC issued a Contaminated Groundwater Advisory to all property owners within North Pole's piped water expansion area, where many private water wells contain sulfolane and/or PFAS.

The advisory helps residents avoid unintentional contact with, or spreading of, the chemicals present in well water.

DEC advises against using untreated, contaminated well water. Bringing contaminated well water to the surface may expose people and animals to chemicals in the water. Using contaminated well water may also allow chemicals in the water to spread onto other properties, sloughs, or ponds.

In issuing this advisory, DEC is seeking the community's assistance in minimizing the future spread of these contaminants. ■

Continued Oversight

DEC continues to oversee responses to contamination at the former North Pole Refinery to protect human health and the environment and ensure compliance with regulations.

- Annual monitoring of the sulfolane plume continues to track movement of the plume boundaries and show where contamination levels are increasing and decreasing. The sampling includes "buffer zone" wells beyond the known extent of the sulfolane plume.
- In 2023, DEC expects to receive a Five-Year Review of monitoring results on and off the former refinery from FHRA and Williams. DEC will evaluate the monitoring results and work with the parties to modify the sampling programs, as appropriate. The Five-Year Review for onsite monitoring is available on the website. DEC is still reviewing this report. The report for offsite monitoring will be posted to the website when available
- In the event the sulfolane plume migrates beyond the expanded municipal water service area, an agreement is in place to supply clean alternative water if sulfolane in a private drinking water well exceeds a protective level, currently set at the EPA's Regional Screening Level of 20 parts per billion. Monitoring through 2022 has not shown sulfolane plume expansion beyond the municipal water service area.
- Investigations are underway to better define the source and extent of PFAS contamination in the soil and groundwater on the former refinery.
- DEC continues to monitor research conducted at the federal level addressing gaps in the understanding of sulfolane and PFAS toxicity. ■

NTP Studies Continue

The National Toxicology Program (NTP), a federal interagency organization, is conducting toxicology studies for sulfolane to look at effects from long-term exposure to the chemical and other research gaps. Specifically, a 2-year study on rats and mice is evaluating the effects of long-term exposure to sulfolane in drinking water and the effects on pregnancy, development, and the immune system. ■

Recent Sampling Results

Off the former refinery: Based on samples collected annually through 2021, the sulfolane plume continues to expand slowly towards the north-northeast but shows no evidence of migrating beyond the area served by municipal water. See map, last page.

On the former refinery: Based on samples collected at least annually through 2022, there are no indications of sulfolane or petroleum contamination migrating off the former refinery property above limits agreed upon by the State and FHRA in 2017. In samples from wells near the property boundary, petroleum concentrations are below Alaska cleanup levels, and sulfolane concentrations are below the limit established in the agreement.

PFAS on the former refinery is being investigated by Williams. In 2020, the North Gravel Pit and selected monitoring wells were sampled for PFAS. The sampling showed areas of PFOS and PFOA above Alaska cleanup levels. A second investigation phase was completed in fall 2022. Results from the 2022 soil, surface water, and groundwater sampling are expected in 2023.

Maps are available on the DEC website: dec.alaska.gov/spar/csp/sites/north-pole-refinery/map/ ■

EPA Update for PFOS and PFOA

DEC received EPA's June 15, 2022, update on drinking water health advisory for PFAS and the March 14, 2023, proposed national drinking water standard for six PFAS. DEC supports the EPA's efforts to address PFAS and reduce Alaskans' exposure to these chemicals. DEC will continue to work with the Alaska Department of Health, the Alaska Department of Transportation & Public Facilities, and our federal partners to interpret this new information as it applies to the people of Alaska. ■

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Information on the status of the cleanup project, current and future actions, newsletters, fact sheets and other project documents for the contamination investigation at the former North Pole Refinery can be found on the DEC website:

dec.alaska.gov/spar/csp/sites/north-pole-refinery

Map showing approximate boundaries of the sulfolane plume

This map shows and compares the approximate boundaries of the sulfolane plume based on results of ground-water sampling done in 2020 (black line) vs. 2019 (red line).

Additional maps showing sampling results and indication of the plume boundary over time are available from the Maps page at the Project website:

dec.alaska.gov/spar/csp/sites/north-pole-refinery/