What is 1,4-Dioxane?

1,4-Dioxane is a man-made industrial chemical formerly used as a stabilizer for chlorinated solvents. It can be found in paint strippers, dyes, greases, antifreeze and aircraft deicing fluids. It is also a byproduct in consumer products such as deodorants, shampoos, and cosmetics. It is easily dissolved in water, making it very mobile in groundwater.

What are its effects on people and the environment?

1,4-Dioxane is a likely human carcinogen and has been found in groundwater at sites throughout the United States. Low level exposure to 1,4-Dioxane over a lifetime can increase the risk of cancer. However studies have found that a person would only show a one in 1 million increased chance of getting cancer if they drank 2 liters of water that contained 0.35 parts per billion of 1,4-Dioxane for 70 years.

At the Landsburg Mine Site, measurements taken in December 2018 showed three north portal wells with 1,4-Dioxane levels ranging from 1.2 to 1.7 parts per billion. All other site wells did not detect 1,4-Dioxane in the water. Preliminary results from a groundwater investigation of its extent towards the nearest private wells and Cedar river showed no detections.

There is no federal drinking water standard for 1,4-Dioxane. It has low aquatic toxicity since it does not accumulate, magnify, or concentrate biologically in the food chain. People can be exposed to 1,4-Dioxane by drinking contaminated water, inhalation of vapors, and workplace contact.

Am I at risk? Is my water well at risk?

There is nothing to indicate an immediate threat to human health or the environment at the Landsburg Mine site from 1,4-Dioxane. The closest private wells are located northwest of the site and are not in the groundwater flow direction (downgradient) of the 1,4-Dioxane. Based on their locations and preliminary results from the 1,4-Dioxane groundwater investigation, there is no indication that these private wells or the river are at risk because the substance appears to not have migrated very far.

Even with such a small chance of risk, Ecology will still be conducting private well sampling at a later time as required in the cleanup action plan for the site (see below).

What is Ecology doing to keep the drinking water supply safe? What is next for the 1,4-Dioxane detections and the Landsburg Mine site cleanup?

Last year, Ecology requested a groundwater investigation to determine its extent past the northern wells. Preliminary results from additional wells installed and sampled for the investigation indicate it has not migrated towards the nearest private wells and Cedar river. The chemical results will still need to undergo a quality assurance validation process, but final results will be submitted to Ecology in a report that will be shared with the public.

If a monitoring well at the Landsburg Mine Site detects a contaminant in groundwater, the cleanup plan includes an evaluation (called an Alternative Source Evaluation), that will determine whether the contaminant is coming from the site or from external sources not related to the site. Ecology will allow this evaluation to take place for a limited time before any additional actions are taken.

The cleanup plan also calls for periodic sampling and analysis of water from nearby private wells. Also, monitoring of groundwater at the north end of the site will be conducted quarterly to keep tabs on the existing 1,4-Dioxane.

In summary, Ecology and the Potentially Liable Persons are carrying out several actions at the same time to assess the 1,4-Dioxane detections and to protect groundwater:

- Conducting more frequent groundwater monitoring (quarterly monitoring) at the northern site wells and nearby private well sampling as a precaution;
- Continuing periodic site-wide groundwater monitoring (for a wide range of chemicals including 1,4-Dioxane) while cleanup construction proceeds;
- Conducting a groundwater investigation to determine the nature and extent of the 1,4-Dioxane past the northern wells and any risks to private wells and to Cedar River;
- Proceeding with the original cleanup plan according to schedule to:
    - Install additional monitoring wells;
    - Construct the south portal infrastructure;
    - Fill in and cap the waste area, to minimize the chance that contaminants leave the mine.
    - Complete the alternative source evaluation for 1,4-dioxane;

This work will guide next steps and decisions based on sound science and sufficient data within state cleanup regulations, while at the same time ensuring there is no immediate danger to the public and the environment.

Sources:

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