

Early, Marti (DEC)

From: Early, Marti (DEC)
Sent: Thursday, February 25, 2010 5:33 PM
To: Undisclosed recipients
Subject: Update #9, sulfolane investigation

Dear concerned citizen,

Many of you may have been at the public meeting on Thursday, Feb. 18th, 2010. If so, we hope your questions were answered. If not, feel free to contact me, or those listed at the end of this email. Some of you may be fairly new to the issue, having recently discovered your well water has sulfolane in it. The best place to get an overview and the history of this issue is on the DEC website, at www.dec.state.ak.us/spar/csp/sites/npolerefinery.htm.

Our website is now updated to include the map which was available at the public meeting. We've also added the following questions and answers to the Q&A section on the website, as these questions have come up recently. As I said, if you have questions or concerns that aren't addressed here, please feel free to e-mail or call us.

Q. Why haven't you asked Flint Hills to test for benzene along with sulfolane in people's well water? The refinery has petroleum contamination from past spills. How can we be sure that benzene isn't leaking off the property?

A. DEC has no reason to believe that benzene has moved off of the refinery property. DEC has overseen monitoring of benzene and other compounds in groundwater at the refinery since 1986 and will continue to do so into the future. Benzene is known to cause cancer and other serious health effects. We know from examining these many years of monitoring data that benzene has not left the refinery property. If Flint Hills were to sample private water wells north of the property and find benzene or other petroleum compounds those compounds would not be from the refinery and therefore not the responsibility of Flint Hills. If you suspect that your well contains contamination other than sulfolane we encourage you to have your well tested independently.

I'm still not convinced that benzene isn't coming off the property with the sulfolane.

Sulfolane and benzene don't have the same chemical properties, so they don't act the same in groundwater. They do bond well to each other, making sulfolane useful in the refining process, however sulfolane and benzene separate easily when dissolved in water.

Benzene can dissolve in water, but it clings to soil, evaporates through the soil and breaks down much more easily than sulfolane by natural processes underground. All these processes mean that benzene, like other petroleum compounds, doesn't move very far in the groundwater compared to sulfolane. Sulfolane, by comparison, dissolves easily in water, does not cling well to soil, and does not evaporate well. When gasoline, containing both benzene and sulfolane leaks into the soil and makes its way to groundwater, the benzene doesn't travel far, but the sulfolane dissolves into the water and travels much further.

Q. Is this plume of sulfolane going to keep on going, northwest, even to Fairbanks and beyond?

A. We don't think so. Sulfolane in groundwater thins out (dilutes) by mixing with more water as it travels away from the refinery. Groundwater carries sulfolane from the source at the refinery to the north and northwest ("downgradient"). The concentrations lower as it moves further away from the source and will be too low to measure well before it could reach Fairbanks.

As sulfolane travels in groundwater, biological organisms like bacteria break down the sulfolane, although this happens very, very slowly in low-oxygen, cold groundwater. (Biological action is much faster in surface waters, where there is more oxygen). The chemical also doesn't evaporate well, but some will go into air.

These dilution and attenuation mechanisms are why the concentrations at the source by the refinery are higher than those seen further north (towards Fairbanks). It is also why we don't expect concentrations to significantly increase downgradient of the refinery as long as no new spills occur.

If you have questions about DEC's work on this issue, please write or call me or those listed.

Sincerely,

Marti Early
Community Involvement Specialist
ADEC - Spill Prevention and Response - Contaminated Sites Program
marti.early@alaska.gov
907-465-5206

For more information:

On contaminated sites, contact DEC: Marti Early, 907-465-5206, marti.early@alaska.gov or

Ann Farris, 907-451-2104, ann.farris@alaska.gov

On health related information, contact the Alaska Division of Public Health, Nim Ha, 907-269-8028, nim.ha@alaska.gov

On public water supplies, contact DEC, Cindy Christian, 907-451-2222, cindy.christian@alaska.gov

On water testing or other refinery issues, contact Jeff Cook, Flint Hills Resources, 907-488-5104, jeff.cook@fhr.com