

JKLM Health Consultation Summary, Coudersport, Potter County, PA

November 2018

Background

In September 2015, JKLM Energy, LLC (JKLM), an independent oil and natural gas exploration and production company, injected chemicals into an open wellbore (actual hole that forms the well) at the Reese Hollow 118 well pad in an attempt to retrieve a drill bit. The Pennsylvania Department of Environmental Protection (PADEP) and JKLM investigated the incident. Sampling revealed the injected chemicals and other naturally-occurring contaminants were present in drinking water supplies near the site. Residents were provided bottled water under an order from PADEP to JKLM within a few days after the contamination was detected. Bottled water was provided until the state determined impacts were resolved. During this time, groundwater was still used for other household purposes (e.g., showering) in the affected area.

Initially, 17 residents complained of private drinking water impacts. Over 100 individual water sources were then sampled in response to this incident. In 2016, PADEP determined that six drinking water sources out of the 100 sampled were impacted by the JKLM release. ATSDR accepted a petition to review the available water sampling data related to this incident.

Full public comment version of the ATSDR report available at:

https://www.atsdr.cdc.gov/HAC/pha/JKLMNaturalGas/JKLM_HC-508.pdf.

The public comment process gives residents the opportunity to review the public comment version of this report and provide their input. If community members would like to share any water sampling information related to the JKLM release in 2015 that is not already included in ATSDR's report, they are invited to share this information with ATSDR using the public comment process. ATSDR's responses to comments received will be included in the final version of the report.

Timeline of JKLM Spill and Response

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| ~09/18/2015 | JKLM injects unapproved chemicals into gas well |
| 09/21/2015 | PADEP receives 17 initial resident complaints of drinking water impacts |
| 09/21/2015 | PADEP and JKLM begin sampling of 100 water sources; bottled water provided |
| 09/30/2015 | PADEP issues notice of violation to JKLM PADEP issues determination letters to 6 residents stating impacts by JKLM across the date range of 10/27/2015-12/14/2015 |
| 02/29/2016 | ATSDR receives petition to assess environmental health concerns due to JKLM well incident |

What did ATSDR Evaluate?

ATSDR focused on the community's possible exposures to contaminants detected in their drinking water supplies following the chemical release from the Reese Hollow 118 pad in September 2015. Data from over 100 water sources, including groundwater wells and springs, surface waters, and public and private drinking water source wells were evaluated by ATSDR. Industrial contaminants released by JKLM as well as naturally occurring contaminants in drinking water were detected and evaluated to determine if exposure could harm people's health.



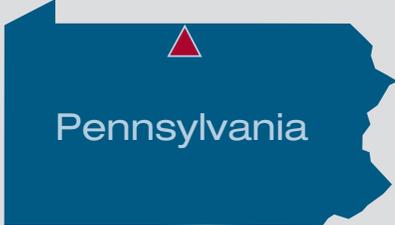
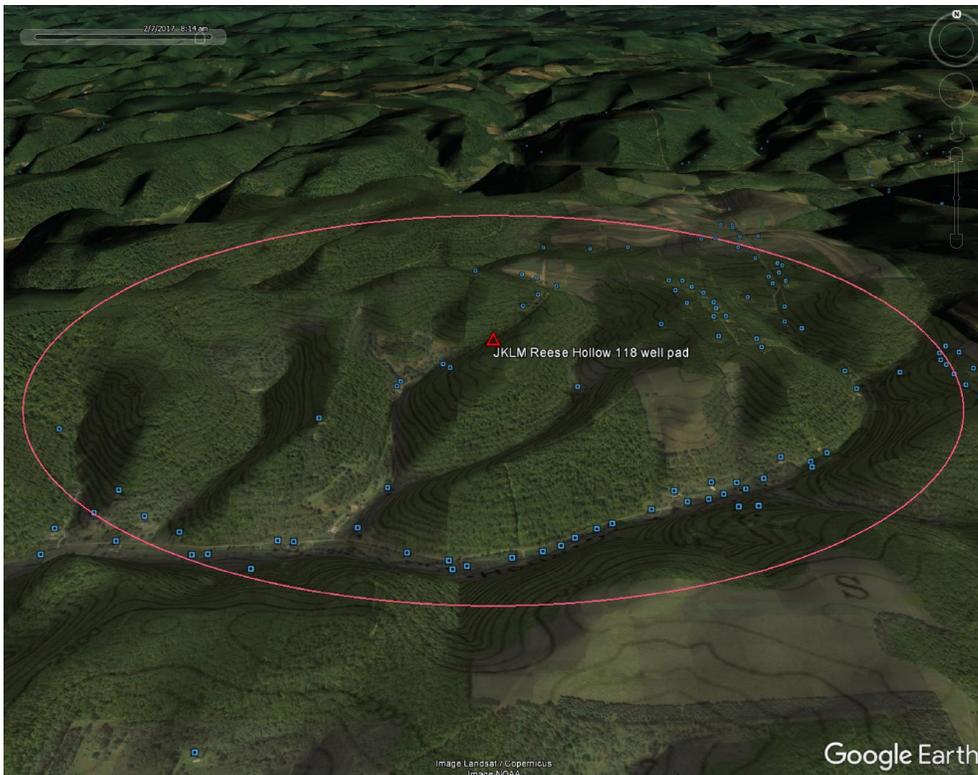
Key Findings

- **Isopropanol (a liquid alcohol released by JKLM) was detected in three private wells. Isopropanol in one private well was high enough to be of health concern from inhalation (but not ingestion) during household water use (e.g. showering).**
 - » Some people may have experienced temporary health effects, including eye, nose, and throat irritation from inhalation exposure. The responses to breathing isopropanol in air can vary from person to person.
 - » Isopropanol was not of health concern at the concentration detected in the other two wells.
- **People who consumed water with naturally occurring contaminants including bromide, iron, lead, lithium, manganese or sodium may be at risk for harmful non-cancer health effects associated with these chemicals.**
 - » **Bromide:** Health effects, including gastrointestinal upset (e.g., nausea, vomiting) may have occurred for some individuals.
 - » **Iron:** Healthy individuals are not likely to experience adverse health effects; individuals on reduced-iron diets to treat hemochromatosis should consult their health professionals to discuss the additional iron exposures from consuming their well water.
 - » **Lead:** Chronic exposure to low lead levels in children has been shown to cause effects on the central nervous system, which can result in deficits in intelligence, behavior, and school performance.
 - » **Lithium:** Any person taking lithium for medical reasons should consult their physician if they are consuming water (i.e., drinking or cooking) from any of the wells with lithium levels above 40 micrograms per liter ($\mu\text{g/L}$).
 - » **Manganese:** Adverse neurological health effects may occur for infants and children consuming water with manganese greater than 300 $\mu\text{g/L}$. Adverse neurological health effects may occur for adults consuming water with manganese greater than 1,000 $\mu\text{g/L}$.
- **Health effects are not expected from exposures to all other chemicals assessed in Coudersport area drinking water sources, including other chemicals detected above health-based screening values but below health effect levels (acetone, aluminum, barium, and benzene) and chemicals detected below health-based screening values.**
- **Biological contamination (i.e., fecal coliform, E. coli) was found in thirty-one water sources that were tested. Drinking water containing fecal coliform can cause severe illness and serious infections with symptoms including, but not limited to, bloody diarrhea, stomach cramps, fever and vomiting.**

Data Limitations

ATSDR could not fully assess the potential health effects from exposures to chemicals in the Coudersport area drinking water sources and surface waters due to incomplete information regarding:

- How long water supplies were impacted,
- How long people were exposed, and,
- The specific chemicals in mixtures.



Pennsylvania

The JKLM Coudersport Site is located in Potter County, Pennsylvania. The site is situated near the ridgeline of a hill.

The hillshade image at the left depicts its position as seen looking from the south toward the north.

The blue dots indicate residential dwellings. The pink line indicates a 1-mile buffer around the site.

Recommendations and Next Steps

Private Well Owners with Elevated Levels of:

- Lead, lithium, manganese or sodium should take steps to reduce exposures from drinking water, work with water quality treatment professionals to install treatment systems specifically designed to remove these contaminants, continue to monitor the quality of their residential well water, and consult with their physician if their levels of these chemicals were elevated.

Private Well Owners with Biological Contamination (i.e., fecal coliform, E. coli):

- ATSDR recommends owners and operators of drinking water sources contaminated with fecal coliform or E. coli take immediate steps to eliminate exposures to the contaminated water, including installing treatment, evaluating/improving the wellhead area, and regularly testing the water supply.

Local and State Environmental and Public Health Agencies Should

- Continue to inform residents with drinking water wells of the importance of regular water testing, and of the responsibilities of all stakeholders (local government, industry, regulators, residents) involved in these types of incidents.
- Drillers and state regulators should develop site-specific procedures that protect the public from exposure to chemicals injected into open boreholes to recover drill bits and other 'lost' items.

Information on Penn State's private water well testing program can be obtained from the Potter County Penn State Extension Office (814-274-8540; PotterExt@psu.edu) or the Penn State Extension Lab Testing website (<http://agsci.psu.edu/aasl/water-testing>).

Penn State has also developed a fact sheet with specific recommendations for analytes appropriate to include in drinking water testing, visit: <https://extension.psu.edu/common-water-test-parameters-related-to-natural-gas-drilling>.

Public comments on the report must be submitted in writing to the ATSDRRecordsCenter@cdc.gov, or mailed to:

Agency for Toxic Substances and Disease Registry

Attn: Records Center

Re: JKLM (Coudersport, PA)

4770 Buford Highway, NE (MS F-09)

Atlanta, Georgia 30341

Please talk to your health professional or call PADOH's Lead Information Line at 1-800-440-LEAD (5323) if you have concerns about exposure to lead and want more information on steps you can take to reduce exposures.

For questions about ATSDR's report, please contact

Robert Helverson,

Regional Representative, ATSDR Region 3

at 215-814-3139, gfu6@cdc.gov

or

Lora Werner,

Regional Director, ATSDR Region 3

at 215-814-3141, lkw9@cdc.gov.