



Agency for Toxic Substances
and Disease Registry (ATSDR),
Region 3
1650 Arch Street, 3HS00
Philadelphia, PA 19103

October 30, 2015

Mr. Buzz Kiskadden
771 Banetown Road
Washington, PA 15301-6432

Ms. Kelly A. Smith
Applied Research & Technical Support Branch, Chief
U.S. Environmental Protection Agency (EPA), ORD/NRMRL/GWERD
919 Kerr Research Drive, Ada, Oklahoma 74820

Dear Mr. Kiskadden:

EPA collected samples from your private water well as part of a national study of the possible effects of hydraulic fracturing on drinking water. This letter summarizes ATSDR's 2013 conversation with you and EPA about your well water quality.

Overview

EPA collected samples from your private water well in March 2012 and shared the results with you. ATSDR reviewed the results from your water samples to evaluate the quality of the water for use as drinking water. Quality drinking water does not contain chemicals at harmful levels and is free of bad odors, taste, and color. EPA requested that ATSDR write this follow-up letter, which summarizes our March 28, 2013 conversation with you and EPA about your well water quality.

A Brief Description about Our Method

To determine if drinking well water poses a health problem, ATSDR compares the results found in well water to health comparison values that agencies such as EPA and the U.S. Department of Interior have established. If your test result showed that the level of a particular chemical or substance was less than the established health comparison value, it is unlikely that it would affect your health. If the result was greater than the health comparison value, then ATSDR evaluated it further. If no health comparison value was available for a particular chemical or substance, then ATSDR evaluated it further. For example, we researched published studies and information to determine if the level found in your well water might affect your health.

What We Found in Your Well Water

We found methane, arsenic, sodium, pH, and total dissolved solids (TDS) in your well water at levels above comparison values. This makes them contaminants of potential concern.

Contaminants of Potential Concern (from samples collected in March 2012)

Chemical	Concentration	Reason identified as contaminant of potential concern
Methane	15.5 mg/L	Exceeds 10 mg/L (DOI warning level)
Arsenic	1.0 µg/L (J)	Exceeds 0.023 µg/L (CREG) (ATSDR)

Sodium	265 mg/L (J)	Exceeds 20 mg/L (EPA DWEL/guidance level)
pH	8.93	Outside EPA SMCL range of 6.5-8.5
Total dissolved solids (TDS)	666 mg/L	Exceeds 500 mg/L (EPA SMCL)

We also found diesel range organics (DRO) in your well water, but no comparison value is available for DRO. This means we had to evaluate it further to determine if it may affect your health.

Chemical	Concentration	Reason identified as contaminant of potential concern
Diesel range organics (DRO)	87.9 µg/L	No CV

Notes for both tables: CREG = cancer risk guidance level; CV = comparison value, DOI = Department of Interior, DWEL = Drinking Water Equivalency Level or guidance level, J = Estimated concentration, SMCL = Secondary maximum contaminant level, mg/L = milligrams per liter; µg/L = micrograms per liter

How Your Well Water May Affect Your Health

We found some of the chemicals in your drinking water at levels that were high enough to affect your health and make the water unsuitable for drinking.

- Methane can increase risk for explosion**
The methane level in your water was higher than a safety level set by the U.S. Department of the Interior (DOI).¹ The possible buildup of methane gas indoors can increase the risk for an explosion. Drinking methane dissolved in well water is not considered a health concern.
- DRO may affect taste and quality of water**
Diesel range organics (DRO) were found in your well water at 87.9 µg/L. Finding DRO in a water sample means that a range of hydrocarbons is present in your well water; this measurement is not specific to any one chemical. DRO are not normally found in drinking water supplies. Their presence may affect the taste and quality of your drinking water. Unless we know what the chemicals were in this DRO mixture, we cannot tell you what this detection means for your health.
- Arsenic can increase the risk of cancer**
Arsenic was found in your well water at 1.0 µg/L. The level found in your well water does not exceed the EPA Maximum Contaminant Level (MCL) of 10 µg/L or a non-cancer ATSDR comparison value of 3 µg/L, but does exceed a cancer screening value of 0.023 µg/L. Arsenic can increase the risk of cancer of the skin and lungs. If you consume the water for many years (70 years) and drink at least 2 liters a day, at the level detected in your water, there is a slight increased risk of developing these cancers.
- Sodium is a health concern for people trying to limit salt intake**
Sodium was found in your well at 265 mg/L, which exceeds the EPA Drinking Water Equivalency Level (DWEL) advisory level of 20 mg/L.² The level of 20 mg/L is intended to protect people who have high blood pressure or are on a sodium-restricted diet. Drinking water with a high level of sodium is a health concern for people who must limit how much salt they eat or drink. The taste of water is generally offensive to all users at levels of 200 mg/L and above because of the salty taste.³ Children are also sensitive to salt in their diet. People who drink this water and must limit their salt intake and should discuss this situation with their family doctor.

- **TDS may make water hard or salty**
Total dissolved solids (TDS) were found in your well at 666 mg/L, which is above the EPA Secondary Maximum Contaminant Level (SMCL) of 500 mg/L.⁴ TDS is a measure of dissolved substances in the water. If the TDS is high, then the water may be hard, stain, or taste salty. Based on taste, TDS levels greater than 1,100 mg/L are considered to be unacceptable for drinking water.⁵
- **The pH level can change the taste, feel, and color of drinking water**
pH is a measure of the acidity or alkalinity of your water. pH can alter how contaminants are dissolved in water. Low pH causes pitting of your pipes and fixtures and can make your water taste metallic or sour. If the pH is high, water will feel slippery and have a soda taste. Because your water is at pH 8.93, which is higher than the EPA SMCL range, your water may have a soda taste and be unsuitable for drinking.

ATSDR Recommends That You Use an Alternative Source

As we discussed together in 2013, based on this information, ATSDR recommends that you use an alternative source for your drinking water or treat your drinking water source. You should carefully consider your options about appropriate water treatment. The Penn State Extension Program and the Master Well Owner Network can provide expert advice to help you make decisions about appropriate water treatment.⁶


Even if you are not drinking water from this well but are using it for other household purposes, ATSDR recommends that you take steps to reduce the safety hazards related to the methane level in your well water. We recommend that you monitor your well for methane by:

- Checking your water for bubbles or a cloudy, milky appearance.
- Installing a combustible gas detector in your home.
- Venting your well head and home to prevent buildup of methane gas.

All private well owners should test their drinking water on a regular basis. The Penn State Extension Program offers well water testing at low costs, and this program offers a specific gas/oil water testing package. You can use the Penn State Extension lab testing web site (<http://agsci.psu.edu/aasl/water-testing/drinking-water-testing>) or call the Washington County Penn State Extension office at 724-228-6881 for more information on their private water well testing program.

If you have any additional questions, please feel free to contact me.

Sincerely,



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cc: Dr. Sharon Williams-Fleetwood, ATSDR DCHI Eastern Branch Chief

More information available at:

- ¹ U.S. DOI, "Technical Measures for the Investigation and Mitigation of Fugitive Methane Hazards in Areas of Coal Mining," <http://www.osmre.gov/resources/library/ghm/methane.pdf>.
- ² U.S. EPA, "Sodium in Drinking Water," <http://water.epa.gov/scitech/drinkingwater/dws/ccl/sodium.cfm>.
- ³ World Health Organization. 1979. Sodium, chlorides and conductivity in drinking water. EURO Reports and Studies No. 2. Regional Office for Europe, Copenhagen.
<https://docs.google.com/a/irc.nl/file/d/0BwhPKU71ZwQDVG05RTRzR19xM28/edit?pli=1>
- ⁴ U.S. EPA, "Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals," <http://water.epa.gov/drink/contaminants/secondarystandards.cfm>.
- ⁵ Bruvold WH, Ongerth HJ. Taste quality of mineralized water. Journal of the American Water Works Association, 1969, 61:170. Online. http://www.revicwboard.ca/upload/project_document/EA1314-02_GNWT_Technical_Report_references_-_Tasten_Quality.PDF
- ⁶ Penn State Extension, "Home Water Treatment in Perspective," <http://extension.psu.edu/natural-resources/water/drinking-water/water-testing/water-treatment/home-water-treatment-in-perspective>