

CITY OF TOMAH WATER UTILITY

WELL # 9 RADIUM NOTICE UPDATES

2-1-2017

Well # 9- 24033 Goose Ave., one of Tomah's five wells, produces water with the presence of Radium (226 + 228) in excess of the 5 picocuries per liter (PC/L) drinking water standard set by state and federal agencies.

Well # 9 is currently being operated under the conditions of a Wisconsin DNR consent order which allows corrective action measures to reduce radium at well # 9 be implemented and requires that strict reporting and testing obligations are met.

Since the original maximum contaminant level (MCL) exceedance in May of 2014 and the public notification of the exceedance in March of 2015 the investigative efforts to reduce radium at well # 9 have included well televising, geophysical logging and extensive water quality testing. Using the data from these procedures, the following corrective measures have been taken:

Addition of a well recirculation system, which allows a small amount of pumped water return down the well casing and borehole to provide a fresh, steady flow and minimize any film, which can contribute to higher radium.

Installation of a well packer, which is placed at the bottom of the well casing and designed to seal off undesirable areas of the well and to draw water from areas found during the geophysical logging process to contain less radium. Better overall water quality has been observed since the addition of the packer and supports the installation a permanent liner in its place as a long term improvement.

In 2016 a seven month study using a constant lower volume pumping rate was implemented to provide a continuous flow pattern through the aquifer and draw radium out of the formation in areas where it had been accumulating in the flow patterns before the installation of the well packer. At the conclusion of the study in July, water quality and radium samples were taken from above and below the packer and the well was returned to normal cyclical pumping. In late 2016 2 separate well flushing procedures known as "rawhiding" showed promise of lowering Radium levels, its effectiveness is being evaluated.

Just as the levels of radium in well # 9 increased very slowly over time it is apparent that even with these corrective measures in place and showing signs of improvement it will take some time to return the well to full compliance. We are working with DNR officials and appreciate their cooperation as we strive for a practical, cost effective solution.

Below is an updated notice showing the most recent results of radium levels detected at well # 9

NOTICE

PWS ID: 64266545 - DNR Violation: 46007627
NC - Monroe County

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PERMIT NO. 137

Important Information about your Drinking Water

Levels of Radium, (226 + 228) in Tomah Waterworks water exceeded standard

The samples listed below indicate the presence of Radium, (226 + 228) in excess of the 5PC/L Maximum Contaminant Level (MCL) in your drinking water and are a violation of State and Federal Safe Drinking Water Regulations.

QUARTERLY COMPLIANCE SAMPLES COLLECTED AT WELL 9 FROM MARCH 2015 TO OCT. 2016

HAD AN AVERAGE RADIUM LEVEL (226+228) OF 6.5 PC/L

RADIUM LEVEL FOR THE COMPLIANCE QUARTER ENDING 12-31-2016 IS 6.0 PC/L

SAMPLES COLLECTED AT THE OTHER ACTIVE WELLS DO NOT EXCEED THE MCL

What precautions should be taken at this time?

You do not need to use an alternative (e.g. bottled) water supply. However, if you have specific health concerns, consult your doctor.

What does this mean?

This is not an immediate risk. If it had been, you would have been notified immediately. Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.

What is being done to correct the problem?

Corrective action(s) taken: The city is currently investigating and implementing well rehabilitation measures to reduce the radium levels at well #9. Sample results will be monitored and reported to the DNR to determine the effectiveness. We are working to resolve this problem as soon as possible. We will notify you when the problem is resolved.

A **RADIUM INFORMATION SHEET** is available at tomahonline.com in the Water Department section under Special Notices.

If you have questions regarding the safety of our drinking water, please contact the

Tomah Water Utility
Business Office: (608) 374-7431

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, or businesses). You can do this by posting this notice in a public place or distributing copies by hand or email.

Initial notices of a violation for exceeding radium levels in drinking water were mailed to Tomah water customers on March 12th 2015. Also, a RADIUM INFORMATION SHEET and the 2015 Consumer Confidence Report (CCR), which contains the important information related to Tomah's drinking water including sampling results and the status of any exceedance, were made available at tomahonline.com in the Water Department section under special notices and at the utilities business office, 819 Superior Ave.

The additional information found below may be helpful with any questions or concerns you may have concerning radium

- Please remember THIS IS NOT AN IMMEDIATE HEALTH RISK. If it had been, the well would have been taken offline and you would have been notified immediately. Customers do not need to use an alternative (e.g., bottled) water supply. However, if you have specific health concerns, consult your doctor

- It is not uncommon to find radium in groundwater. From January 1, 2010 to January 1, 2015, 91% of Wisconsin public water supply samples contained measureable levels of Ra-226 and Ra-228 (Radium)

- Radium is not a contaminant, but is a naturally occurring radioactive element that is present in varying amounts in soil, rocks and minerals within the earth's crust. Small amounts of radium can also be found in groundwater supplies. Radium can be present in several forms, called isotopes. The most common isotopes in groundwater are Ra-226 and Ra-228. Ultra low levels of radioactivity are also found naturally in common items such as floor tile, kitty litter and bananas

- The MCL (Maximum Contaminant Level) for radium has been set well below levels for which health effects have been observed and is therefore assumed to be protective of public health. This allows water system time to correct the issue. Public water supplies whose radium levels exceed 5 pCi/L are required to notify the public that the water exceeded the MCL. They also must evaluate ways to reduce the radium levels in the water. Individuals may test their private wells and use the MCL of 5 pCi/L as a guideline.

- Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer. The WI DNR and Dept. of Health and social services have advised that the standard is based on the consumption of ½ gallon of water per day for a lifetime and that the immediate health risk is negligible.

- For example, the US EPA estimates that long-term consumption of water containing 5 pCi/L will cause an estimated 44 additional cancer deaths per every 1 million people exposed; an approximate 0.004% increase ($44/1,000,000 \times 100$) in the risk of cancer development. This risk doubles with long-term consumption of water containing 10 pCi/L and triples with the consumption of 15 pCi/L; approximate increases of 0.009% and 0.013%, respectively, compared to individuals consuming drinking water with radium concentration below federal standards

- Water from well # 9 makes up less than one fifth of the total daily usage. This water is blended with water from the other wells at the reservoirs and in the distribution system, which could lower these radium levels considerably

- The average level of Radium (226 + 228) from well #9 was 7.7 pCi/L in 2014 and 6.5 pCi/L in 2015. Samples collected from the other four active wells did not exceed the MCL for Radium (226 + 228)

- The MCL for combined Ra-226 and Ra-228 is currently 5pCi/l (picocuries per liter of water) A picocurie is a measurement describing the rate of radioactive decay.

- Well #10 experienced similar levels of radium about ten years ago. A treatment facility for radium removal was eventually constructed and has been very effective since.

- For additional water quality specifics, search: widnr > drinking water quality data > public water systems > type Tomah in box > hit find. > click on TOMAH WATERWORKS