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pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
NORTHCENTRAL REGIONAL OFFICE

12/3/2010

[REDACTED]
[REDACTED]
[REDACTED]
CERTIFIED MAIL NO. [REDACTED]

Re: Act 223, Section 208 Determination
Complaint No. 275834
Monroe Twp., Bradford County

Dear [REDACTED]

The Department has investigated the possible degradation of your water supply in response to your 8/6/2010 complaint that recent gas well drilling activities may have affected your water well. On 8/24/2010, the Department collected samples from water well supplying the [REDACTED]. The Department collected additional samples from the water well supplying the [REDACTED] on 10/6/2010. The samples were submitted to the Department's laboratory in Harrisburg for analysis. The analytical report for the samples are included as well as a summary table and documents that will assist you with interpreting the sample results. The Department investigation indicates that gas well drilling has impacted your water supplies to the properties currently occupied by [REDACTED].

The sample results from 8/6/2010 show methane is present at 30.3 mg/l in the Earl Sites water supply. The results also show barium was present at 5.439 mg/l which exceeds the primary drinking water standard of 2 mg/l. Primary drinking water standards are intended to reflect potential dangers to human health. In addition iron, manganese, total dissolved solids (TDS), chloride, and turbidity exceed secondary drinking water standards. Secondary drinking water standards do not indicate a risk to human health but rather reflect the aesthetics of the water (i.e. taste, smell, etc.).

The sample results from the 10/6/2010 show methane is present at 9.58 mg/l in the [REDACTED] water well. The sample collected from the [REDACTED] water well on 10/6/2010 also exceeded the primary drinking water standard for barium and secondary drinking water standards for manganese, iron, and turbidity. The sample collected from the [REDACTED] water well on 10/6/2010 show methane is present at 11.3 mg/l. In addition, manganese, iron, and turbidity exceed secondary drinking water standards.

Methane is the predominant component of natural gas. Drinking water standard limitations have not been established for methane gas and we do not know of any associated health risks. The true level of concern begins above 28 mg/l methane, which is referred to as the saturation level. At this level, under normal atmospheric pressure, the water cannot hold additional methane in

12/3/2010

[REDACTED]

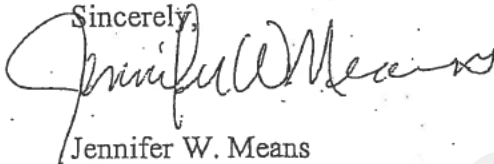
solution. The potential hazard occurs when the water is used for extended periods of time. This may allow the gas to come out of the water and concentrate in the air space of your home or building. There is a physical danger of fire or explosion due to the migration of natural gas into water wells or through soils into dwellings where it could be ignited by sources that are present in most homes/buildings. Natural gas can also cause a threat of asphyxiation, although this is extremely rare.

When the Department is made aware of methane levels greater than 3 mg/l, we notify the water supply owner of the hazards associated with methane in their water supply. Please be aware however, that the methane levels can fluctuate. This means that even with a relatively low level of methane, you should be vigilant of changes in your water that could indicate an increase in methane concentration.

It is the Department's recommendation that all water wells should be equipped with a working vent. This will help alleviate the possibility of concentrating these gases in areas where ignition would pose a threat to life or property. Please note that it is not possible to completely eliminate the hazards of having natural gas in your water supply by simply venting your well.

Monitoring of free gas in the headspaces of the [REDACTED] water wells is ongoing. It is our understanding that Chesapeake is currently providing you with an alternate water supply. The Department is continuing to work with Chesapeake in order to permanently resolve this issue. Should you have any questions concerning this matter, please feel free to contact Caleb Woolever at 570-327-0546.

Sincerely,



Jennifer W. Means
Environmental Program Manager
Oil and Gas Management

Enclosures

cc:
Caleb Woolever
William Kosmer
John Rider
Chesapeake Energy
Complaint File