

Geologic Methane Leakage in Wyalusing PA Area and Well Failure Rates Reported by PADEP Presenter – Barbara Arrindell

First let's start with well failure rates - these are based on Pennsylvania DEP reports of wells drilled, violations and failures as assembled by Prof. Ingraffea of Cornell University.

1,609 wells drilled in 2010. 97 well failures. 6% rate of failure.

1,972 wells drilled in 2011. 140 well failures. 7.1% rate of failure.

1,346 wells drilled in 2012 120 well failures. 8.9% rate of failure.

Consistent with previous industry data, and not improving

I would like to stress that these mistakes, errors, failures result in permanent damage that impacts real places and real communities and real people and their lives and hopes and families...to say nothing of their property values. And these are only the initial failures - as the drilling proceeds, though there are nine listed types of violations possible, for many more wells, "The inspection reports indicate that many failed wells were not issued violations." according to Dr. Ingraffea's research. To pretend that allowing drilling in the Delaware Basin would produce different results is foolish.

So now to look at one of those real places certified as an impacted area by PA DEP. This is along the Susquehanna River in Bradford County where PA DEP fined Chesapeake Appalachia, LLC \$900,000. for causing "stray gas" conditions, impacting the area and contaminating water supplies. DCS sent GasSafetyUSA with a Picarro CRDS machine to record the methane levels from public roads where there were reports of bubbling in the Susquehanna River and in ponds, puddles and in residents drinking water sources. Though it is harder to record methane any distance away from it's source we found elevated methane levels, as shown in figure which combines the roads covered in the June GasSafety run with two of the impact area maps in the "Consent Order" of May 16, 2011. Blue and orange markers indicate the Paradise Road and Sugar Run methane migration impact areas(4 mile radius each) mapped in that Consent Order and show about double the surrounding local methane baseline levels. There is definitely an ongoing methane leakage situation here and contamination of drinking water sources that has continued since September, 2010 through the GasSafety methane survey in June, 2013.

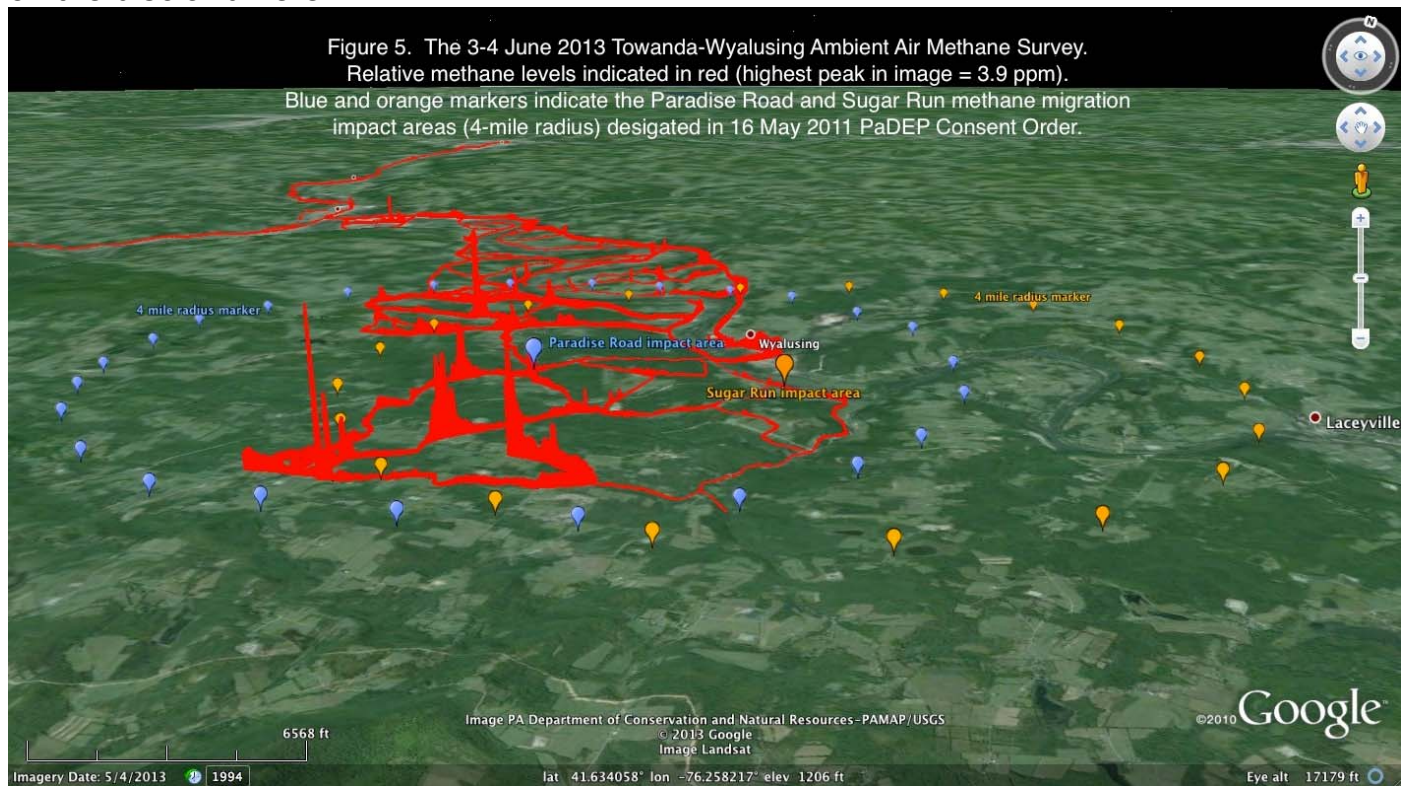
IN OTHER WORDS THE AREA IS STILL IMPACTED AND THE WATER SOURCES ARE STILL CONTAMINATED FROM DRILLING.

The Conclusion from the September, 2013, GasSafety Wyalusing Report

“Methane from any source rapidly diffuses and rises in the air. Consequently, detection of possible methane sources from any distance away requires extremely sensitive measurement capabilities. The GSI survey approach takes advantage of extremely sensitive measurement instrumentation to detect small increases in ambient air methane levels as an indication of probable methane emissions sources in a given area. Based on the data collected using that equipment, we conclude that the Towanda-Wyalusing area is probably substantially impacted by methane emissions from shale gas wells both within and beyond the survey area. The coincidence of two DEP methane migration impact areas, Paradise Road and Sugar Run, and the most marked elevated ambient air methane levels suggests there are still gas control problems associated with the shale gas wells there, as well as in another documented impact area in Leroy Township also cursorily measured following the main survey. A rapid water test in the Leroy area confirmed the water in that area is still contaminated with methane. These survey results suggest measures taken by gas well operators with regard to methane migration problems that have occurred in these three areas have likely been only partially effective.”

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The figure is from the GasSafety Report on these Wyalusing area measurements - found on the disc and here:



“Stray Gas” Definition • A gaseous material that is from an undetermined source that is located in area that may become hazardous. • Hazardous conditions can be flammable, toxic, or oxygen reducing that could cause suffocation.

http://pa.water.usgs.gov/projects/energy/stray_gas/presentations/3_840_Graeser.pdf

\$900,000. fine - <http://www.businessweek.com/ap/financialnews/D9N9C7981.htm>
Consent order referenced here is #161 in this Determination letters folder on the disc
and at this link:
<https://www.dropbox.com/s/ndgx7fe2hg8f2dg/161%20Consent%20Agreem%20Susquahana%20River.pdf>

CRDS http://www.picarro.com/technology/cavity_ring_down_spectroscopy

<http://www.damascuscitizensforsustainability.org/wp-content/uploads/2012/11/PSECementFailureCausesRateAnalysisIngraffea.pdf>

Table 1. Violation Codes Used to Identify Wells with Violations for Figure 7.

78.73A - Operator shall prevent gas and other fluids from lower formations from entering fresh groundwater.

78.81D2 - Failure to case and cement properly through storage reservoir or storage horizon

78.83A - Diameter of bore hole not 1 inch greater than casing/casing collar diameter

78.73B - Excessive casing seat pressure

78.83GRNDWTR - Improper casing to protect fresh groundwater

78.83COALCSG - Improper coal protective casing and cementing procedures

78.85 - Inadequate, insufficient, and/or improperly installed cement

78.86 - Failure to report defective, insufficient, or improperly cemented casing

207B - Failure to case and cement to prevent migrations into fresh groundwater