



# EXHIBIT A-44



COMMONWEALTH OF PENNSYLVANIA  
GOVERNOR'S OFFICE OF GENERAL COUNSEL

February 11, 2014

**Southwest Regional Counsel**

**412-442-4262**

**Fax: 412-442-4267**

*Via E-mail and First Class Mail*

Kendra L. Smith, Esquire  
SMITH BUTZ  
Bailey Center I, Southpointe  
125 Technology Drive, Suite 202  
Canonsburg, PA 15317

Re: *Haney et al v. Range Resources-Appalachia, et al.*  
Docket Nos. 2012-3559 and 2012-7402  
Lazor Affidavit.

Dear Kendra:

At last week's deposition of Nicholas Lazor, you asked Mr. Lazor to perform professional work that was not part of the Department's Southwestern Pennsylvania Marcellus Shale Short-term Ambient Air Sampling Report. Specifically you asked Mr. Lazor to calculate Hazard Quotient values for methyl mercaptan using the results of the Open Path sampling at the Yeager Impoundment on July 19, 2010 (pm), July 20, 2010 (am & pm), July 21, 2010 (am & pm), July 22, 2010 (am). You also asked Mr. Lazor to recalculate the Hazard Index for these sampling events including the calculated HQ for methyl mercaptan. I objected to the questions because they required Mr. Lazor to perform professional work that was not part of the work he did in the course of his employment, and beyond the scope of discovery. Judge Odell-Seneca overruled my objections, and ordered Mr. Lazor to submit his calculations via affidavit on February 11, 2014.

Thought the Judge orally directed the affidavit to be delivered to her chambers, I was later informed by the Judge's law clerk that the Affidavit should be delivered to you rather than to chambers. Accordingly, Mr. Lazor's affidavit and attachments responding to your questions regarding methyl mercaptan at the Yeager Impoundment are attached to this letter. The calculations were performed following the same methodology that was employed in the Department's Southwestern Pennsylvania Marcellus Shale Short-term Ambient Air Sampling Report.



Kendra L. Smith, Esquire

2

February 11, 2014

Feel free to contact me if you have any questions.

Sincerely,

Michael J. Heilman  
Assistant Regional Counsel

Enclosure

c: N. Lazor, RCSOB (w/)  
R. Watling, SWOCC (w/)

A0004588



**AFFIDAVIT OF NICHOLAS LAZOR**

I, Nicholas Lazor, make the following affidavit pursuant to the direction of the Washington County Court of Common Pleas on February 7, 2014.

1. I am an Environmental Program Manager employed as the Chief of the Air Quality Monitoring Division in the Bureau of Air Quality of the Pennsylvania Department of Environmental Protection ("Department" or "DEP"). My office is located in the Rachel Carson State Office Building, 400 Market Street, Harrisburg, PA.

2. In 2010, I was involved with a short-term air quality study of air emissions near Marcellus Shale gas operations in southwestern Pennsylvania. Similar studies were undertaken in the northcentral and northeastern regions of Pennsylvania.

3. The primary purpose of these short-term screening studies was to try to determine the presence of air contaminants attributable to Marcellus Shale gas development, and to gather information to determine if longer term studies are warranted.

4. Sampling for the short-term air quality study included sampling by the DEP Bureau of Laboratories' Mobile Analytic Unit using an Open Path Fourier Transform Infrared Spectrometer ("Open Path"), which measures contaminants in air using an infrared beam of light. The Open Path analyzes compounds in the air utilizing consecutive two minute sampling windows. In addition, canisters that collect air at a constant rate over a 24 hour period were deployed. The collected air samples were analyzed using a Gas Chromatograph/Mass Spectrometer (GC/MS) at the Department's Harrisburg laboratory. The Department's Bureau of Laboratories provided sample analysis results to the Bureau of Air Quality.

5. The Department produced a report of the southwest Pennsylvania short-term air quality study entitled "Southwestern Pennsylvania Marcellus Shale Short-Term Ambient Air

Sampling Report. ("Southwest Short-Term Report"). The Southwest Short-Term Report is dated November 1, 2010.

6. The Southwest Short-Term Report also included a limited characterization of acute risk from certain compounds that were found in the sampling. Specifically, the sampling results were compared to available California EPA recommended exposure limits (REL), Environmental Protection Agency (EPA) acute exposure guidelines (AEGL-1 and AEGL-2) and ERPG which is an acronym for Emergency Response Planning Guidelines developed by the American Industrial Hygiene Association (ERPG-1) (collectively "reference concentrations"). ERPG values do not contain safety factors usually incorporated into exposure guidelines and are designed to serve as planning tools, not standards to protect public health. These reference concentrations are concentrations of a particular compound below which adverse health effects are not expected to occur from a period of continuous exposure. Reference concentrations exist for different time periods. The time period of the sampling and the reference concentration should be consistent. The REL, AEGL and RPG values used in this report placed the ambient data in an understandable context.

7. The Air Toxics and Risk Assessment section of the Division of Permits in the Bureau of Air Quality, provided the reference concentrations and standards used in the Southwest Short-Term Report.

8. In the Southwest Short-Term Report acute risk for an individual compound during each sampling event was expressed as a Hazard Quotient (HQ), which is the compound's concentration divided by the applicable reference concentration.

9. In the Southwest Short-Term Report acute risk for each sampling event at a particular site was expressed as a Hazard Index (HI), which is the sum of all of the HQs calculated for various compounds during the sampling event.

10. The Department relies upon the EPA Dose-Response Assessment for Assessing Health Risks Associated with Exposure to Hazardous Air Pollutants online tool to provide an accurate compilation of all relevant chronic and acute dose response values. If a dose response value for a particular compound was not listed at the time of the study then calculations for hazard quotient and hazard index were not compiled as part of the short-term studies.

11. The Air Toxics and Risk Assessment Section of the Division of Permits in the Bureau of Air Quality did not provide a reference concentration or standard for methyl mercaptan as it was not listed in the above referenced tool at the time of the studies. Accordingly, the Southwest Short-Term Report did not calculate an HQ for any of the sampling events in the Southwest Short-Term Report, and HI values do not reflect methyl mercaptan.

12. I understand that I have now been directed to calculate HQ values for methyl mercaptan using a standard produced by counsel for plaintiffs at my February 7, 2014 deposition in *Haney et al v. Range Resources et al*, Dkt. Nos. 2012-3534, 2012-7402. The standard is contained in deposition exhibit 18 and is titled "Current AIHA ERPG Values (2009)." The specific standard I have been directed to use is ERPG-1 of 0.005 ppm. I understand that this is a one-hour standard.

13. Neither my employer, the Commonwealth of Pennsylvania, nor I, are parties in *Haney et al v. Range Resources et al*, Dkt. Nos. 2012-3534, 2012-7402.

14. I have been directed to calculate HQ values using the 2009 ERPG-1 value for the following sampling events by the Open Path at the Yeager Impoundment, Amwell Township,

Washington County: July 19, 2010 (pm), July 20, 2010 (am), July 20, 2010 (pm), July 21, 2010 (am), July 21, 2010 (pm), and July 22, 2010 (am).

15. I have also been directed to recalculate the HI by including any HQ calculated for methyl mercaptan for the following Open Path sampling events at the Yeager Impoundment, Amwell Township, Washington County: July 19, 2010 (pm), July 20, 2010 (am), July 20, 2010 (pm), July 21, 2010 (am), July 21, 2010 (pm), and July 22, 2010 (am).

16. The HQ and HI values I have been directed to perform, described in Paragraphs 12-14, above, required me to undertake new professional work. These calculations were not performed as part of the preparation of the Southwest Short-Term Report.

17. Each Open Path sampling event at the Yeager Impoundment was approximately seven hours long. The Open Path took 2 minute readings throughout each period.

18. The Yeager Impoundment was used as part of a gas company's operations. It was not a residential area, and was not open to the general public.

19. In making these calculations of HQ and recalculation of HI I will use the same methodology and conservative assumptions that were used in the Southwest Short-Term Report.

20. The conservative assumptions that were used in the Southwest Short-Term Report result in conditions that are more severe than those that actually existed during the sampling and, therefore, may overstate actual risk.

21. The primary conservative assumptions used are the following:

a. The maximum 2 minute concentration for methyl mercaptan determined by the Open Path in each sampling event was assumed to have existed continuously for an entire hour.

b. Though the Yeager Impoundment was not a residential area or accessible to the public, it was assumed that it is an area where people would be present continuously.

22. Another reference concentration for methyl mercaptan also exists. It is an AEGL-2 developed by the EPA. The AEGL-2 for methyl mercaptan is 40 ppb.

23. In the Southwest Short-Term Report when more than one reference concentration exists for a compound, HQ and HI were calculated for each reference concentration. I followed the same approach here and calculated HQ and revised HI values for ERPG-1 and AEGL-2 for methyl mercaptan.

24. The HQ calculations for methyl mercaptan at the Yeager Impoundment are set forth in Attachment A to this Affidavit.

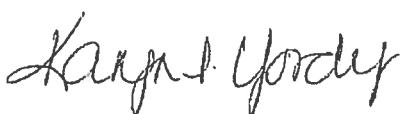
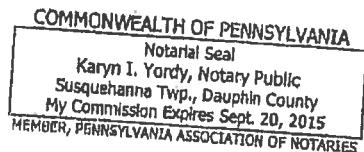
25. The revised HI values for the Yeager Impoundment, including methyl mercaptan, are set forth in Attachment B to this Affidavit.

The information set forth in this Affidavit and the attachments to it is true to the best of my information, knowledge and belief.



Nicholas Lazor

Sworn and subscribed before  
me this 11th day of February, 2014



**Attachment A**

**Calculations**

**ppb to ug/m3**

$\text{ug/m3} = (\text{ppb} \times \text{MW}) / (\text{MV})$  where:

MW = Molecular weight in grams of methyl mercaptan (48.11)

MV = Molar volume in liters at standard conditions (298\*0.08206) = 24.45388

**Hazard Quotient**

$\text{HQ} = (\text{ug/m3}) / \text{RfC}$

**HQ Calculations**

Date	Time	RfC	Max ppb	times MW	divided by MV	equals ug/m3	divided by RfC	equals HQ
7/19/2010	5:40 pm - 12:00 am	AEGL-2	726	48.11	24.45388	1428	92466.7	0.02
		ERPG-1	726	48.11	24.45388	1428	9.8	145.75
7/20/2010	4:45 am - 12:00 pm	AEGL-2	1249	48.11	24.45388	2457	92466.7	0.03
		ERPG-1	1249	48.11	24.45388	2457	9.8	250.74
7/21/2010	5:00 pm - 12:00 am	AEGL-2	1003	48.11	24.45388	1973	92466.7	0.02
		ERPG-1	1003	48.11	24.45388	1973	9.8	201.36
7/21/2010	4:30 am - 12:00 pm	AEGL-2	135	48.11	24.45388	266	92466.7	0.00
		ERPG-1	135	48.11	24.45388	266	9.8	27.10
7/22/2010	7:00 pm - 12:00 am	AEGL-2	156	48.11	24.45388	307	92466.7	0.00
		ERPG-1	156	48.11	24.45388	307	9.8	31.32
7/22/2010	5:00 am - 12:00 pm	AEGL-2	604	48.11	24.45388	1188	92466.7	0.01
		ERPG-1	604	48.11	24.45388	1188	9.8	121.25



Table: PA BOL OPP-TIR Results  
Site: Yeager Wastewater Impoundment

ATTACHMENT B

DRAFT	Sample	Method	Result	LOD	LOQ	Unit	Method	Result	LOD	LOQ	Unit
	1,2,4-Timethylbenzene		0.00	0.00	0.00	0.00					
	2-Methoxy-2-Methylpropane (MTBE)		0.00	0.00	0.00	0.00					
	2-Methyl Pentane		0.00	0.00	0.00	0.00					
	3-Methyl Pentane		0.00	0.00	0.00	0.00					
	Benzene		0.00	0.00	0.00	0.00					
	Carbon Disulfide		0.00	0.00	0.00	0.00					
	Carbon Monoxide		0.00	0.00	0.00	0.00					
	Carbon Sulfide		0.00	0.00	0.00	0.00					
	Chloromethane		0.00	0.00	0.00	0.00					
	Dimethyl sulfide		0.00	0.00	0.00	0.00					
	Ethane		0.00	0.00	0.00	0.00					
	Ethylbenzene		0.00	0.00	0.00	0.00					
	Formic acid		0.00	0.00	0.00	0.00					
	Hydrogen Chloride		0.00	0.00	0.00	0.00					
	Iso-Butane		0.00	0.00	0.00	0.00					
	Methane		0.00	0.00	0.00	0.00					
	Methanol		0.00	0.00	0.00	0.00					
	Methyl mercaptan		0.02	0.03	0.02	0.00		0.01	145.76	250.74	201.36
	m-Xylen		0.00	0.00	0.00	0.00		0.01	271.0	31.32	121.25
	Naphthalene		0.00	0.00	0.00	0.00					
	n-Butane		0.00	0.00	0.00	0.00					
	n-Heptane		0.00	0.00	0.00	0.00					
	n-Octane		0.00	0.00	0.00	0.00					
	n-Pentane		0.00	0.00	0.00	0.00					
	o-Xylene		0.00	0.00	0.00	0.00					
	Ozone		0.00	0.00	0.00	0.00					
	Propane		0.00	0.00	0.00	0.00					
	p-Xylene		0.00	0.00	0.00	0.00					
	Syrene		0.00	0.00	0.00	0.00					
	Sulfur Dioxide		0.00	0.00	0.00	0.00					
	Toluene		0.00	0.00	0.00	0.00					
	Hazard Index		0.00	0.00	0.00	0.00		0.02	0.03	0.02	0.00
								0.00	0.01	145.75	250.74
										201.36	271.0
										31.32	31.32
											121.25



COMMONWEALTH OF PENNSYLVANIA  
GOVERNOR'S OFFICE OF GENERAL COUNSEL

February 12, 2014

Southwest Regional Counsel

412-442-4262  
Fax: 412-442-4267

*Via E-mail and First Class Mail*

Kendra L. Smith, Esquire  
SMITH BUTZ  
Bailey Center I, Southpointe  
125 Technology Drive, Suite 202  
Canonsburg, PA 15317

Re: *Haney et al v. Range Resources-Appalachia, et al.*  
Docket Nos. 2012-3559 and 2012-7402  
Corrected Lazor Affidavit.

Dear Kendra:

This morning I notified you that there is a typo in Paragraph 22 of the Nicholas Lazor's Affidavit, which was e-mailed to you yesterday afternoon. The AEGL-2 value listed in Paragraph 22 was "40 ppb." This value should have been "47 ppm." The HQ calculations in Attachment A used 47 ppm; only the description in Paragraph 22 was in error. Accordingly, Mr. Lazor's Corrected Affidavit, dated February 12, 2014, is attached to this letter, and the Affidavit provided yesterday (dated February 11, 2014) should be discarded.

I apologize for any confusion or inconvenience that this typo may have caused to you. Feel free to contact me if you have any questions.

Sincerely,

Michael J. Heilman  
Assistant Regional Counsel

Enclosure

c: N. Lazor, RCSOB (w/)  
R. Watling, SWOCC (w/)



### CORRECTED AFFIDAVIT OF NICHOLAS LAZOR

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22. Another reference concentration for methyl mercaptan also exists. In 2010 the AEGL-2 for methyl mercaptan would have been 47 ppm.

23. In the Southwest Short-Term Report when more than one reference concentration exists for a compound, HQ and HI were calculated for each reference concentration. I followed the same approach here and calculated HQ and revised HI values for ERPG-1 and AEGL-2 for methyl mercaptan.

24. The HQ calculations for methyl mercaptan at the Yeager Impoundment are set forth in Attachment A to this Affidavit.

25. The revised HI values for the Yeager Impoundment, including methyl mercaptan, are set forth in Attachment B to this Affidavit.

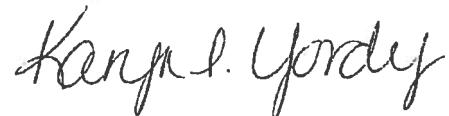
The information set forth in this Affidavit and the attachments to it is true to the best of my information, knowledge and belief.



Nicholas Lazor

Sworn and subscribed before  
me this 12<sup>th</sup> day of February, 2014

COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Karyn I. Yordy, Notary Public  
Susquehanna Twp., Dauphin County  
My Commission Expires Sept. 20, 2015  
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES



**Attachment A**

**Calculations**

**ppb to ug/m<sup>3</sup>**

ug/m<sup>3</sup> = (ppb x MW)/(MV) where:

MW = Molecular weight in grams of methyl mercaptan (48.11)

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**Hazard Quotient**

HQ = (ug/m<sup>3</sup>) / RfC

**HQ Calculations**

Date	Time	RfC	Max ppb	times MW	divided by MV	equals ug/m <sup>3</sup>	divided by RfC	equals HQ
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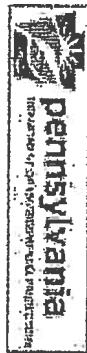


Table: PA BOL OPFTIR Results  
Site: Yeager Wastewater Impoundment

ATTACHMENT B

DRAFT

Compound	Hazardous Concentration											
	Evening	Morning										
2-Methoxy-2-methylpropane (MIB)	—	—	—	—	—	—	0.00	0.00	—	—	—	—
2-Methyl Butane	—	—	—	—	—	—	—	—	—	—	—	—
2-Methyl Pentane	—	—	—	—	—	—	—	—	—	—	—	—
Benzene	—	—	—	—	—	—	—	—	—	—	—	—
Carbon Disulfide	—	—	—	—	—	—	—	—	—	—	—	—
Carbon Monoxide	—	—	—	—	—	—	—	—	—	—	—	—
Carbonyl Sulfide	—	—	—	—	—	—	—	—	—	—	—	—
Chloromethane	—	—	—	—	—	—	—	—	—	—	—	—
Dimethyl sulfide	—	—	—	—	—	—	—	—	—	—	—	—
Ethene	—	—	—	—	—	—	—	—	—	—	—	—
Ethylbenzene	—	—	—	—	—	—	—	—	—	—	—	—
Formaldehyde	—	—	—	—	—	—	—	—	—	—	—	—
Hydrogen Chloride	—	—	—	—	—	—	—	—	—	—	—	—
Hydrogen Sulfide	—	—	—	—	—	—	—	—	—	—	—	—
Iso-Butane	—	—	—	—	—	—	—	—	—	—	—	—
Methane	—	—	—	—	—	—	—	—	—	—	—	—
Methanol	0.00	—	—	—	0.00	—	—	—	0.00	—	—	—
Methyl mercaptan	—	—	—	—	0.02	0.03	0.02	0.00	0.00	0.01	145.75	250.74
m-Xylene	—	—	—	—	—	—	—	—	—	—	201.36	27.10
Naphthalene	—	—	—	—	—	—	—	—	—	—	31.32	121.25
n-Bulane	—	—	—	—	—	—	—	—	—	—	—	—
n-Haptene	—	—	—	—	—	—	—	—	—	—	—	—
n-Hexane	—	—	—	—	—	—	—	—	—	—	—	—
Nitric Acid	—	—	—	—	—	—	—	—	—	—	—	—
Nitric Oxide	—	—	—	—	—	—	—	—	—	—	—	—
Nitrogen Dioxide	—	—	—	—	—	—	—	—	—	—	—	—
Nitrous Acid	—	—	—	—	—	—	—	—	—	—	—	—
n-Octane	—	—	—	—	—	—	—	—	—	—	—	—
Styrene	—	—	—	—	—	—	—	—	—	—	—	—
Sulfur Dioxide	—	—	—	—	—	—	—	—	—	—	—	—
Toluene	—	—	—	—	0.02	0.03	0.02	0.00	0.00	0.01	145.75	250.74
Hazard Index	0.00	—	—	—	—	—	—	—	—	—	201.36	27.10
											31.32	121.25