

NM State Land Office
Proposed amendment to 19.2.100 NMAC, Section 23

May 28, 2026

Re: Amendments to the Oil and Gas Financial Assurance Rule Public Engagement

To NMSLO members,

Please include this *Environmental Health Project - Counselor Chapter Air Quality Assessment Results for Particulate Matter (PM2.5) and Volatile Organic Compounds (VOCs)* for determining additional risk mitigation costs in the proposed amendments to the Oil and Gas Financial Assurance Rule.

Local community data on health impacts from air pollution from oil and gas operations is difficult to find in NM and still more difficult to keep updated and current. The proposed increased minimum financial assurance requirements for oil and gas leases is a long-needed requirement by NM State Land Office to properly plug inactive wells and remediate spills and decaying leaking infrastructure in SLO oil fields.

The oil/gas industry created wasteland in the San Juan Basin now encircles many communities and Navajo chapters with a constant source of toxic emissions and leaks. When wells are abandoned, contamination levels are reduced but still continuous and harmful.

Single high intensity exposures to leaked gas emissions or wastewater spills can lead to sudden collapse, short or long term illness or death. The proposed higher bonding rules would enable the prompt and appropriate closure of the thousands of abandoned wells that pose such a threat to rural New Mexicans living in the oil "play" field communities.

The additional required Annual Reporting (19.2.100.23(D)) would also establish a means to communication on the status of operations and any remediation or reclamation efforts that would be helpful and more reassuring to the public.

Please note our strong support for the draft bonding rule and requirements.

Best regards,

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SOUTHWEST PENNSYLVANIA ENVIRONMENTAL HEALTH PROJECT

COUNSELOR CHAPTER AIR QUALITY

ASSESSMENT RESULTS:
Particulate Matter (PM_{2.5}) and
Volatile Organic Compounds
(VOCs)



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Dear Counselor residents,

Thank you for your participation in the Environmental Health and air Monitoring. We are providing you with an analysis of the data collected from several Specks used in your community in April of 2018. With information from these monitors, we can provide an estimate of baseline outdoor air quality in your community for this time period. ***If you have any questions please do not hesitate to contact us at: sjoginpally@environmentalhealthproject.org or clewis@environmentalhealthproject.org.***

What is in this Report? This report gives a summary of results from community air monitoring. It shows how these results compare to other results that EHP has reviewed in New York, Ohio, California and Pennsylvania. Pages 3- 5 shows the community results for PM_{2.5} monitoring. You will also find results from nearby Volatile Organic Compounds (VOCs) sampling on pages 6-10. VOC samples, at four different locations, were collected near natural gas activity sites for a 24-hour period. Samples were collected on May 23rd and May 30th 2018.

OUTDOOR PM_{2.5} RESULTS:

The figures on page 4 (1A-E) show the range of results of PM_{2.5} monitoring for five components measured (Figure 1A-peaks per day, Fig. 1B-duration of peaks, Fig. 1C-time between peaks, Fig. 1D- baseline air quality, and Fig. 1E- accumulated particle matter) using **Speck** monitor data. **The results are shown in relation to the entire Speck monitor data reviewed so far at EHP. The PM_{2.5} data for this location indicate that majority of locations had a higher baseline levels and accumulated particle count.** Other variables like peaks per day, duration of peaks and time between peaks are either below or above the average. It is normal for peaks to occur occasionally, and there are many possible sources of these peaks. The use of wood stoves, outdoor barbeque and heating with wood in winter can be significant sources of these peaks (see recommendations for home air quality on page 11 for more information). The wind direction and wind speed from the natural gas activity site like drilling and compressor site or another nearby source could also affect these results.

We monitored for PM_{2.5} at eight residences/locations in your area. In the bar charts below, each blue dot represents the average results for outdoor air levels at one home. The red bar marks the average (median) of all results compiled by EHP.

Answers to questions from Counselor HIA Committee

How does Counselor compare with other communities being monitored by EHP?

Baseline PM_{2.5} levels in other communities are generally below 10 micrograms/meter³. 6 out of the 8 monitored locations in Counselor Chapter recorded levels between 10-25 micrograms/meter³, with only 2 locations reading at the lower average PM_{2.5} level. Also, the total particle count over the 32-day monitoring period was at or above average levels of accumulated PM_{2.5}.

Are Counselor's PM_{2.5} levels considered high?

Yes, because they are higher than average PM_{2.5} levels recorded at similar distances from oil wells in communities in New York, Ohio, California and Pennsylvania. Counselor is the first community in a southwestern state to be monitored by the SWPA Environmental Health Project.

What are some reasons for Counselor's higher levels of PM 2.5 and Formaldehyde?

- Many homes in Counselor are located closer than a mile to one or more operating oil and gas wells. The recommended setback distance between occupied structures and wells is now 6600', or 1¼ mile.
- Many homes are "downwind" of wells that emit Volatile Organic Compounds (VOCs) and Formaldehyde (which can be formed from methane emissions in the presence of sunlight) that can have harmful health effects on residents.
- Many homes are located on open plains with few trees that experience frequent wind often at high speed, which increases residents' exposure to greater levels of PM_{2.5}.

Figure 1A. Peaks per day: This dot plot shows the average number of large-scale changes (peaks) in air quality per day recorded by each Speck over a 32-day period. These results range from about 2 to 4 peaks per day.

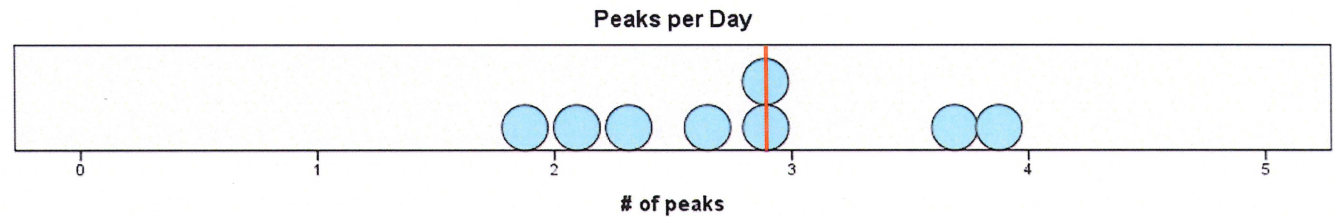


Figure 1B. Duration of peaks: This dot plot shows the average length of time peaks lasted. These results show a range from about 21 - 28 minutes per peak.

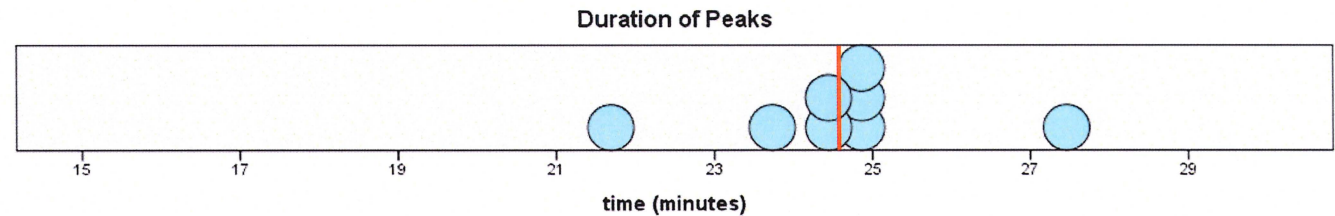


Figure 1C. Time between peaks: This dot plot shows the average length of time between peaks. The fewer the number of peaks, the greater the time period between peaks. These results range from about 6-13 hours, with three locations above average.

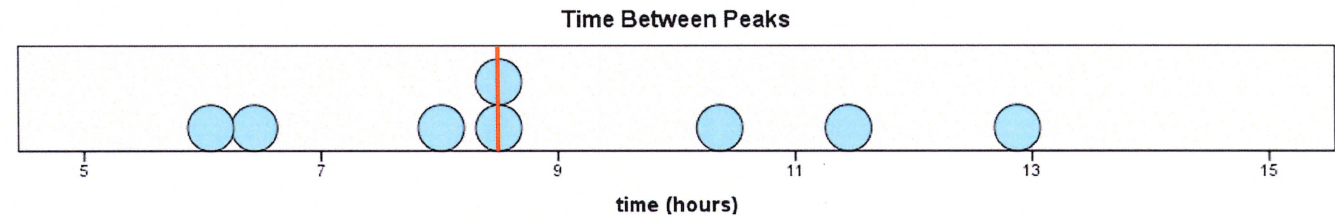


Figure 1D. Baseline air quality: This dot plot shows the level of particles generally found outside when peaks are not occurring.

These results show 6 locations being higher than average baseline outdoor air quality.

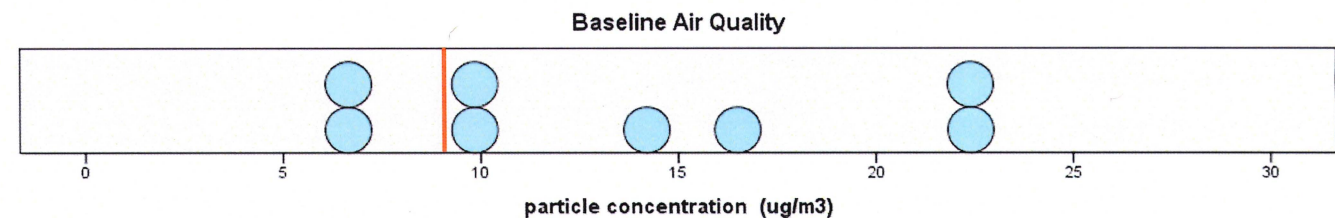
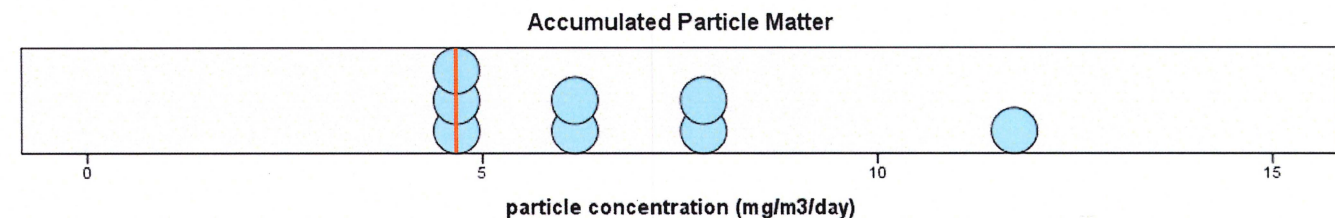
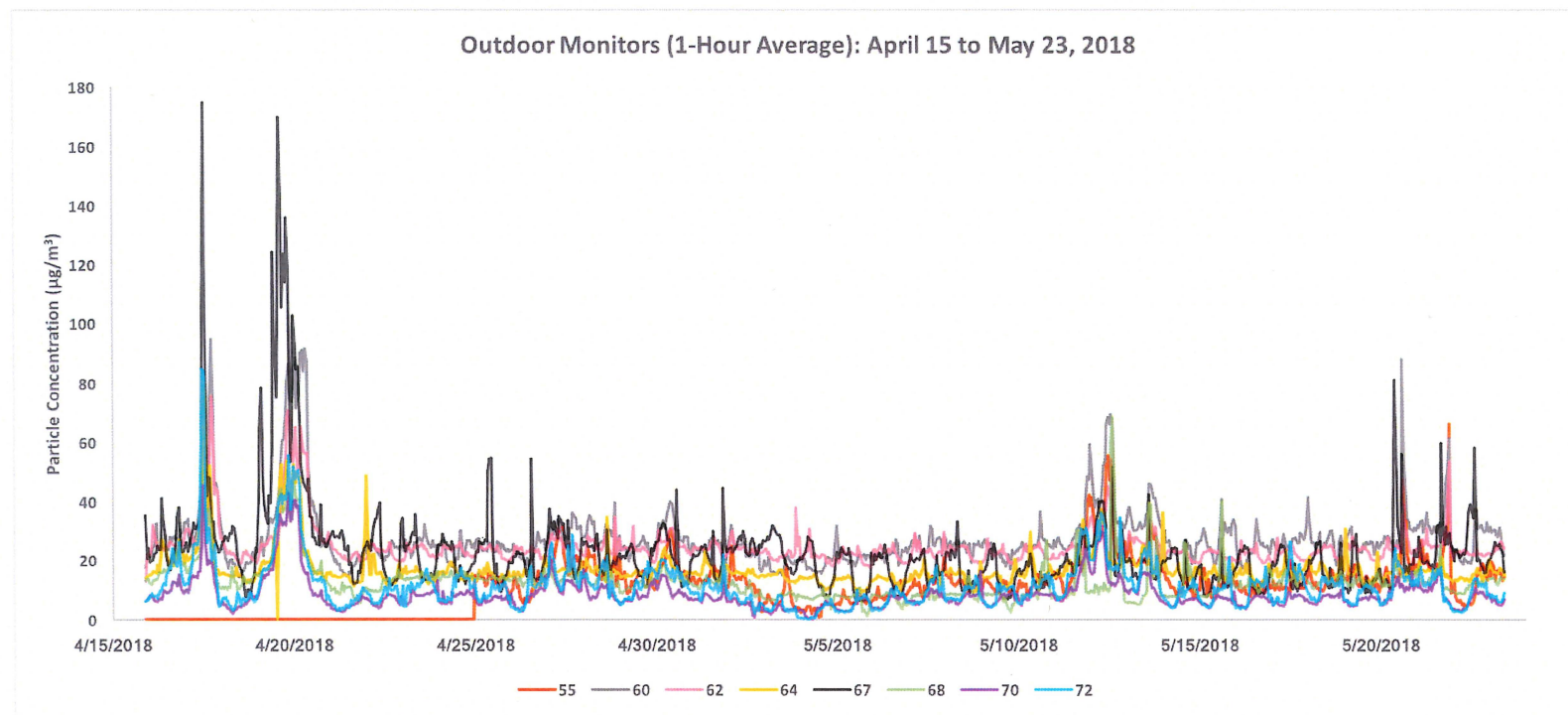


Figure 1E. Accumulated particle matter: This dot plot shows the total sum of particle counts over the 32-day period for each outdoor Speck. These results show a range at and above the average levels of accumulated PM2.5.



Figures 2 show the results from the eight outdoor Speck monitors placed in the community for 32 days. You can see that there were many times when peaks in PM_{2.5} exposure occurred simultaneously at various locations, most notably on 4/17 and 4/19. **If a source of air pollution is nearby, these conditions could cause increased exposure for residents. Chemicals from the source may combine with the particulate matter and travel to the deep regions of the lungs to cause respiratory problems or gain access to other parts of the body through blood-gas exchange.** Indoor Speck results have been provided to individual residents.

Figure 2 Outdoor PM_{2.5} results from 4 locations from April 15 – May 23, 2018



Monitoring for Volatile Organic Compounds (VOCs)

Using four summa canisters, you collected four 24-hour air samples and tested for 75 chemicals. The lab detected 3 on 5/23 and 7 on 5/30 of the 75 VOCs. Although exposure levels are below the threshold, we believe continued or longer duration of exposure to low levels may also significantly impact health. Table 1 shows which chemicals were found, potential health effect parameters and a color-coded analysis about the safety of this particular exposure. For each chemical identified there is a *threshold to consider action*. This is the level at which residents should be concerned about harmful exposure to a chemical. In this sample all chemicals were found at levels below what we think would cause immediate health effects. We still recommend taking action to limit your exposures (see recommendations at the end of the report) and providing this information to your Physician or primary health care provider. You also sampled for hydrogen sulfide and formaldehyde using separate badges. **No hydrogen sulfide was detected. Formaldehyde was detected at all sampling events at levels that have the potential to impact health. It is associated with incomplete fossil fuel combustion and can be formed from methane in the presence of sunlight.** Formaldehyde results are found in Table1.

Use the results key to quickly review the VOC results.

Use this key as your at-a-glance to quickly find items with an orange button that have the potential to impact your health or items with a red button that pose a significant and possible immediate concern for health.

RESULTS KEY



No action recommended due to no current health concern



Action recommended due to potential health concern

Immediate action strongly recommended due to significant and/or immediate health concern

Table1. Outdoor VOC readings in the community:Source: <http://www.atsdr.cdc.gov/mrls/mrlolist.asp>*Sample 1 collected on May 30th/2018*

Air Test Parameter	Threshold Source	Threshold to Consider Action*	Outdoor Air Test Result	Potential Health Effects of Parameter	Analysis
Acetone	ATSDR	26 ppm	3.6 ppbV (0.0036 ppm)	Neurological effects	
Chloromethane	OSHA	50 ppm (1.66 ppm)*	0.75 ppbV (0.00075 ppm)	Neurological and cardiovascular effects. May damage liver and kidneys.	
Dichlorodifluoromethane	NIOSH REL	1000 ppm (30 ppm)*	0.58 ppbV (0.00058 ppm)	Cardiovascular and Neurological effects	
Trichloroethene	OSHA	100 ppm (3.3 ppm)*	0.22 ppbV (0.00022 ppm)	Neurological and dermatological effects	
Formaldehyde	ATSDR	0.003 ppm	0.0085 ppm	Respiratory effects, carcinogen	

* Exposure limits from NIOSH are for an 8-hr workday schedule. EHP computes lower thresholds for residential areas for 24 hours of exposure, and also includes a calculation for vulnerable individuals including children and the elderly and others who may be more susceptible to these contaminants. These thresholds are found in parentheses, see Chloromethane (1.66ppm) for example.

Sample 2 collected on May 30th/2018

Air Test Parameter	Threshold Source	Threshold to Consider Action*	Outdoor Air Test Result	Potential Health Effects of Parameter	Analysis
Acetone	ATSDR	26 ppm	4.3 ppbV (0.0043 ppm)	Neurological effects	
Chloromethane	OSHA	50 ppm (1.66 ppm)*	0.69 ppbV (0.00069 ppm)	Neurological and cardiovascular effects. May damage liver and kidneys.	
Dichlorodifluoromethane	ATSDR	5 ppm (acute exposure) 0.06 (chronic exposure)	0.57 ppbV (0.00057 ppm)	Eye and throat irritation; possible carcinogen	
Hexane	ATSDR	0.6 ppm	0.56 ppbV (0.00056 ppm)	Neurological effects	
Methylene chloride	OSHA	25 ppm (0.83 ppm)*	2.9 ppbV (0.0029 ppm)	Neurological effects	

Formaldehyde	ATSDR	0.003 ppm	0.0070 ppm	Respiratory effects, carcinogen	
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* Exposure limits from NIOSH are for an 8-hr workday schedule. EHP computes lower thresholds for residential areas for 24 hours of exposure, and also includes a calculation for vulnerable individuals including children and the elderly and others who may be more susceptible to these contaminants. These thresholds are found in parentheses, see Chloromethane (1.66ppm) for example.

Sample 3 collected on May 23rd/2018

Air Test Parameter	Threshold Source	Threshold to Consider Action*	Outdoor Air Test Result	Potential Health Effects of Parameter	Analysis
Acetone	ATSDR	26 ppm	2.1 ppbV (0.0021 ppm)	Neurological effects	
Chloromethane	OSHA	50 ppm (1.66 ppm)*	0.69 ppbV (0.00069 ppm)	Neurological and cardiovascular effects. May damage liver and kidneys.	
Dichlorodifluoromethane	ATSDR	5 ppm (acute exposure) 0.06 (chronic exposure)	0.56 ppbV (0.00056 ppm)	Eye and throat irritation; possible carcinogen	

Formaldehyde	ATSDR	0.003 ppm	0.0090 ppm (Sampled on 05/30/2018)	Respiratory effects, carcinogen	
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* Exposure limits from NIOSH are for an 8-hr workday schedule. EHP computes lower thresholds for residential areas for 24 hours of exposure, and also includes a calculation for vulnerable individuals including children and the elderly and others who may be more susceptible to these contaminants. These thresholds are found in parentheses, see Chloromethane (1.66ppm) for example.

Sample 4 collected on May 30th /2018

Air Test Parameter	Threshold Source	Threshold to Consider Action*	Outdoor Air Test Result	Potential Health Effects of Parameter	Analysis
2-Propanol	OSHA	400 ppm (13.3 ppm)*	1.6 ppbV (0.0016 ppm)	Neurological and cardiovascular effects.	
Acetone	ATSDR	26 ppm	9.8 ppbV (0.0098 ppm)	Neurological effects	
Chloromethane	OSHA	50 ppm (1.66 ppm)*	0.71 ppbV (0.00071 ppm)	Neurological and cardiovascular effects. May damage liver and kidneys.	
Dichlorodifluoromethane	NIOSH REL	1000 PPM (30 ppm)*	0.57 ppbV (0.00057 ppm)	Eye and throat irritation; possible carcinogen	

Hexane	ATSDR	0.6 ppm	1.1 ppbV (0.0028 ppm)	Neurological effects	
Methylene chloride	OSHA	25 ppm (0.83 ppm)*	3.3 ppbV (0.00049 ppm)	Neurological effects	
Formaldehyde	ATSDR	0.003 ppm	0.0097 ppm	Respiratory effects, carcinogen	

* Exposure limits from NIOSH are for an 8-hr workday schedule. EHP computes lower thresholds for residential areas for 24 hours of exposure, and also includes a calculation for vulnerable individuals including children and the elderly and others who may be more susceptible to these contaminants. These thresholds are found in parentheses, see Chloromethane (1.66ppm) for example.

Recommendations for Checking the Home Environment for

The periods of exposure at your home could be related to a number of nearby sources or activities. Try to identify sources of emissions, both inside and outside your house. These may include:

- Non-Vented Kitchens and Bathrooms – Improved ventilation can decrease moisture in home which can result in condensation and mold, decreases odors, and improve air quality.
- Heating systems – The heating system in your home may be decreasing the air quality if your heating source is oil, kerosene, wood, propane, or coal. It may be adding to the level of fine particulate matter in your home and the air you breathe.
- Homes built before 1978 may have products that contain lead.
- Homes built before 1930, which have not been renovated, may have asbestos that if disturbed could cause illness.

- New furniture, carpet, vinyl flooring or refinished furniture may be high in formaldehyde, a chemical that is a probable carcinogen.
- Winterizing your home may increase the efficiency of your heating or cooling system, but it also has the potential to increase radon levels and increase the level of indoor air contaminants.
- Carbon monoxide detectors are recommended in any homes with gas, oil or wood fuel-burning appliances in case of accidental carbon monoxide poisoning.
- The use of pesticides or herbicides (bug or weed killers, flea or tick sprays, collars, powders, or shampoos) in your home, garden, or on your pets may pose a health concern.
- Pets in the home – Pets and other animals can increase the amount of dust and dander in a home and be a trigger for asthma.

Please see EHP's Recommendations for reducing exposures to air particles in your home at:

<http://www.environmentalhealthproject.org/health-issues/air>

If you have any questions, ***please do not hesitate to contact us via email or phone call.***

Thank you again for working with EHP

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Attachments (2)

Figure 1:

Map of 8 Monitoring locations in Counselor Chapter deployed during the week of April 8-15, 2018 and retrieved on May 23, 2018.

Figure 2:

Close up Map of location with highest levels of PM 2.5 showing wind speed and direction and intensity of PM 2.5 – ranging from lowest (blue) to yellow-green (which indicates the EPA level of PM 2.5 at 35 ug/m³, which can impact the respiratory health of individuals) to red (highest level of exposure and hazardous to human health).

Acronyms

US EPA United State Department of Environmental Protection

ATSDR Agency for Toxic Substances and Disease Registry of the Centers for Disease Control and Prevention

NIOSH National Institute for Occupational Safety and Health

OSHA Occupational Safety and Health Administration

PEL Permissible exposure limits

REL Recommended exposure limit

µg/m³ Micrograms per cubic meter → air quality measurement

ppm parts per million

ppb parts per billion