New Mexico Environment Department

Ozone Precursor Rule – C&E Training

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Today's Discussion

High level discussion – this will not answer every question.

C&E Staff are expected to read the rule, including applicable definitions to fully understand.

We believe there is at least one problematic typo in the rule. Can you find it?

- Pollutants of Concern
- General Applicability and Scope
- General Requirements
- General Monitoring Requirements
- General Recordkeeping Requirements
- General Reporting Requirements
- Overview of Compliance Timelines
- Compliance Requirements by Section

Sections

- **113 – Engines and Turbines**
- 114 – Compressor Seals
- **115 – Control Devices and Closed Vent Systems**
- **116 – Equipment Leaks and Fugitive Emissions**
- 117 – Natural Gas Well Liquid Unloading
- **118 – Glycol Dehydrators**
- **119 – Heaters**
- 120 – Hydrocarbon Liquid Transfers
- 121 – Pig Launching & Receiving
- **122 – Pneumatic Controllers and Pumps**
- **123 – Storage Vessels**
- **124 – Well Workovers**
- 125 – Small Business Facilities
- 126 – Produced Water Management Units
- 127 – Flowback Vessels & Preproduction Operations

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Pollutants of Concern

And rationale for the rule

Pollutants of Concern

- Ozone formation, in general, forms when oxides of nitrogen (NOx) and volatile organic compounds (VOC) react in the presence of sunlight.
- 20.2.50 NMAC (“Part 50”) is a result of the Department’s “Ozone Attainment Initiative” which was triggered by our statutory requirement to address ozone concentrations that reach or exceed 95% of the National Ambient Air Quality Standards (NAAQS) for ozone.
- The focus of Part 50 is on reducing NOx and VOC from the oil & gas industry – the biggest contributors in the areas of the State that have reached or exceeded 95% of the NAAQS.

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General Applicability and Scope

Who and where?

Who is subject to Part 50?

In general, the oil and gas industry in 8 counties* that have contributed to ozone concentrations reaching 95% of the NAAQS

- Chaves
- Doña Ana
- Eddy
- Lea
- Rio Arriba
- Sandoval
- San Juan
- Valencia

*Other counties may be added at a later date by amending the rule, if needed.

Determining applicability

PTE is "the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design."

- For each source that may be subject to Part 50, an applicability determination must be made.
- The only exit from applicability is to obtain a federally enforceable limit on potential to emit (PTE).
  - Permit from the Bureau
  - Federal requirement (accept applicability)

Who/what in the oil & gas industry?

O&G production and processing equipment at:

- Well sites
- Tank batteries
- Gathering/boosting stations
- Natural gas processing plants
- Transmission compressor stations

Exclusions:

- Refineries
- Oil transmission pipelines
- Natural gas transmission pipelines (unless at a transmission compressor station)
- Saltwater disposal facilities
- Small business facilities are only subject to Sections 125 and 127 (with a few exceptions, found in Section 125)

How can PTE be reduced?

- Federally enforceable requirement:
  - Install and operate air pollution control equipment
  - Restrict hours of operation
  - Restrict the types or amounts of materials:
    - Combustion
    - Processing
    - Storage
- To avoid a possible future compliance issue, for any source without a permit or claimed federal requirement to reduce emissions below the thresholds in each applicable section, owners/operators should assume applicability unless calculations of PTE are completed demonstrating the source is not subject to the specific requirement in question.

General Requirements

Operations and maintenance, responding to the Department, modifications

General requirements

Operate and maintain affected sources appropriately:

- Good air pollution control practices for minimizing emissions (including start-up, shutdown and malfunctions)
- Consistent with manufacturer specifications or good engineering and maintenance practices (as an alternative)

- Additional requirements:
  - <u>For good cause</u>, the Department may require third party verification with a report for implementing recommendations.
  - If modifying an existing source, applicability must be determined for the modified source – always.

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General Monitoring Requirements

Monitoring, testing and inspections

General Monitoring Requirements

"Monitoring" may include:

- Testing
- Monitoring
- Inspections

Units that are shut down are <u>not</u> required to restart only to perform required monitoring. Instead:

- Record the shutdown date and time range by equipment; and
- Test, monitor or inspect as soon as possible after the unit is restarted.

General Recordkeeping Requirements

Maintenance of records

General Recordkeeping Requirements

Electronic records of all monitoring events must be maintained by the owner or operator for 5 years

- Companies are responsible for setting up a database system that can handle the data collected.
- Time/date/location stamp requirements:
  - Starting August 5, 2024 – must use approved technology:
    - By August 5, 2023, the Department will publish an "approved technology" list for this purpose.
    - Prior to August 5, 2024, date, time and location may be entered manually.
- An annual compliance database report (CDR) must be generated and maintained for 5 years.

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General Reporting Requirements

Submitting information to the Department

General Reporting Requirements

Upon request from the Department

- Owners/operators must submit a response within 3 business days (for a single facility). Additional time may be granted if the request is for multiple facilities.
- Response must include the CDR correlated with the information request.
- Response must be uploaded to the Department's Secure Extranet Portal.
- No other regular reporting is required.

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Compliance Timelines

An overview

Compliance Timelines - Overview

- Effective date of the rule – August 5, 2022
- Beginning immediately:
  - Method 22 observations when visible emissions are observed from flares or enclosed combustion devices (ECD). (Section 115)
  - Use best management practices to minimize emissions at well workovers. (Section 124)
  - Conduct weekly AVO inspections for some (larger*) well sites, tank batteries, gathering/boosting stations, natural gas processing plants and transmission compressor stations. (Section 116)
  - Conduct monthly AVO inspections for smaller facilities*. (Section 116)
  - Inspect control devices visually (or with federally approved methods). (Section 115)
  - Conduct monthly OGI or EPA Method 21 inspections at gathering/boosting stations with PTE greater than or equal to 25 tpy VOC. (Section 116)
- New sites have different timelines – requirements generally begin upon start-up. These are noted in each section where applicable.

Compliance Timelines Overview

2022

- November
  - Determine applicability for existing well sites. (Section 116) New well sites' applicability determinations must be completed within 30 days of construction.
  - Perform quarterly Method 22 observations for flares or ECDs. (Section 115)
  - Conduct quarterly OGI or EPA Method 21 inspections at gathering/boosting stations with PTE less than 25 tpy VOC. (Section 116)
  - Conduct quarterly OGI or EPA Method 21 inspections at transmission compressor stations OR in compliance with NSPS Subpart OOOOa. (Section 116)
  - Conduct quarterly OGI or EPA Method 21 inspections at well sites within 1,000 feet of an occupied area*. (Section 116)

Compliance Timelines Overview

2023

- January
  - Inventory of all existing natural gas-fired spark ignition engines with schedule for assuring compliance for existing engines. (Section 113). New engines must meet standard upon startup.
- February
  - ~~Initial engine and turbine compliance tests if operated 500 hours per year or more. (Section 113) Periodic testing required annually. If installed more than 180 days after effective date, initial test required within 60 days of maximum production (but no later than 180 days after startup).~~ See Engine section below.
  - OGI or EPA Method 21 inspection of inactive well sites (as of 8/5/2022) or within 30 days of well becoming inactive. (Section 116) Annual inspections required thereafter.
  - Produced water management units (and associated storage vessels) must meet emission standards. (Section 126)

Compliance Timelines Overview

2023

- July
  - Inventory of all existing affected turbines and a schedule for meeting emission standards. (Section 113). New turbines must meet standard upon startup.
  - Determine total pneumatic controller count subject to each table (Section 122) at all affected facilities that <u>commenced construction</u> before August 5, 2022.

Compliance Timelines Overview

2024

- January
  - 30% of existing natural gas-fired turbines meet standard. (Section 113)
  - OGI or EPA Method 21 inspections of 30% of existing wellhead-only facilities completed. Annual inspections thereafter. (Section 116)
  - 25-80% of (previously) natural gas-driven pneumatic controllers must be converted to non-emitting controllers. (Section 122, Tables 1 and 2) Percentage depends on total historic percentage and type of facility. New pneumatic controllers must be non-emitting starting August 5, 2022.
- July
  - Generate first CDR on all assets under owner/operator’s control. (Section 112) Annual CDR generation required.

Compliance Timelines Overview

2024

- August
  - Centrifugal compressor with wet seals control VOC emissions from fluid degassing system by at least 95%. (Section 114) New compressors control upon startup.
  - Existing well sites or standalone tank batteries: conduct OGI or EPA Method 21 inspections. (Section 116) Periodic inspections may be required annualy, semi-annually or quarterly, depending on PTE.
  - Implement best management practices at natural gas wells with liquid unloading operations that result in venting. (Section 117)

Compliance Timelines Overview

2024

- August
  - Existing glycol dehydrators with PTE greater than 2 tpy VOC: achieve capture / control efficiency of 95% or better. (Section 118) New glycol dehydrators achieve this efficiency upon startup.
  - Hydrocarbon liquid transfers at certain existing facilities control VOC emissions by at least 95% during transfer. (Section 120) New transfer facilities control upon startup. Transfers at existing gathering/boosting stations without controlled storage vessels comply per schedule in Section 123.
  - Pig launching and receiving operations reduce VOC emissions by at least 95%. (Section 121)
  - Existing produced water management units control per Section 123 requirements or submit VOC minimization plan to the Department. (Section 126) New units control upon startup.

Compliance Timelines Overview

2025

- January
  - 30% of existing natural gas-fired spark ignition engines meet emission standard. (Section 113)
  - 65% of existing wellhead-only facilities must be OGI or EPA Method 21 inspected. Annual inspections thereafter. (Section 116)
  - 30% of existing storage vessels (by company) have capture/control efficiency of 95% or greater. (Section 123) New storage vessels meet efficiency requirements upon startup.

Compliance Timelines Overview

2025

- August
  - Existing closed vent systems (CVS) assessed and certified. (Section 115) New CVS assessed and certified within 90 days of startup.
  - Unstall backup control device or redundant VRU at sites that already have VRU installed as of August 5, 2022. (Section 115)
  - Existing natural gas-fired heaters comply with emission standards for NOx and CO. (Section 119) New heaters comply upon startup.
  - 100% of existing natural gas-driven pneumatic pumps comply with emission standards. (Section 122) New controllers or pumps comply upon startup.

Compliance Timelines Overview

2026

- January
  - 100% of existing wellhead-only facilities OGI or EPA Method 21 inspected. (Section 116) Annual inspections thereafter.
  - 65% of existing natural gas-fired turbines meet standard. (Section 113)
  - Well recompletions and new wells at existing wellhead sites collect and control emissions from flowback vessels. (Section 127) New wells at new wellhead sites subject to these requirements as of August 5, 2022 or when completed/recompleted.

Compliance Timelines Overview

2027

- January
  - 65% of existing natural gas-fired spark ignition engines meet standard. (Section 113)
  - 65-95% of (previously) natural gas-driven pneumatic controllers converted to non-emitting controllers. (Section 122, Tables 1 and 2)
  - 65% of company's existing storage vessels have combined capture/control efficiency of 95%. (Section 123)

Compliance Timelines Overview

2028

- January
  - 100% of existing natural gas-fired turbines meet standard. (Section 113)

2029

- January
  - 100% of existing natural gas-fired engines meet standard. (Section 113)
  - 100% of existing storage vessels meet 95% capture/control efficiency. (Section 123)

Compliance Timelines Overview

2030

- January
  - 80-98% of (previously) natural gas-driven pneumatic controllers must be converted to non-emitting controllers. (Section 122, Tables 1 and 2)

For more specific information, please see individual sections in the rule. Also, more information may be found in the "General Compliance Guidelines" document or in the "Compliance Timelines" matrix. Both are published on the NMED website. Also available is an FAQ document based on questions already received and answered by NMED.

Section 113

Engines and Turbines – Many portable and stationary natural gas-fired spark engines; compression engines ≥500 bhp (if not subject to NSPS IIII); natural gas-fired turbines ≥1,000 bhp; Only at O&G sites subject to rule
Exclusion for non-road engines as defined in 40 CFR 1068.30

Engine/Turbine Standards

- NEW Compression Engine (diesel) ≥500 bhp (not subject to NSPS IIII): NOx: no more than 9 g/bhp-hr – no NOx standard for existing
- **Natural Gas Spark Ignition**
  - Must perform inventory of existing engines by Jan 1, 2023; prepare schedule to meet standards (unless they have an approved ACP)
    - Jan 1, 2025, at least 30%; Jan 1, 2027 - 65%; Jan 1, 2029 - 100%
  - CO, NOx, and NMNEHC (as propane) emission standards
    - All in g/bhp-hr units and vary based on new or existing, engine type, and rated bhp; Tables 1 and 2 in Section 113
- **Natural gas fired turbines ≥1,000 bhp**
  - Existing Inventory by July 1, 2023; prepare schedule to meet standards
    - Schedule: Jan 1, 2024 at least 30%, Jan 1, 2026 - 65%; Jan 1, 2028 - 100%
  - CO, NOx, and NMNEHC (as propane) emission standards
    - Limits in ppmvd @15% O2; vary based on new or existing and bhp; Table 3 in Section 113
- Emergency engines – not subject to standards; need a non-resettable hour meter

Engine/Turbine Monitoring

- Engines, turbines, catalytic converters, AFR controllers must be maintained according to manufacturer recommendations and specs
  - Section 112 defines manufacturer specifications to include “alternative set of specifications, maintenance practices and schedules” approved by qualified personnel other than the manufacturer - i.e., operator maintenance plans
- **For units operated 500+ hours per year**
  - Initial compliance test for NOx and VOC using EPA reference methods or ASTM 6348 (FTIR) within 180 days of **effective date (see note below)**; for existing equipment on the schedule, but installed after effective date: within 60 days of achieving max production rate but no later than 180 days after initial startup
  - Annual periodic monitoring required, but can be conducted with portable analyzer
  - CO testing can be used as surrogate for NMNEHC (VOC)
- **For units operated <500 hours / year**
  - Monitor hours of operation with non-resettable hour meter
  - Test the unit at least once per 8,760 hours of operation
- Emergency engines OR if limiting operating hours to meet standards
  - Monitor hours of operation with non-resettable hour meter
- Date and time stamp for all testing, inspection, maintenance

Section 114

Compressor Seals

Section 115

Control Devices and Closed Vent Systems (CVS)

If used to meet “emission standards and emission reduction requirements” of Part 50.

Control devices as defined in Part 50 contains the “VRU exception” when VRU is part of the process

CVS – “system that is designed, operated, and maintained to route the VOC emissions from a source or process to a process stream or control device with no loss of VOC emissions to the atmosphere during operation.”

Control Devices and CVS

General Requirements

- Control device must operate as a CVS
- Control device must be designed / sized appropriately (adequate combustion efficiency for flares, ECDs, TOs)
- At least monthly visual inspections of control devices (with date/time stamp and GPS)
- CVS for a **storage vessel** (3 others) using a control device or routing to a process
  - Ensure control device or process able to handle expected range of emissions
  - By Aug 5, 2025 for existing; within 90 days of startup for new:
    - Conduct assessment of CVS design / capacity
    - Assessment must be certified according to specific directions (including a quoted statement)

Open Flare Requirements

- Continuous gas streams require continuous pilot (by Aug 5, 2023; upon startup for new units)
- Continuous pilot or auto-igniter – thermocouple with continuous recorder and alarm to ensure a flame is present at all times gas is sent to flare (by Aug 5, 2023)
- Manual ignition – visually ensure pilot flame is present during flaring events
- At least quarterly, and when VEs occur, Method 22 for at least 15 consecutive minutes (no more than 30 seconds of VE)
- Repair within 3 business days of pilot flame alarm

ECDs/TOs/VRUs

ECDs/TOs

- Continuous pilot or auto-igniter (with alarm system) by Aug 5, 2024; new: upon startup
- Method 22 (like flare)
- Record keeping like open flares

VRUs

- VRU must be operated as a CVS routing to process or sales pipeline
- Must control VOC during VRU downtime with backup control or redundant VRU (by Aug 5, 2025)
- Comply with Section 116 or implement program meeting OOOOa fugitives

Section 116

Equipment Leaks and Fugitive Emissions – applicable to all types of sites subject to Part 50 and associated piping and components

Default Monitoring Requirements

AVO inspections

- >10 BO/day or >60K sccf/d
  - Weekly AVO
  - Repair upon discovery or place tag and repair within 30 days
- ≤ threshold above
  - Monthly AVO
  - Same repair requirements

OGI or EPA Method 21 inspections

- Compliance begins 8/5/2024 for existing well sites and standalone tank batteries
- Exceptions:
  - Wellhead-only facilities (phased in by 1/1/2026)
  - Inactive well sites – 2/5/2023 or 30 days after site becomes inactive

OGI/M21 Monitoring Frequency[1]

- Well sites and standalone tank batteries
  - Annually (<2 tpy), semi-annually (2-5 tpy) or quarterly (>5 tpy)
- Gathering/boosting stations
  - Quarterly (<25 tpy) or monthly (25+ tpy)
- Transmission compressor stations
  - Quarterly or in compliance with NSPS Subpart 60 (if as stringent)
- <u>All</u> well sites[2] within 1,000 feet of occupied area (determined by 11/5/2022) – quarterly
- Existing wellhead-only facilities – annual
- Inactive well sites – annual

[1]Alternative monitoring plans allowed if approved by AQB

[2]Injection well sites and temporarily abandoned well sites not subject to Section 116

Repair Requirements

AVO, OGI, M21 inspections

- Location, time, date
- Method
- Person performing inspection
- Leak status and tag placement

Leak detections

- Date detected
- Date repair attempted
- If delayed – reason, date of next shutdown, personnel name determining delay is necessary
- Date of successful repair
- Date of after-repair monitoring
- Component designated difficult, unsafe or inaccessible (with explanation and schedule)
- For OGI, instrument specs, daily check and survey requirements from NSPS Subpart SA

Section 117

Natural Gas Well Liquid Unloading

Section 118

Glycol Dehydrators – Applicable to GDs with PTE ≥2 tpy at all types of facilities subject to Part 50

Emission Standard

Combined capture and control efficiency of 95% (still vent and flash tank)

IF combustion control device used, design efficiency of 98% or better

- Compliance deadlines:
  - Existing – by 8/5/2024
  - New – upon startup
- Emissions routed at all times to reboiler firebox, condenser, control device, fuel cell or process – no venting to atmosphere
- IF VRU used, closed loop system operational at least 95% of facility operating time – may supersede Section 115!

Monitoring and Recordkeeping

Monitoring

- Annual extended gas analysis on inlet gas – calculate uncontrolled and controlled VOC emissions
- Semi-annual inspections, including reboiler and regenerator; emissions routed correctly

Recordkeeping

- ID# and location
- Glycol circulation rate, monthly NG throughput, date of recent measurement
- Emissions calculation data and methodology
- Controlled and uncontrolled VOC emissions (tpy)
- Type, make model, ID# of control device
- Time, date
- Results of inspection, including repair info
- Manufacturer specifications

Section 119

Heaters – Rated heat input ≥20 MMBtu/hr at all types of facilities subject to Part 50

Emission Standards and Monitoring*

- 30 ppmvd @3% O_2 NOx (new or existing)
- 400 ppmvd @3% O_2 CO (new or existing)
- Compliance deadlines
  - Existing – 8/5/2025
  - New – upon startup
  - Emission testing (NOx and CO) within 180 days of compliance deadline and biannually thereafter
    - If operated at 110% of prior test load, re-test within 60 days from anomalous operation
    - Alternative testing allowed if AQB-approved prior to testing
- Inspect, repair and maintain heaters per manufacturer specifications
- If concentrations exceed emissions limits, repeat inspection and tune-up within 30 days of testing

*Recordkeeping similar to other monitoring recordkeeping requirements: ID#, location, results of testing, corrective actions

Section 120

Hydrocarbon Liquid Transfers

Section 121

Pig Launching and Receiving

Section 122

Pneumatic Controllers and Pumps - Applicability

- Natural gas-driven pneumatic controllers and pumps located at:

TABLE 1 - Well Sites, Standalone Tank Batteries and Gathering/Booster Stations

TABLE 2 – Transmission Compressor Stations and Gas Processing Plants

Emission Standards

Table 1 – well sites, stand alone tank batteries, gathering/booster stations

Total Historic Percentage of Non-Emitting Controllers	Total Required Percentage of Non-Emitting Controllers by January 1, 2024	Total Required Percentage of Non-Emitting Controllers by January 1, 2027	Total Required Percentage of Non-Emitting Controllers by January 1, 2030
> 75%	80%	85%	90%
> 60-75%	80%	85%	90%
> 40-60%	65%	70%	80%
> 20-40%	45%	70%	80%
0-20%	25%	65%	80%

July 1st 2023

- Determine **total controller count** (**emitting + non-emitting**) except safety of process purpose controllers.
- Determine **total historic non-emitting percent of controllers = non-emitting/total controller count X 100**
- Determine the replacement schedule.

January 1st 2024 – Demonstrate Compliance

(% of Non-Emitting Controllers is GREATER THAN OR EQUAL TO value for that year)

January 1st 2027 – Demonstrate Compliance

January 1st 2030 – Demonstrate Compliance

By August 05, 2024 **- Pneumatic Diaphragm Pumps w/ commercial electric power = ZERO emission rate**

- Pneumatic Diaphragm Pumps w/o commercial electric power = 95% VOC reduction

Monitoring and Recordkeeping

Monitoring -

- January 1st, 2023 – "monitor compliance status" of controllers
- Monthly: AVO or OGI inspection w/ maintenance
- August 5, 2024 – Required Data System details are required

Recordkeeping –

- Total controllers and excluded safety and process controllers
- Electronic record for each pneumatic controller
- Record why a controller has a bleed > six(6) scf/hr
- Comply with recordkeeping in 20.2.50.112 NMAC

Section 123

Storage Vessels – Applicability:

- New PTE ≥ 2 tpy (each tank)
- Existing (in multi-tank batteries) PTE ≥ 3 tpy
- Existing (single tank batteries) PTE ≥ 4 tpy
- IF associated with PWMU, comply to the extent specified in Section 126

Emission Standards

Combined capture and control efficiency of 95%; IF combustion control device used, it's design efficiency must be 98% or better.

Compliance deadlines - Existing

- 30% by 1/1/2025
- 65% by 1/1/2027
- 100% by 1/1/2029

Compliance deadline - New

- Compliance upon startup

Additional Standards:

- Thief hatches must close automatically following any over-pressurization event. Thief hatches must remain closed and latched during measuring activities.
- New tank batteries receiving annual average 200 BO/d with grid power must have "lease automated custody transfer" (LACT) units. LACT units inspected semi-annually or in accordance with BLM directions or system manufacturer.
- Annual training requirement for employees and third parties.

Monitoring and Recordkeeping

By 1/1/2023

- Monthly:
  - Monitor, calculate or estimate total monthly liquid throughput and upstream separator pressure (if storage vessel directly downstream)
  - SV inspection to include leak detection
- Weekly – AVO inspection
- Records include unique ID#, location, throughput determination, upstream separator pressure, emissions calculations data & methodology, control device data, emissions calculations, repair data.

Section 124

Well Workovers – Applicability

Oil and Natural Gas Wells

Emission Standards

B **M** **P**

B	**M**	**P**
E	A	R
S	N	A
T	A	C
	G	T
	E	I
	M	C
	E	E
	N	S
	T	

1) Reduce wellhead pressure before blowdown
2) Monitor manual venting until venting is complete
3) Route natural gas to the sales line (if possible)

Monitoring and Recordkeeping

MONITOR THE FOLLOWING:

- Wellhead pressure
- Flowrate of vented natural gas
- Duration of venting
- Estimate volume and mass of VOC vented

RECORD-KEEPING:

- Location of well and Unique ID#
- Date workover performed
- Wellhead pressure
- Flowrate of vented natural gas
- Duration of venting to atmosphere
- Description of BMPs used
- Calculation of estimated VOCs
- Method of notification to the public and proof

Reporting requirements

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- If not feasible to prevent VOC emissions from being emitted:
  - Notify residents located within one-quarter mile at least 3 days before workover event.
- For routine or emergency needs
  - Shall notify all residents at least 24 hours before workover event.

Section 125

Small Business Facilities

Section 126

Produced Water Management Units

Section 127

Flowback Vessels and Preproduction Operations

Other documents available

Available at https://www.env.nm.gov/air-quality/compliance-and-enforcement/

- Initial guidance document for industry
- FAQs – updated approximately monthly
- Recording of industry webinar
- Industry workshop slides
- Chronological Timelines document

A complex rule requires a knowledgeable staff. Thank you for all you do for the Bureau!

Questions?