


Proposed Rulemaking - Control of VOC Emissions from Oil and Natural Gas Sources 25 Pa. Code Chapters 121 and 129

Environmental Quality Board Meeting
December 17, 2019

Tom Wolf, Governor

Patrick McDonnell, Secretary

Purpose of the Proposed Rulemaking

- Establishes Reasonably Available Control Technology (RACT) requirements for volatile organic compound (VOC) emissions from existing oil and natural gas sources.
- Emissions of VOC are precursors to the formation of ground-level ozone, a public health and welfare hazard.
- VOC RACT emission reduction measures for these sources are reasonably required to achieve and maintain the 8-hour ozone National Ambient Air Quality Standards (NAAQS) and to satisfy related Clean Air Act requirements for this Commonwealth.

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Basis of the Proposed Rulemaking

- This proposed rulemaking establishes the VOC emission limitations and other requirements of the Environmental Protection Agency's (EPA) recommendations in the Control Techniques Guidelines (CTG) for the Oil and Natural Gas Industry issued on October 27, 2016.
- RACT is ''the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.'' See 44 FR 53761
- RACT for oil and gas sources is required statewide, not just in designated ozone nonattainment areas, because Pennsylvania is included in the Ozone Transport Region (OTR).

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Elements of the Proposed Rulemaking

This proposed rulemaking covers the following sources:

- Establishes requirements for storage vessels, natural gas-driven pneumatic controllers, natural gas-driven diaphragm pumps, reciprocating and centrifugal compressors, and fugitive emissions components.
- Establishes the compliance date and compliance demonstration requirements for the above sources.

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Storage Vessel Requirements

- A storage vessel is an affected source if located at:
  - A conventional well site or an unconventional well site constructed before August 10, 2013 with potential VOC emissions of 6 tons per year (tpy) or greater;
  - An unconventional well site constructed on or after August 10, 2013, with potential VOC emissions of 2.7 tpy or greater;
  - A midstream compressor station, a natural gas processing plant, or a transmission station with potential VOC emissions of 2.7 tpy or greater.
- Require 95% control of VOC emissions.
- The control requirement can be waived with a demonstration that actual VOC emissions are below the appropriate thresholds on a 12-month rolling basis.

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Pneumatic Controller Requirements

- A natural gas-driven continuous bleed pneumatic controller located between the wellhead and the natural gas processing plant is required to have a bleed rate of 6 standard cubic feet per hour (scfh) or less.
- A natural gas-driven pneumatic controller at a natural gas processing plant is required to have a bleed rate of zero.
- Any natural gas-driven pneumatic controller that requires a greater bleed rate based on functional requirements may be claimed by the owner or operator for exception.
- Each affected natural gas-driven pneumatic controller must be tagged, and the proper records maintained and reports submitted.

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Diaphragm Pump Requirements

- A natural gas-driven diaphragm pump located at a well site is required to route VOC emissions to an onsite control or process if technically feasible.
  - Require 95% VOC emission reduction by routing emissions through a closed vent system to an existing control device or process.
  - If an existing control device or process cannot achieve 95% VOC emission reduction, the emissions must still be routed and the control device's control efficiency documented.
  - Technical feasibility may be determined by and documented by a professional engineer or an in-house engineer.
- A natural gas-driven diaphragm pump located at a natural gas processing plant is required to have zero VOC emissions.

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Compressor Requirements

- A reciprocating compressor located between the wellhead and the natural gas transmission and storage segment, except for a compressor located at a well site, is required to either replace the compressor rod end packing every 26,000 hours or every 36 months or route the packing emissions through a cover and closed vent system to a process.
- A centrifugal compressor located between the wellhead and the natural gas transmission and storage segment that uses wet seals, except for a compressor located at a well site, is required to reduce VOC emissions by 95% by routing the emissions through a cover and closed vent system to a control device or process.

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Fugitive Emission Requirements

- A fugitive emissions component located between the wellhead and the natural gas transmission and storage segment is required to be inspected monthly using an audio, visual and olfactory (AVO) inspection and quarterly using an instrument-based leak detection and repair (LDAR) inspection.
  - Fugitive emissions components located at a well site with a well with an average production of 15 barrels of oil equivalent per day is exempt.
  - A well site where the gas to oil ratio is less than 300 standard cubic feet per barrel of oil produced will be required to monitor the gas to oil ratio annually.
  - An operator of a well site can opt to track the percentage of leaking components and reduce the frequency of the instrument-based LDAR inspection if they meet the criteria.

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Affected Parties

- DEP identified 5,039 operators of affected facilities in this Commonwealth using the eFACTS database and the NAICS codes covered by the CTG and estimates that 3,929 of these facility operators may meet the definition of small business.
- DEP estimates that approximately 71,229 conventional wells, 8,403 unconventional wells, 435 midstream compressor stations, 120 transmission stations, and 10 natural gas processing plants may have sources that will be affected by this proposed rulemaking.
- DEP estimates that approximately 21 storage vessels, 28,348 pneumatic controllers, and 1,164 diaphragm pumps will have requirements under this proposed rulemaking.

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Economic Impacts

- Approximately 199 conventional wells and 4,913 unconventional wells will be required to implement LDAR or increase the current LDAR frequency under this proposed rulemaking.
- Approximately 278 midstream compressor stations and 5 natural gas processing plants will be required to implement LDAR or meet new requirements under this proposed rulemaking.
- Implementation of this proposal will cost, on average, $7,000 dollars per operator or $5,000 net cost per operator.

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Environmental Impacts

- DEP estimates that the implementation of the proposed rulemaking will result in:
  - VOC emissions reductions of 4,404 tpy.
  - Co-benefit methane reductions of 75,603 tpy.
- The VOC emission control measures and other requirements in this proposed rulemaking will allow the Commonwealth to make substantial progress in achieving and maintaining the 8-hour ozone NAAQS statewide.

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Advisory Committee Review

- The following advisory committees concurred with DEP's recommendation to present this proposed rulemaking to the EQB for consideration:
  - Air Quality Technical Advisory Committee on April 11, 2019
  - Small Business Compliance Advisory Committee on April 17, 2019
  - Citizens Advisory Council on June 18, 2019
- DEP also provided an informational presentation to the Oil and Gas Technical Advisory Board on March 21, 2019.

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Recommendation and Public Participation

- DEP recommends the adoption of this proposed rulemaking.

- A 60-day public comment period with at least three public hearings is recommended.

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