

Executive Summary
Control of VOC Emissions from Oil and Natural Gas Sources
25 Pa. Code Chapters 121 and 129

Purpose and Summary of the Proposed Rulemaking

The Department of Environmental Protection (Department) recommends that the Environmental Quality Board (EQB) adopt this proposal to amend Chapters 121 (relating to general provisions) and 129 (relating to standards for sources). This proposed rulemaking would add §§ 129.121—129.130 to adopt reasonably available control technology (RACT) requirements and RACT emission limitations for oil and natural gas sources of volatile organic compound (VOC) emissions which were in existence on or before the effective date of this rulemaking, when published as a final-form rulemaking. These sources include storage vessels in all segments except natural gas distribution, natural gas-driven pneumatic controllers, natural gas-driven diaphragm pumps, reciprocating compressors, centrifugal compressors, and fugitive emissions components. This proposed rulemaking would also add definitions, acronyms, and the United States Environmental Protection Agency (EPA) methods to § 129.122 to support the interpretation of the measures.

VOCs are precursors to the formation of ground-level ozone, a public health and welfare hazard. Reductions in VOC emissions that are achieved following the adoption and implementation of VOC emission control measures and other requirements in this proposed rulemaking would allow the Commonwealth to make substantial progress in achieving and maintaining the 1997, 2008, and 2015 8-hour ozone National Ambient Air Quality Standards.

In accordance with sections 172(c)(1), 182(b)(2)(A) and 184(b)(1)(B) of the CAA (42 U.S.C.A. §§ 7502(c)(1), 7511a(b)(2)(A) and 7511c(b)(1)(B)), this proposed rulemaking establishes the VOC emission limitations and other requirements of the EPA's recommendations in the Control Techniques Guidelines for the Oil and Natural Gas Industry, EPA 453/B-16-001, Office of Air Quality Planning and Standards, EPA, October 2016 (2016 O&G CTG) as RACT for these sources in this Commonwealth. See 81 FR 74798 (October 27, 2016). The EPA defines RACT as "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 (September 17, 1979).

The Department reviewed the RACT recommendations included in the 2016 O&G CTG for their applicability to the ground-level ozone reduction measures necessary for this Commonwealth and determined that the VOC emission reduction measures and other requirements are appropriate for this source category; however, the Department determined in two cases that more stringent RACT requirements are necessary. In the first, the Department determined that a lower VOC applicability threshold is necessary for storage vessels at unconventional well sites installed on or after August 10, 2013 to prevent backsliding and that the lower applicability threshold also represents RACT for storage vessels at gathering and boosting stations, processing plants and transmission stations. In the second, the Department determined that owners or operators must conduct monthly audio, visual, olfactory (AVO) inspections and quarterly leak detection and repair (LDAR) inspections of fugitive emissions components at their facilities.

This proposed rulemaking will provide consistency among all oil and natural gas sources in this Commonwealth for monitoring fugitive emissions components by including monthly AVO and quarterly LDAR inspection requirements. These requirements are consistent with the LDAR requirements specified in the Department's General Plan Approval and/or General Operating Permit for Natural Gas Compression Stations, Processing Plants and Transmission Stations, the General Plan Approval and/or General Operating Permit for Unconventional Natural Gas Well Site Operations and Remote Pigging Stations and Air Quality Permit Exemptions, Category 38. Owners or operators of both new and existing facilities will be able to merge both types of sources into one LDAR program.

This proposed rulemaking is also consistent with Governor Wolf's strategy to reduce emissions of methane from the oil and natural gas industry in Pennsylvania. In the strategy, announced on January 19, 2016, the Department committed to developing a regulation for existing sources to reduce leaks at existing oil and natural gas facilities based on the RACT recommendations in the 2016 O&G CTG. The strategy also states that the Commonwealth will reduce emissions by requiring LDAR and more frequent use of leak-sensing technologies. This proposed rulemaking fulfills that part of the strategy.

While this proposed rulemaking requires VOC emission reductions, methane emissions are also reduced as a co-benefit, because both VOCs and methane are emitted from oil and gas operations. Except for storage vessels, the requirements for control of emissions are not dependent on an applicability threshold for VOCs, meaning that most requirements have no minimum level of VOC emissions under which sources are granted an exemption. For example, continuous bleed natural gas-driven pneumatic controllers are required to limit their bleed rate to 6 standard cubic feet per hour of natural gas, regardless of the VOC concentration, which also serves to limit methane emissions. Reciprocating compressors at gathering and boosting stations and natural gas processing plants are required to replace the rod end packing or route the rod end packing emissions to a closed vent system regardless of the actual VOC emissions, which serves to reduce both VOC and methane emissions by limiting natural gas leakage. Both wet seal centrifugal compressor degassing systems and natural gas-driven diaphragm pumps are required to control their VOC emissions by 95% regardless of the actual VOC emissions, which also effectively controls methane emissions. Also, for fugitive emissions components, the AVO inspection and LDAR programs detect natural gas leakage, which, with the repair requirement, serves to reduce both emissions of VOC and methane. The above control measures implemented for VOC emissions simultaneously control methane emissions and provide VOC emission reductions of approximately 4,404 tons per year (TPY) and methane emission reductions of approximately 75,603 TPY.

This proposed rulemaking will be submitted to the EPA for approval as a revision to the Commonwealth's State Implementation Plan following promulgation of the final-form rulemaking.

Affected Parties

This proposed rulemaking would apply statewide to owners and operators of one or more of the following oil and natural gas sources of VOC emissions which were in existence on or before the effective date of this rulemaking: storage vessels in all segments except natural gas distribution, natural gas-driven pneumatic controllers, natural gas-driven diaphragm pumps, centrifugal compressors and reciprocating compressors, and fugitive emission components.

The Department is aware of approximately 89,320 unconventional and conventional oil and natural gas wells, of which the Department estimates that 8,403 unconventional and 71,229 conventional wells are currently in production. These facilities also include approximately 435 midstream compressor stations, 120 transmission compressor stations and 10 natural gas processing facilities in this Commonwealth whose owners and operators may be subject to the proposed VOC emission reduction measures, work practice standards, and reporting and recordkeeping requirements. It is possible that owners and operators of additional facilities that have not been identified could be subject to this proposed rulemaking. Of the 71,229 conventional wells reporting production, only 303 are above the 15 barrel of oil equivalent per day production threshold as reported in the Department's 2017 oil and gas production database and will have fugitive emissions component requirements. In addition, the Department estimates most small business stationary sources will be below the applicability thresholds. However, affected small businesses may incur minimal cost as a result of this proposed rulemaking. Overall, the Department does not anticipate that this proposed rulemaking will result in any significant adverse impact on small oil and gas operators.

Advisory Groups

The Department consulted with the Air Quality Technical Advisory Committee (AQTAC) and the Small Business Compliance Advisory Committee (SBCAC) in the development of this proposed rulemaking. On December 14, 2017, the Department presented concepts to AQTAC on a potential rulemaking incorporating the 2016 O&G CTG recommendations. The Department returned to AQTAC on December 13, 2018 for an informational presentation on a preliminary draft Annex A. This proposed rulemaking was presented for a vote to AQTAC on April 11, 2019 and SBCAC on April 17, 2019. Both committees concurred with the Department's recommendation to move this proposed rulemaking forward to the Board for consideration.

The Department also conferred with the Citizens Advisory Council's (CAC) Policy and Regulatory Oversight Committee concerning this proposed rulemaking on May 7, 2019. On June 18, 2019, the full CAC concurred with the Department's recommendation to move this proposed rulemaking forward to the Board for consideration.

The Department plans to educate and assist the public and the regulated community in understanding the proposed requirements and how to comply with them. The Department will continue to work with the Department's provider of Small Business Stationary Source Technical and Environmental Compliance Assistance.

Public Comments and Board Hearings

The Department recommends that the Board adopt this proposed rulemaking. The Department also recommends a 60-day public comment period for this proposed rulemaking and an opportunity for three public hearings.