

SUMMARY OF REQUIREMENTS FOR PROCESSES AND EQUIPMENT

AT OIL WELL SITES

On May 12, 2016 EPA issued final New Source Performance Standards to reduce emissions of greenhouse gases – most notably methane – along with smog-forming volatile organic compounds (VOCs) from new, modified and reconstructed sources in the oil and natural gas industry. At oil production sites, the updates set emission limits for completions of hydraulically fractured oil wells and pneumatic pumps, in addition to requirements for detecting and repairing leaks at oil well sites.

Requirements for New, Modified and Reconstructed Sources Not Covered in the 2012 Rules

Completions of Hydraulically Fractured Oil Wells

- Many hydraulically fractured wells that are drilled primarily for oil production contain natural gas along with the oil. During a stage of well completion known as “flowback,” following the fracture of these wells, gas flows to the surface along with water, fracturing fluids, condensate and crude oil.
- The final rule requires owners/operators of hydraulically fractured oil wells to capture the natural gas that currently escapes into the air. Capturing the gas will both reduce methane and VOC emissions and maximize natural gas recovery from well completions. The rule requires that significant emissions reduction be accomplished primarily through the use of a proven process known as a “reduced emissions completion” or “green completion.” This process is estimated to reduce methane and VOC emissions by 95 percent.
- In a green completion, special equipment separates gas and liquid hydrocarbons from the flowback that comes from the well as it is being prepared for production. The gas and hydrocarbons can then be treated and used or sold, avoiding the waste of natural resources that cannot be renewed. Owners/operators must have a separator on site during the entire well completion process for development wells.
- EPA is phasing in the green completion requirement for hydraulically fractured oil wells to give the industry time to ensure that a sufficient supply of green completion equipment and personnel is available. Owners/operators will have six months after the final rule is published in the Federal Register to begin using green completions; they must reduce methane and VOC emissions using combustion controls until the green completion requirement takes effect.
 - Like the 2012 requirements for hydraulically fractured natural gas wells, the 2016 updates do not require green completions for certain oil wells, such as new

exploratory (“wildcat”) wells, delineation wells (used to define the borders of a reservoir), or low-pressure wells. A separator is not required to be on site for these wells; however, emissions from the wells must be controlled.

- The final rule does not require emissions reductions from wells with a gas-to-oil ratio of less than 300 standard cubic feet of gas per barrel, provided the owner/operator maintains records of the low gas-to-oil ratio certification and a claim signed by a certifying official.
- The rule also does not require green completions from other hydraulically fractured oil wells if it is not technically feasible to get the gas to a pipeline. Owners/operators of these wells generally must reduce emissions using combustion during the well-completion process.
- Oil wells that are refractured and recompleted are not be considered to be “modified” if well owners and operators use green completions to reduce emissions, and they meet notification and reporting requirements for new wells. This also was a requirement for completions of hydraulically fractured natural gas wells in the 2012 rules.
 - In a number of states, this allows owners/operators to refracture wells without triggering state permitting requirements. This flexibility reduces burden to both industry and permitting agencies, without compromising the environmental benefits of the rule.

Finding and Repairing Leaks (Fugitive Emissions)

- Leaks, also known as “fugitive emissions,” can occur at a number of points at an oil well site when connections are not properly fitted, hatches are not properly weighted and sealed, or when seals and gaskets start to deteriorate. Leaks can be a significant source of methane and VOC emissions in the oil and gas industry.
- The updated NSPS requires that owners/operators of oil well sites develop and implement a leaks monitoring plan. Owners/operators must use a technology known as optical gas imaging to conduct a leaks survey. Optical gas imaging equipment uses a special camera to “see” emissions of methane and VOCs.
 - Owners/operators may use “Method 21” as an alternative to optical gas imaging. Method 21 is an EPA method for determining VOC emissions from process equipment. The method is based on using a portable VOC monitoring instrument, such as an organic vapor analyzer (sometimes referred to as a “sniffer”).
- For new and modified oil well sites, owners/operators must conduct the initial survey one year after the final rule is published in the Federal Register, or within 60 days of the startup of production, whichever is later. After the first survey, leaks monitoring surveys must be conducted twice a year.

- The survey covers a number of components, including valves, connectors, pressure-relief devices, open-ended lines, flanges, closed vent systems, compressors and thief hatches on controlled storage tanks, among others.
- Any leaks found during the surveys must be repaired within 30 days, unless the repair would require shutting down production, which could lead to significantly greater emissions releases. In that case, owners/operators are required to fix the leak at the next shutdown, or within two years.
 - Equipment that vents natural gas as part of normal operation is not considered to be leaking and is not covered by this requirement; however, leaks surveys can also help operators detect malfunctions in these venting devices, such as pneumatic controllers.
- After considering public comment on the proposed rule, and based on available data, EPA is not exempting low-production well sites (those with an average combined oil and natural gas production of less than 15 barrels of oil equivalent per well per day), from the requirements to find and repair leaks. Available data indicate that methane and VOC emissions from these sites could be similar to emissions from well sites that are not low-production. As a result, low-production well sites must meet requirements of the leaks monitoring program.
- The final rule also creates a pathway for EPA to approve the use of emerging alternative leaks monitoring technology, which is developing rapidly. The rule outlines the information owners/operators must submit to demonstrate that using the alternative technology is capable of achieving methane and VOC reductions equivalent to those that can be achieved by using optical gas imaging or Method 21 to find leaks, and then repair them.

Pneumatic Pumps

- Pneumatic pumps use gas pressure to drive fluids. These pumps often are used at oil production sites where electricity is not readily available. At well sites, pneumatic diaphragm pumps are used to transfer fluids or to circulate glycol “heat trace medium,” which is used to keep pipes and equipment from freezing, for example.
- The final rule requires owners/operators of diaphragm pumps at natural gas well sites to route methane and VOC emissions from the pumps to a control device or process that is available on site, such as a device to control emissions from other equipment. Owners/operators must meet these requirements within 180 days after the final rule is published in the Federal Register.
- Limited-use pneumatic pumps – those at a well site that operate for less than a total of 90 days per year – are exempt from the requirements.

- EPA is not finalizing requirements that owners/operators reduce emissions from natural gas-driven piston pumps, which are used to inject small amounts of chemicals to limit production problems and protect equipment. After analyzing currently available data and considering public comments on the proposed rule, EPA determined that these pumps are low-emitting and should not be subject to the final rule requirements.
- The final rule encourages owners/operators to use pumps that are not driven by natural gas where technically feasible. These pumps include solar-powered, electrically powered and air-driven pumps, which are exempt from requirements of the rule.

Compressors

- EPA did not establish requirements for compressors at oil well sites, because these compressors are typically small and low emitting. However, compressors at oil gas well sites are included in the equipment covered by the leaks survey and repair requirements.

Requirements for Equipment Covered by the 2012 Rules

- The final updates to the NSPS add greenhouse gas standards, in the form of limitations on methane, for the types of equipment and processes that were covered in the 2012 NSPS for VOCs. EPA's analyses have determined that best systems for reducing methane and VOC emissions are the same. As a result, the final requirements for pneumatic controllers remain the same as in the 2012 rule.
- In addition, the 2012 rules included requirements for storage tanks across the oil and gas sector. The 2016 final NSPS does not change those requirements.

MORE INFORMATION

- To read the final rule and summary information on requirements for other types of facilities in the oil and gas industry, visit www.epa.gov/airquality/oilandgas