

New NSPS 0000a Regulations Affecting Methane and VOC Emissions from the O&G Sector Finalized as of June 3, 2016

(AUSTIN, TEXAS) -- June 28, 2016 – The EPA has issued three final rules that will curb emissions of methane, smog-forming volatile organic compounds (VOCs) and toxic air pollutants such as benzene from new, reconstructed and modified oil and gas sources, while providing greater certainty about Clean Air Act permitting requirements for the industry.

The EPA's amended and new regulations affecting methane (CH₄) and VOC emissions from the oil and gas sector have been finalized and the new rules were published in the Federal Register on June 3, 2016, amending 40 CFR 60 Subpart 0000. The final NSPS rules become effective August 3, 2016.

These rules revise NSPS 0000 and create the new NSPS 0000a. NSPS 0000 affects oil and gas facilities constructed, modified or reconstructed after August 23, 2011, and on or before September 18, 2015. NSPS 0000a affects facilities constructed, modified or reconstructed after September 18, 2015. NSPS 0000a includes CH₄ and VOC emission standards.

See link, <https://www3.epa.gov/airquality/oilandgas/may2016/nsps-table.pdf> for a table listing of affected emission sources for NSPS 0000 and 0000a.

Requirements for the oil and gas upstream industry for gas processing facilities are:

NSPS 0000 changes (changes to NSPS 0000 also apply to NSPS 0000a and include):

- Replacement storage vessels (tanks) are subject to the same requirements as the storage vessel that it replaced.
- Reconnected storage vessels are subject to the same requirements as those that applied before being removed from service.
- Requires flow indicators and alarms for bypasses from control devices for storage tanks and compressor wet seals.
- Exempts storage vessels with a capacity greater than 100,000 gallons used to recycle water that has been passed through two stage separation.
- For enclosed combustion devices (VCU) stack tested, it increases the limit for total organic carbon (TOC) in the exhaust gases to a level equal to or less than 275 parts per million by volume as propane on a wet basis corrected to 3 percent oxygen.
- Adds a definition of "Capital expenditure" for determining if a modification has occurred.
- The final amendments to the current NSPS 0000 do not change the requirements for operations already covered by the current NSPS 0000 standards.

Affected Sources for NSPS 0000a include new, reconstructed and modified processes and equipment after September 18, 2015.

- Completions of hydraulically fractured wells at gas wells and oil wells (NSPS 0000 only affected gas wells).
- Fugitive equipment leaks – well sites and compressor stations.
- Compressors – reciprocating and centrifugal located at production gathering and boosting stations.
- Crude oil, condensate and produced water storage tanks.
- Pneumatic controllers using natural gas.
- Pneumatic pumps – natural gas-driven diaphragm pumps.

Dates to be aware of:

- All revised and new NSPS rules become effective August 2, 2016.
- NSPS 0000 applies to facilities constructed, modified or reconstructed after August 23, 2011, (i.e., original proposed date of Subpart 0000) and on or before September 18, 2015.
- NSPS 0000a applies to new affected facilities (equipment and processes) constructed, reconstructed and modified after September 18, 2015.
- Facilities constructed on or before August 23, 2011, (and not modified or reconstructed after that date) are not affected by the new final rules.

Deferred Emission Sources

For liquids unloading operations, the EPA stated in the proposal that they did not have sufficient information to propose a national standard for liquids unloading. This emission source may be included in a future NSPS rule making.

Summary of New NSPS 0000a Emission Sources and Standards

The following summarizes the emission sources covered by NSPS 0000a. Consult the rule itself for actual requirements.

Enclosed Combustion Device Performance (Stack) Testing

NSPS 0000 VCU Testing

Enclosed combustion devices (e.g., VCU) installed to meet NSPS 0000 must continue to comply with existing NSPS 0000 regulations. The rules regarding testing VCUs include:

- Optional testing by the manufacturer for the VCU model following rules in 0000 (60.5413). Tested VCUs must be listed in the EPA list of tested devices (see table below for tested devices of Aereon Abutec):

**Performance Testing for Combustion Control Devices
Manufacturers' Performance Test¹
NSPS 0000 and MACT HH/HHH**

Manufacturer	Model Number	Date of Performance Test Submittal	Control Device Demonstrates Performance Requirements²	Maximum Inlet Flow Rate³
ABUTEC	ABUTEC 20	2/12/2013	Yes	1500 scf/hr.
ABUTEC	ABUTEC 100	2/12/2013	Yes	6000 scf/hr.
ABUTEC	ABUTEC 200	10/30/2014	Under Review	

¹The purpose of the table is to inform owners or operators the combustion control devices that have been manufacturer tested and for which the test results have been submitted to EPA for review.

²"Yes" means that the manufacturer has demonstrated that the specific model of control device listed achieves the combustion control device performance requirements in NSPS subpart 0000 and NESHAP subparts HH and HHH through performance testing conducted as specified in these subparts. An owner or operator who uses a device listed above as "YES" is exempt from conducting performance tests under 40 CFR §60.5413(a)(7), §63.772(e) and/or §63.1282(d), and from submitting test results under §60.5413(e)(6), §63.775(d)(1)(ii) and/or §63.1285(d)(1)(ii), as applicable. "Yes" does not constitute an endorsement by EPA. Operation of such a device does not relieve the owner or operator of an affected facility from other compliance obligations under the rule.

³This column provides the maximum inlet flow rate determined by the manufacturer for the specified model, as required under §60.5413(d)(11)(ii), §63.772(h)(7)(ii), §63.1282(g)(7)(ii), as applicable.

- VCU's not stack tested by the manufacturer must be conducted monthly visible emission testing for a 15-minute period using Method 22 – (<https://www3.epa.gov/ttnemc01/promgate/m-22.pdf>) of 40 CFR 60 Subpart A. VCU's can have up to 1 minute of visible emissions in any 15-minute period.
- To view the entire list of Performance Testing for Combustion Control Devices, please go to: <https://www3.epa.gov/airquality/oilandgas/pdfs/mantesteddevices.pdf>.

NSPS 0000a VCU Performance (Stack) Testing

VCUs used to meet NSPS 0000a MUST have a performance (stack) test conducted. This can include:

1. Testing by the manufacturer for the VCU model following rules in 0000a (60.5413a). Tested VCUs must be listed in the EPA list on the previous page.
2. VCUs not stack tested by the manufacturer must conduct in-field testing within 180 days of installation or within 180 days of August 2, 2016 – whichever is later date. Test data must be submitted to the EPA.
3. After initial testing, VCUs not stack tested by manufacturer must conduct in-field testing every 60 months. Test data must be submitted to the EPA.

NSPS 0000a Enclosed Combustion Device Compliance and Periodic Monitoring

Manufacturer Tested VCUs

1. The inlet gas flow rate must be equal to or less than the maximum specified by the manufacturer.
2. A pilot flame must be present at all times of operation.
3. Devices must be operated with no visible emissions, except for periods not to exceed a total of 1 minute during any 15-minute period. A visible emissions test conducted according EPA Method 22 must be performed at least once every calendar month, separated by at least 15 days between each test.

VCUs Not Tested by Manufacturer

1. Monthly visual inspections to confirm that the pilot is lit when vapors are being routed to the combustion device and that the continuous burning pilot flame is operating properly.
2. Monthly visible emission testing conducted according EPA Method 22 must be performed at least once every calendar month, separated by at least 14 days between each test.
3. Conduct olfactory, visual and auditory inspections of all equipment associated with the combustion device to ensure system integrity.

NSPS 0000a Fugitive Component Leak Monitoring

NSPS 0000a requires the following facility types to conduct routine fugitive leak monitoring:

- Oil and gas well sites
- Compressor stations (a subset of production gathering and boosting stations)

These rules are independent of the leak monitoring required for closed vent systems and cover requirements required for piping used to send vent gas to a VRU or VCU.

Definition of Leak

Fugitive emissions are defined as:

- Any visible emission from a fugitive emissions component observed if using optical gas imaging (OGI).
- Instrument reading of 500 ppm or greater if using EPA Method 21.

Fugitive Leak Components Included

Components required to be monitored include:

- Valves
- Connectors
- Pressure relief devices
- Open-ended lines
- Flanges
- Compressors

- Instruments
- Meters
- Covers and closed vent systems (i.e., piping) not subject to NSPS 0000a monitoring
- Storage thief hatches or other openings on a controlled storage vessel

Pneumatic controllers and pumps designed to vent as normal part of operations are not defined as fugitive emission sources.

Exemption from Leak Monitoring

A well site that only contains one or more wellheads (e.g., no process equipment) is exempt from fugitive monitoring.

Modifications to Existing Facilities that Trigger Leak Monitoring

The following modifications to a well site cause the facility to be covered by NSPS 0000a fugitive leak monitoring requirements:

- A new well is drilled at an existing well site
- A well at an existing well site is hydraulically fractured
- A well at an existing well site is hydraulically refractured

The following modifications to a compressor station cause a facility to be covered by NSPS 0000a fugitive leak monitoring requirements:

- An additional compressor is installed at a compressor station
- One or more compressors at a compressor station is replaced by one or more compressors of greater total horsepower than the compressor(s) being replaced. When one or more compressors is replaced by one or more compressors of an equal or smaller total horsepower than the compressor(s) being replaced, installation of the replacement compressor(s) does not trigger a modification of the compressor station for purposes of leak monitoring.

Leak Detection Plan Observation Path and Tagging Components

If you use an OGI camera, there is no requirement to tag components (like those in 40 CFR 60 Subparts KKK, V and VV). You may want to tag leaking components to ensure you know components requiring repair or replacement. No tagging required for OGI camera monitoring since rule requires the operator to include in their Leak Monitoring Plan a defined “Observation Path” that ensures that all fugitive emissions components are within sight of the path. The observation path must account for interferences.

Some operators may choose to use Method 21 to monitor for leaks since the cost of the equipment is much lower than the cost of OGI equipment. If use Method 21, then must maintain a list of fugitive components to be monitored and the method for determining the location of fugitive components to be monitored. This would require tagging or use of another identification method such as use of a process and instrumentation diagrams.

Leak Monitoring Requirements

1. Develop the required emissions Leaks Monitoring Plan that covers the collection of fugitive emissions components at well sites and compressor stations within each company-defined area.
2. Develop an observation path for each covered facility. The observation path description can be a simple schematic diagram of the facility site or an aerial photograph of the facility site that shows locations of the components and the OGI operator's walking path.
3. Initial fugitive leak monitoring
 - a. Initial monitoring survey within the later date of:
 1. 60 days of the startup of production or new well site or
 2. June 3, 2017
 - b. For a modified oil and gas well facility, the later date of:
 1. Within 60 days of the first day of production or
 2. June 3, 2017
4. Periodic fugitive leak monitoring frequency
 - a. For oil and gas well sites conduct semiannual surveys after the initial survey. Consecutive semiannual monitoring surveys must be conducted at least 4 months apart.
 - b. For compressor stations, conduct quarterly surveys after the initial survey. Consecutive quarterly monitoring surveys must be conducted at least 60 days apart.
 - c. Submit survey results in annual report to EPA. Some of the information required by the report include:
 1. Location, methods used and deviations from the plan
 2. Number and type of components for which fugitive emissions were detected
 3. Number and type of difficult-to monitor and unsafe-to-monitor components monitored
 4. Method 21 readings, if used
 5. Number and type of components not repaired
 6. Data on tagged components not repaired. If not tagged, then digital photograph or video of such components
 7. Repair methods applied to repair components
 8. Number and type of fugitive emission components placed on delay of repair and explanation for each delay of repair
 9. Date of successful repair of the fugitive emissions component
5. Repair and replacement
 - a. Repairs or replacements of leaking components required as soon as practicable, but no later than 30 calendar days after detection of the fugitive emissions.
 - b. For each repair that cannot be made during the monitoring survey when the fugitive emissions are initially found, a digital photograph must be taken of that component or the component must be tagged for identification purposes.
 - c. If the repair or replacement is technically infeasible or would be unsafe to repair during operation of the unit, the repair or replacement must be completed during the next compressor station shutdown, well shutdown, well shut-in, after an unscheduled, planned or emergency vent blowdown or within 2 years, whichever is earlier.

- d. A fugitive emissions component is repaired when the optical gas imaging instrument shows no indication of visible emissions. A fugitive emissions component is repaired when the Method 21 instrument indicates a concentration of less than 500 ppm above background or when no soap bubbles are observed when the alternative screening procedures.
6. Resurvey
Each repaired or replaced fugitive emissions component must be resurveyed as soon as practicable but no later than 30 days after being repaired. Document that there are no fugitive emissions from the repaired or replaced component.

The rules give guidance on monitoring requirements for difficult-to-monitor components and unsafe-to-monitor components.

Compressor stations located within an area that has an average calendar month temperature below 0°F for two of three consecutive calendar months of a quarterly monitoring period are not required to do leak monitoring during that quarter. Cannot skip leak monitoring for two consecutive quarterly monitoring periods.

Leak Detection Exemption from Modification Definition if no Capital Expenditure Occurs

Existing facility will not trigger a modification (and be subject to OOOOa leak monitoring) if the amount of capital expenditure (as defined in §60.5430a) is not exceeded for an expenditure for a physical or operational change to an existing facility.

This is important in determining the applicability of the fugitive leak monitoring at existing facilities. If do not trigger a capital expenditure at an existing affected facility type, then the facility will remain exempt from leak monitoring.

Pneumatic controllers

NSPS OOOOa has similar emission standards as the current NSPS OOOO for pneumatic controllers. This affects pneumatic controllers at oil and gas well sites, production gathering and boosting stations and natural gas compressor stations (transmission & storage). Each pneumatic controller that uses natural gas and is a continuous bleed device must be a low-bleed device with a bleed rate of less than or equal to 6 standard cubic feet per hour (scf/hr.).

If a facility installs a continuous, high-bleed device (>6 scf/hr.) then must justify reason for using and submit annual reports on such devices operating. Reasons for the exemption include functional needs, such as limited to response time, safety and positive actuation.

For natural gas processing plants, continuous, low-bleed devices must have a bleed rate of 0 scf/hr.

Devices in compressed air service are exempt.

Pneumatic (Diaphragm) Pumps Using Natural Gas

Affects new, modified and reconstructed natural gas-driven diaphragm pumps at well sites and natural gas processing plants.

Pumps at boosting and gathering systems, transmission and storage facilities are exempt at this time pending results of data collected by the proposed Information Collection Request (ICR), see <https://www3.epa.gov/airquality/oilandgas/methane.html>.

A single natural gas-driven diaphragm pump that is in operation less than 90 days per calendar year is exempt provided keep records of the days of operation. Any period of operation during a calendar day counts toward the 90 calendar day threshold. For example, if operated a diaphragm pump as a sump pump that operates only 1 day per week over a year, then the pump would not be exempt.

A pump in which a fluid is displaced by a diaphragm is not considered a diaphragm pump. Lean glycol circulation pumps (e.g., Kimray pump) that uses energy exchange with the rich glycol from the contractor are exempt.

There are separate requirements for “greenfield” well sites and existing well sites. Greenfield sites include oil and gas well sites or booster/gathering facility which is entirely new construction.

Greenfield Sites Affected Pneumatic Pumps

1. Route vent gas:
 - a. To an existing control device if an emissions control device exists at the facility.
 - b. Back to the system (e.g., vapor recovery unit, fuel gas) if technically feasible.
2. If no control device exists, then there is no requirement to install a control device just to control affected pneumatic pumps.
3. If no control device exists at the facility or it is not technically feasible to route vent gas to a control device or back to system, then must submit certification on reasons for this to EPA in the net NSPS 0000a annual report.

Non-Greenfield Sites Affected Pneumatic Pumps

1. Route vent gas:
 - a. To an existing control device if an emissions control device exists at the facility.
 - b. Back to the system (e.g., vapor recovery unit, fuel gas) if technically feasible.
2. If no control device exists, then there is no requirement to install a control device just to control affect pneumatic pumps. Must submit certification to EPA in NSPS 0000a annual report if no control device exists.
3. If not technically feasible to send gas to an existing control device or send gas back to the system then must:
 - a. Obtain certification by qualified Professional Engineer on technical infeasibility.
 - b. Also must submit certification to EPA in your next NSPS 0000a annual report regarding reasons controls not used.

Changes to Status of Control Requirements for Pneumatic Pumps

If a facility adds a control device or has a change that makes routing gas to the system feasible, then must control the vent gas from the affected pumps.

If the control device is removed or the ability to route gas to system becomes not feasible, then the facility can stop controlling vent gas from the affected pumps. These changes must be reported to the EPA in next annual NSPS 0000a report.

Devices in compressed air service are exempt.

Storage Tanks

The rule has similar requirements as the current NSPS 0000 for storage tanks.

Affects crude oil, condensate and produced water storage tanks.

Storage tanks that emit 6 or more tons per year (tpy) of VOC must use a control device that reduces VOC emissions by at least 95%. Typical control devices include VRUs and enclosed combustors. Review the regulations for details on compliance requirements.

VRUs used to recover vent gas and send the gas back into the process can be considered process equipment and not an emission control device. Natural gas recovered by the vapor recovery system does not count toward the potential to emit VOC emissions from the storage tank.

NSPS 0000a exempts storage tanks with a legally and practically enforceable permit limit at or less than 6 tpy of VOC. Also exempts storage vessels with a capacity greater than 100,000 gallons used to recycle water that has been passed through two stage separation.

Closed Vent Systems (Piping) Design Certification

The rule requires certification by a qualified professional engineer that the closed vent system is properly designed to ensure that all emissions from the unit being controlled in fact reach the control device and allow for proper control.

This applies only to NSPS 0000a required closed vent systems for emission control devices used to control vent gas from affected centrifugal compressor we seal fluid degassing systems, reciprocating compressors rod packing, pneumatic pumps and storage vessels.

Completions of hydraulically wells at gas and oil wells – the rule requires reduced emissions completions (RECs) for oil wells and gas wells that are hydraulically fractured or refractured with some exceptions/exemptions.

Sets up 2 subcategories of hydraulically fractured wells:

- Well completions (subcategory 1: non-wildcat and non-delineation wells).
 - Route flowback to separator and storage vessel.
 - Use reduced emissions completions (RECs) and combustion.
 - If technically infeasible to recover gas, recovered gas must be combusted. All liquids must be routed to a storage vessel or well completion vessel, collection system, or be re-injected into the well or another well.
 - Well completion (subcategory 2: exploratory and delineation wells and low pressure wells).
 - No separator required.
 - Any gas present in the flowback before the separator can function is not subject to control.
 - Capture and direct recovered gas to a completion combustion device with a continuous pilot flame.

Venting allowed in lieu of combustion would present safety hazards or can damage tundra, permafrost or waterways. Review the regulations for details on compliance requirements.

Reciprocating and centrifugal compressors at production gathering and boosting stations. The rule has similar requirements as the current NSPS 0000 for replacement or control of rod packing seals for reciprocating compressors and control of venting from centrifugal compressors operating at production gathering and boosting stations. NSPS 0000a has same exemption as NSPS 0000 for reciprocating and centrifugal compressors operating at well sites.

Affected reciprocating compressors must change rod packing before 26,000 hours of operation or prior to 36 months from the date of the most recent rod packing replacement. The option to change the packing every 26,000 hours is only allowed if the compressor runtime is continuously monitored.

Affected centrifugal compressors must reduce VOC emissions from each centrifugal compressor wet seal fluid degassing system by 95.0% or greater.

Review the regulations for details on compliance requirements.

Annual Reporting NSPS 0000a

The initial annual report is due no later than 90 days after the end of the initial compliance period (estimated to be October 31, 2017 – pending EPA guidance).

Subsequent annual reports are due no later than same date each year as the initial annual report. Consult EPA or state regulators for exact date.