



State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-087-13

MEMORANDUM

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Colleen Delaney, Environmental Scientist

DATE: October 23, 2013

SUBJECT: PROPOSE FOR PUBLIC COMMENT: New Rule R307-210-2. Oil and Gas Sector: New Source Performance Standards; and New Rule R307-214-3. Oil and Gas Sector: National Emission Standards for Hazardous Air Pollutants.

On August 16, 2012, the Environmental Protection Agency (EPA) promulgated New Source Performance Standards (NSPS) and corresponding revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the oil and gas sector. On September 23, 2013, EPA revised the oil and gas sector regulations to extend compliance dates for some of the requirements.

These NSPS and NESHAP regulations are currently enforceable by EPA. The proposed rule change would incorporate the standards into Utah's rules to make them enforceable under state law. The proposed rule change would not establish any new requirements for sources. Additional information about the oil and gas NSPS and NESHAP is attached to this memo.

Staff Recommendation: Staff recommends the Board propose new rules R307-210-2 and R307-214-3 for public comment.

1 R307. Environmental Quality, Air Quality.

2 R307-210. Stationary Source.

3 R307-210-2. Oil and Gas Sector: New Source Performance
4 Standards.

5 The "Oil and Gas Sector: New Source Performance Standards"
6 in 40 CFR 60.17, 40 CFR Part 60 Subpart KKK, 40 CFR Part 60
7 Subpart LLL, and 40 CFR Part 60 Subpart OOOO promulgated by the
8 Environmental Protection Agency on August 16, 2012 in 77 FR 49490
9 and revised on September 23, 2013 in 78 FR 58435 are hereby
10 incorporated by reference.

11

12 KEY: air pollution, stationary sources, new source review

13 Date of Enactment or Last Substantive Amendment: [~~March 7,~~
14 ~~2012~~] 2014

15 Notice of Continuation: April 6, 2011

16 Authorizing, and Implemented or Interpreted Law: 19-2-104(3)(g);
17 19-2-108

1 R307. Environmental Quality, Air Quality.
2 R307-214. National Emission Standards for Hazardous Air
3 Pollutants.
4 R307-214-3. Oil and Gas Sector: National Emission Standards for
5 Hazardous Air Pollutants.
6 Revisions to the "Oil and Gas Sector: National Emission
7 Standards for Hazardous Air Pollutants" in 40 CFR 63.14, 40 CFR
8 Part 63 Subpart HH, and 40 CFR Part 63 Subpart HHH promulgated by
9 the Environmental Protection Agency on August 16, 2012 in 77 FR
10 49490 are hereby incorporated by reference.

11

12 KEY: air pollution, hazardous air pollutant, MACT
13 Date of Enactment or Last Substantive Amendment: 2014
14 Notice of Continuation: November 8, 2012
15 Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

EPA's Air Rules for the Oil & Natural Gas Industry

FINAL UPDATES TO REQUIREMENTS FOR STORAGE TANKS USED IN OIL AND NATURAL GAS PRODUCTION AND TRANSMISSION

Storage tanks are used to temporarily hold liquids produced during the production and transmission of oil and natural gas. These storage tanks can emit ozone-forming volatile organic compounds (VOCs), along with several toxic air pollutants, including benzene. Storage tanks used in oil or natural gas production, and transmission are subject to EPA's 2012 New Source Performance Standards (NSPS) for VOCs if they have the potential to emit 6 or more tons of VOCs a year.

ACTION

- On Aug. 2, 2013, EPA updated its 2012 performance standards for oil and natural gas to address VOC emissions from storage tanks used by the crude oil and natural gas production industry. The updates will ensure the tanks likely to have the highest emissions are controlled first, while providing tank owners and operators time to purchase and install VOC controls. The amendments reflect recent information showing that more storage tanks will be coming on line than the agency originally estimated.
- All tanks subject to the NSPS must control VOC emissions by 95 percent or meet the alternative emissions limit EPA is finalizing today.
- The updates:
 - phase in the date by which storage tanks must install VOC controls;
 - establish alternative emission limits for tanks where emissions have declined;
 - clarify test protocols for control equipment;
 - clarify the types of tanks subject to the rule;
 - streamline compliance monitoring requirements to ensure leaks are repaired while EPA addresses monitoring issues raised in reconsideration petitions; and
 - adjust requirements for submitting annual reports.
- The updates respond to issues raised in several petitions for reconsideration of the 2012 standards. EPA is continuing to evaluate other issues raised in the petitions.

SUMMARY OF UPDATES

Tanks Subject to the Rule

- The updated rule clarifies the type of storage tanks that are subject to the NSPS. Tanks are considered “affected facilities” if they: were constructed after Aug. 23, 2011; have potential VOC emissions of 6 or more tons per year; and are used to store crude oil, condensate, unrefined petroleum liquids known as “intermediate hydrocarbon liquids,” or produced water. Fuel tanks, for example, are not covered by these rules.
- Tanks with enforceable permit limits under federal, state, local or tribal authority are not affected facilities if those limits are less than 6 tons a year.
- Storage tanks subject to the rule may be located anywhere along the oil and natural gas production and transmission process. For natural gas, this process extends from the natural gas well to the point where gas enters the distribution system; for oil, it extends from the well to the point where oil is transferred to the pipeline for crude oil transmission. Storage tanks located at refineries are not covered by this rule.

Phased-In Control Deadlines

- The 2012 standards required that storage tanks subject to the rule install controls to reduce VOC emissions by Oct. 15, 2013. After those standards were issued, EPA received information that led the agency to substantially increase its estimate of storage tanks that are subject to the rule. In light of that information, and information received during public comment on the proposed changes, EPA is adjusting the compliance date for tanks subject to the rule.
- Emissions from storage tanks generally decline over time, because the amount of liquid that moves through the tank declines as production from a well slows. EPA is setting two compliance dates, based on the date storage tanks were constructed or modified. This phased approach will help ensure the tanks likely to have the highest emissions are controlled first, while giving tank owners/operators time to purchase and install controls.
 - **April 15, 2014** is the compliance deadline for tanks that come online after April 12, 2013, or within 60 days after startup, whichever is later.
 - Within 30 days of startup, owners/operators of these tanks (known as Group 2 tanks) must estimate their tanks’ potential emissions and determine whether their tanks are subject to the rule. Vapors that are collected and re-routed to a process do not have to be counted as potential emissions.
 - If a tank’s potential emissions are 6 or more tons of VOCs per year, the tank owner/operator has an additional 30 days to control VOC emissions.

- **April 15, 2015** is the compliance deadline for tanks constructed between Aug. 23, 2011, and April 12, 2013 (known as Group 1 tanks).
 - Owners/operators of Group 1 tanks have until Oct. 15, 2013 to estimate their tanks' potential emissions and determine whether their tanks are subject to the rule. Vapors that are collected and re-routed to a process do not have to be counted as potential emissions.
 - If a tank's potential emissions are 6 or more tons of VOCs per year, the owner/operator has to control VOC emissions by April 15, 2015.
 - Based on public comment and additional information the agency received about the availability of VOC controls, EPA is not finalizing a proposed requirement that Group 1 tanks control VOC emissions only if there is a change that potentially would increase the tank's emission – such as the addition of a well supplying the tank, or the refracture of an existing well. All Group 1 tanks subject to the rule must control VOC emissions.

Alternative Emissions Limit

- EPA also is establishing an alternative emissions limit for storage tanks that allows owners/operators to either:
 - Reduce VOC emissions at a tank by 95 percent, as required in the 2012 rule; or
 - Demonstrate emissions from a tank have dropped to less than 4 tons per year of VOCs without emission controls.
 - This alternative limit reflects the decline in emissions that occurs at most tanks over time and allows owners/operators to shift control equipment to higher-emitting tanks.
 - To qualify for this emissions limit, owners/operators have to document that a tank's monthly uncontrolled emissions have been below 4 tons per year for at least 12 consecutive months.
 - In addition, owners/operators must re-evaluate uncontrolled VOC emissions on a monthly basis. If emissions increase (at or above the 4 ton-per-year limit), owners/operators have 30 days to meet the 95 percent reduction requirement. However, if the increase was associated with the fracture or re-fracture of a well supplying the storage tank, owners/operators must meet the 95 percent control

limit as soon as liquids from the fractured or re-fractured well are routed to the tank.

- Similar requirements apply to storage vessels that have been taken out of service and then returned to service.

Clarifying Test Protocols for Control Equipment

- The 2012 NSPS allows owners/operators to use manufacturer-tested emission control device models (combustors) that have been demonstrated to reduce VOC emissions from storage tanks by 95 percent, rather than requiring field performance testing of these devices.
- Today's updates align the protocol that emission control manufacturers must use in testing the controls with the testing protocol required in EPA's 2012 air toxics regulations for storage tanks.
- EPA also is allowing tank owners/operators to use control devices that are designed to reduce VOC emissions by 95 percent, while the agency reviews issues raised in the reconsideration petitions related to field testing protocol requirements. EPA expects to address this issue by the end of 2014.

Reviewing Monitoring Requirements for Tanks That Already Have Controls

- The 2012 final NSPS required that tank owners/operators conduct a performance test and use a continuous parametric monitoring system (CPMS) to demonstrate that they are meeting requirements to reduce VOC emissions from tanks by 95 percent.
- EPA received several petitions asking that the agency reconsider this requirement, based on the large number of storage tanks affected each year and the remoteness of many of the well sites where the tanks are located. EPA is continuing to evaluate this issue and will address it by the end of 2014.
 - While the agency completes its evaluation of monitoring issues raised in the reconsideration petitions, the agency is streamlining compliance and monitoring requirements for tanks that have already installed VOC controls. For tanks with controls, the updates require monthly inspections of covers, closed-vent systems and control devices. This step is expected to minimize VOC emissions by leading to prompt repairs of leaks, while requiring little or no specialized monitoring training or equipment.

Timing of Annual Reports

- The 2012 final NSPS required that owners/operators submit an annual report on well completions, along with information on storage tanks and other equipment constructed or modified during the year. The rule gave owners/operators 30 days to submit the report, which must be certified by a senior company official. Several of the reconsideration petitions noted that 30 days is not enough time to compile the required information and obtain a senior official's signature. These updates give owners/operators 90 days to submit this report.

BACKGROUND

- On April 17, 2012, EPA issued cost-effective regulations, as required by the Clean Air Act, that reduce harmful air pollution from the oil and natural gas industry, while allowing continued, responsible growth in U.S. oil and natural gas production. The final rules included the first federal air standards for natural gas wells that are hydraulically fractured, along with requirements for several of other sources of pollution in the oil and gas industry that were not previously regulated at the federal level.
- After EPA issued the final rule, the agency received petitions for reconsideration from several industry and environmental organizations, and the Texas Commission on Environmental Quality. EPA is continuing to evaluate other issues raised in those petitions.
 - Industry groups that petitioned for reconsideration are: the America's Natural Gas Alliance; the American Petroleum Association; Gas Processors Association; the Interstate Natural Gas Association of America; the Texas Oil and Gas Association; the Western Energy Alliance; REM Technology Inc.; and (jointly) the Independent Petroleum Association of America, Independent Oil and Gas Association of West Virginia, Inc., Kentucky Oil & Gas Association, Inc., Indiana Oil and Gas Association, Pennsylvania Independent Oil & Gas Association, Ohio Oil and Gas Association, and the Illinois Oil & Gas Association.
 - Environmental groups that petitioned for reconsideration are: Earthjustice; and (jointly) Clean Air Council, the Clean Air Task Force, Environmental Defense Fund, Group Against Smog and Pollution, the Natural Resources Defense Council and the Sierra Club.

Reducing Air Pollution from the Oil and Natural Gas Industry

**EPA's Final New Source Performance Standards and
National Emission Standards for Hazardous Air Pollutants**

April 17, 2012





Today's Action

- Updates standards issued in 1985 and 1999
- Continues growth in clean domestic energy production, while increasing environmental protection
- Relies on available, affordable technology already in use
- Offsets the cost of pollution controls through the capture of emissions
- Provides flexibility and transparency

"[I]t is vital that we take full advantage of our natural gas resources, while giving American families and communities confidence that natural and cultural resources, air and water quality, and public health and safety will not be compromised."

*Executive Order Supporting Safe and Responsible
Development of Unconventional Domestic Natural Gas Resources
signed by President Obama on April 13, 2012*

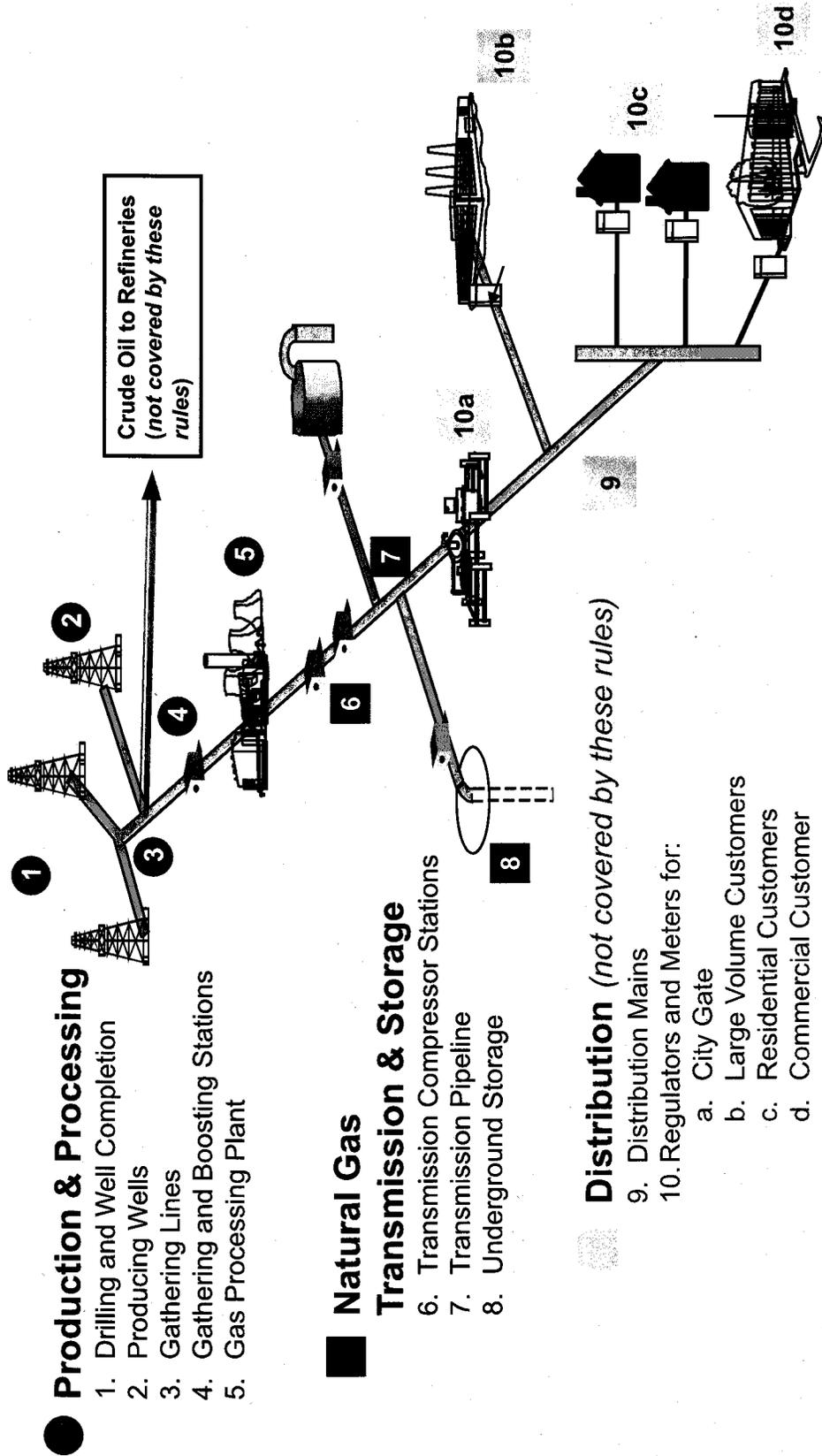


Overview of Action

- On April 17, 2012, EPA issued rules that will ensure that domestic natural gas production can continue to grow in an environmentally responsible manner.
- A key feature of these rules will require companies to capture natural gas that escapes when hydraulically fractured gas wells are prepared for production -- gas that currently is going to waste in many areas.
- The rules are cost-effective: projected revenues from recovered natural gas are expected to offset costs, yielding a cost savings of \$11 million to \$19 million in 2015.
- EPA made a number of changes to the rules in response to public comment.
- The final rules provide flexibility while maintaining environmental benefits . They provide a phase-in period -- which ensures that equipment to capture natural gas is available in time to meet compliance deadlines -- and set key requirements based on performance rather than on a specific technology.
- The rules also include incentives for industry to modernize equipment and reduce pollution early.
- The rules will reduce emissions of smog-forming volatile organic compounds (VOCs). These reductions are expected to help reduce ozone in areas where natural gas production occurs. The rules will also reduce emissions of air toxics. Air toxics are known or suspected to cause cancer and other serious health problems.
 - The rules will also yield co-benefits by reducing methane from natural gas wells. Methane is a potent greenhouse gas -- more than 20 times as potent as carbon dioxide.

The Natural Gas Production Industry

Natural gas systems encompass wells, gas gathering and processing facilities, storage, and transmission and distribution pipelines.



Source: Adapted from American Gas Association and EPA Natural Gas STAR Program



Pollutants Emitted by the Oil and Natural Gas Industry Are a Health & Environmental Concern

- **VOCs** are one of the key ingredients in forming ozone (smog).
 - The oil and gas industry is the largest industrial source of VOC emissions in the U.S., based on data reported to the 2008 National Emissions Inventory.
 - Ozone is linked to asthma attacks, hospital and emergency department visits, and increased school absences, among other serious health effects.
 - Ozone used to be considered a summertime pollutant; but recently has become a problem in winter in some areas where significant natural gas production occurs.
 - In some areas, VOCs also help form fine particle pollution (PM_{2.5}).
- **Air toxics** can cause cancer and other serious, irreversible health effects, such as neurological problems and birth defects.
- **Methane** reacts in the air to form ground-level ozone.



Clean Air Act Requirements

- The Clean Air Act requires EPA to set **new source performance standards (NSPS)** for industrial categories that cause, or significantly contribute to, air pollution that may endanger public health or welfare.
 - Each performance standard must be based on the "best system of emission reduction."
 - The law requires EPA to review and, if appropriate, revise new source performance standards every eight years.
 - EPA issued its two existing NSPS for the oil and gas industry in 1985.
- The Clean Air Act also requires EPA to set **standards for air toxics, which are known or suspected to cause cancer and other serious health effects.**
 - EPA must review these standards eight years after they are issued, to determine whether additional changes are necessary to reduce risk
 - EPA must review and revise as necessary these standards eight years after they are issued, to reflect better emission control practices, processes or technologies that have become available and are cost-effective
 - EPA's existing air toxics standards for the oil and natural gas industry were issued in 1999.
- EPA issued today's rules under a court deadline.

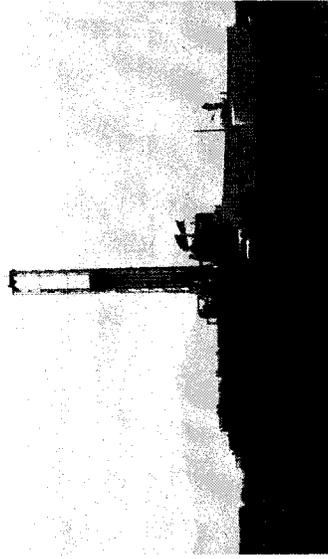


Reducing Pollution from Well Completions

- Today's rules will reduce pollution from natural gas wells that are hydraulically fractured, without slowing production.
- The rules phase in requirements for capturing natural gas. This phase-in provides time for equipment to be manufactured and operators to be trained to capture gas through a process known as a "green completion."
- Industry leaders already are using green completions as a smart business practice.
- Owners/operators of fractured and refractured wells may reduce pollution through flaring until Jan. 1, 2015; after that, gas capture is required.
- Wells that are refractured will not be considered affected facilities if they use green completions and meet recordkeeping/reporting requirements as of the effective date of the rule.
- Exploratory, delineation and low-pressure wells are exempt from green completion requirements; will have to flare.
- EPA streamlined well completion notification and reporting requirements to reduce burden to industry and states, while ensuring transparency and accountability.



Example of Green Completion Equipment
(Source: Weatherford)



A natural gas well site. EPA photo.



Key Changes Since Proposal

Based on comments received during the public comment period, the final rule:

- Includes an updated definition for a “green completion”
 - Changed to focus on performance rather than technology, allowing greater flexibility, lowering costs and reducing the burden on equipment manufacturing and distribution.
- Eliminates state permitting “trigger” when wells are refractured if operators choose to use green completions (instead of flaring)
 - Refractured wells that use green completions will not be considered affected facilities. These wells will not trigger minor source permitting requirements in some states.
 - Refractured wells may choose to flare for now and phase in green completions by Jan. 1, 2015. These wells will be considered affected facilities for permitting purposes.
- Does not finalize requirements for compressors and pneumatic controllers in the transmission segment of this industry
 - Based on public comment, the agency concluded it needed additional information in order to set cost-effective standards for compressors and controllers in this segment, where VOC content of the gas generally is low.



Additional Requirements to Reduce Pollution

Today's rules also set requirements for several types of equipment that may vent or leak VOCs or air toxics.

Storage tanks

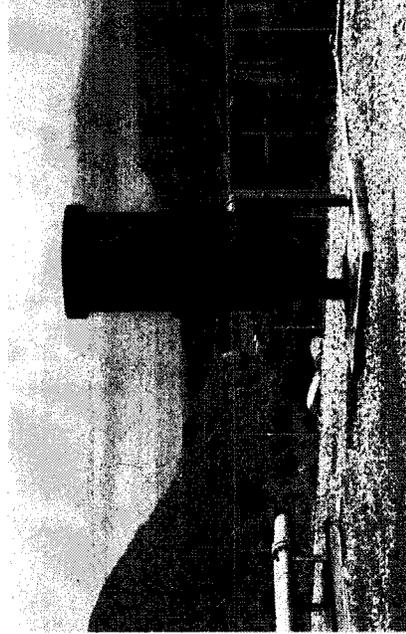
- EPA is phasing in requirements to reduce VOC emissions from new & modified tanks over one year, to ensure enough combustion devices are available to reduce the emissions.
- Requirement applies to both oil and natural gas production.
- EPA did not change air toxics standards for storage tanks; however emissions storage tanks in natural gas production sector will be counted toward determining a major source under the air toxics standards for oil & natural gas production.

Centrifugal compressors

- VOC reduction required for compressors with wet seal systems only; requirements do not apply in the natural gas transmission and storage segments, where VOC emissions generally are low.

Reciprocating compressors

- Rule requires replacement of rod packing, which can leak VOCs as it wears.
- Rule provides an alternative schedule for rod packing replacement that does not require monitoring and documentation of operating hours.



A combustion device and storage tanks. EPA photo



Additional Requirements, cont.

Pneumatic controllers

- Used to regulate conditions such as pressure and temperature.
- Rule affects high-bleed controllers, allows use only for critical applications, such as emergency shutoff valves.
- Requirements apply to controllers used in both oil and gas sectors; (in natural gas sector, applies only to sources upstream of the transmission line).

Glycol dehydrators

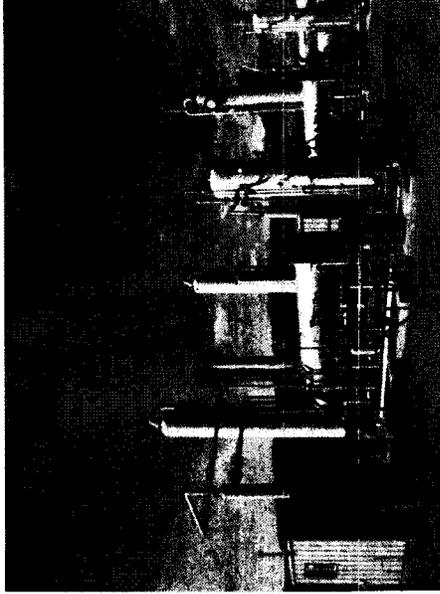
- Covered under two air toxics standards (oil and natural gas production; natural gas processing plants)
- Both standards retain existing standards for large dehydrators at major sources, set new standards for small dehydrators (not "area sources.")

Leaks from valves at gas processing plants

- Strengthened requirements for detection and repair for VOCs and air toxics.

Sweetening units at natural gas processing plants

- Must reduce sulfur dioxide emissions by 99 percent



*Glycol dehydrators at a well production pad.
EPA photo*



Cost Savings and Emissions Reductions

- The rules will yield a cost savings of **\$11 to \$19 million** in 2015, because the value of natural gas and condensate that will be recovered and sold will offset costs.
- EPA estimates the following combined annual emission reductions when the rules are fully implemented :
 - **VOCs:** 190,000 to 290,000 tons
 - **Air toxics:** 12,000 to 20,000 tons
 - **Methane:** 1.0 to 1.7 million short tons (about 19 to 33 million tonnes of CO₂ equivalent (CO₂e))



Today's Rules Respond to Public Comment

- EPA sought, and received, extensive public comment during the development of today's final rules. The agency:
 - Held two public meetings while developing the proposal,
 - Held three public hearings on the proposed rule
 - Received more than 156,000 written comments.
- Today's action responds to a number of those comments, in order to ensure the requirements of the rule are cost effective and allow continued, responsible growth in natural gas production.



For Additional Information

- To read more about today's action, visit: www.epa.gov/airquality/oilandgas

**OVERVIEW OF FINAL AMENDMENTS TO AIR REGULATIONS
FOR THE OIL AND NATURAL GAS INDUSTRY**

FACT SHEET

OVERVIEW OF ACTION

- On April 17, 2012, the U.S. Environmental Protection Agency (EPA) issued cost-effective regulations to reduce harmful air pollution from the oil and natural gas industry while allowing continued, responsible growth in U.S. oil and natural gas production.
- The final rules include the first federal air standards for natural gas wells that are hydraulically fractured, along with requirements for several other sources of pollution in the oil and gas industry that currently are not regulated at the federal level. The rules for fractured gas wells rely on proven, cost-effective technology and practices that industry leaders are using today at about half of the fractured natural gas wells in the U.S.
- EPA extensively sought comment on the proposed rules, which the agency was required to review under the Clean Air Act. Today's final action includes a number of changes made in response to those comments. The final rules provide flexibility for industry to ensure equipment is available to capture natural gas in time to meet compliance deadlines, while maintaining the environmental benefits from the proposal. The rules also include incentives for industry to modernize equipment and reduce pollution early, and changes to reporting requirements to strengthen accountability.
- A key component of the final rules is expected to yield a nearly 95 percent reduction in VOCs emitted from more than 11,000 new hydraulically fractured gas wells each year. This significant reduction would be accomplished primarily through the use of a proven process – known as a “reduced emissions completion” or “green completion” -- to capture natural gas that currently escapes to the air.
- 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.
- The estimated revenues from selling the gas that currently goes to waste are expected to offset the costs of compliance, while significantly reducing pollution from this expanding industry. EPA's analysis of the rules shows a cost savings of \$11 to \$19 million when the rules are fully implemented in 2015.
- Some states, such as Wyoming and Colorado, require green completions, as do some cities,

including Fort Worth and Southlake, Texas. In addition, data provided to EPA's Natural Gas STAR program show that a number of companies are using green completions voluntarily. Today's rule builds on the emission reductions these leaders have taken, leveling the playing field across the industry and ensuring this smart environmental and business practice is used in all states where gas wells are fractured.

POLLUTION REDUCTION, CONTINUED NATURAL GAS PRODUCTION

- The VOC emission reductions from wells, combined with reductions from storage tanks and other equipment, are expected to help reduce ground-level ozone in areas where oil and gas production occurs. In addition, the reductions would yield a significant environmental co-benefit by reducing methane emissions from new and modified wells. Methane, the primary constituent of natural gas, is a potent greenhouse gas – more than 20 times as potent as carbon dioxide when emitted directly to the atmosphere. Oil and natural gas production and processing accounts for nearly 40 percent of all U.S. methane emissions, making the industry the nation's single largest methane source.
- Today's final rules also would protect against potential cancer risks from emissions of several air toxics, including benzene.
- EPA estimates the following combined annual emission reductions when the rules are fully implemented :
 - VOCs: 190,000 to 290,000 tons;
 - Air Toxics: 12,000 to 20,000 tons; and
 - Methane 1.0 to 1.7 million short tons [about 19 to 33 million tonnes of CO₂ equivalent (CO₂e)]
- Today's action continues EPA's efforts to support responsible oil and natural gas exploration and production that protect public health and the environment. In 2011, for example, the Agency signed a memorandum of understanding with the departments of Interior and Agriculture establishing a common process for the agencies to follow in analyzing the potential air quality impacts of proposed oil and gas activities on federally managed public lands. The collaborative approach in the agreement will provide increased certainty, clarity and transparency about requirements on public lands.
- To learn more about specific requirements of today's rules visit:
www.epa.gov/airquality/oilandgas

COSTS AND BENEFITS

- Today's cost-effective rules will yield significant reductions in air pollution while offsetting the costs to industry. EPA estimates the combined rules will yield a cost savings of \$11 to \$19 million in 2015, because the value of natural gas and condensate that will be recovered and sold will offset costs.

- The VOCs and air toxics reductions in the rules are expected to improve outdoor air quality, protect against cancer risk from air toxics emissions and reduce health effects associated with exposure to ground-level ozone (smog). Exposure to ozone is linked to increased asthma attacks, hospital admissions and emergency room visits, and premature death. EPA was unable to model health benefit estimates for the rule, due to uncertainties about future locations of oil and gas emissions. Air quality changes associated with air toxics and VOC reductions can be highly localized.
- Today's rules also would yield significant reductions in methane, a potent greenhouse gas. EPA's Regulatory Impact Analysis for the rule estimates the value of the climate co-benefits that would result from this reduction at \$440 million annually by 2015. This includes the value of climate-related benefits such as avoided health impacts, crop damage and damage to coastal properties.

AIR EMISSIONS FROM OIL AND GAS PRODUCTION IN THE U.S.

- In 2009, about 1.1 million wells were producing oil and natural gas in the United States. The wells are located in many areas of the country, including both urban and rural areas.
- The majority of new gas wells drilled today use a process known as hydraulic fracturing or "fracking." In this process, a mixture of water, chemicals and a "proppant" (usually sand) is pumped into a well at extremely high pressures to fracture rock and allow natural gas to escape. An estimated 11,400 new wells are fractured each year; EPA estimates another 1,400 existing wells are re-fractured to stimulate production or to produce natural gas from a different production zone.
- The gas these wells produce goes to gathering and boosting stations that take it to processing plants. These plants remove contaminants to make the gas ready for the pipelines that deliver it to commercial, industrial and residential customers. Transmission compression stations help move the gas through 1.5 million miles of natural gas pipelines across the United States.
- The oil and gas industry is a significant source of VOCs, which contribute to the formation of ground-level ozone (smog). Data provided to EPA's Natural Gas STAR Program show that some of the largest air emissions in the natural gas industry occur as natural gas wells that have been fractured are being prepared for production. During a stage of well completion known as "flowback," fracturing fluids, water, and reservoir gas come to the surface at a high velocity and volume. This mixture includes a high volume of VOCs and methane, along with air toxics such as benzene, ethylbenzene and n-hexane. The typical flowback process lasts from three to 10 days. Pollution also is emitted from other processes and equipment in the industry that prepare gas for sale and that assist in moving it through pipelines.

BACKGROUND

- Today's final action will cut emissions of smog-forming volatile organic compound (VOC) emissions and air toxics from several segments of the oil and gas industry. The final rules are the result of the review of four air regulations for the oil and natural gas industry required by the Clean Air Act: a new source performance standard for VOCs; a new source performance standard for sulfur dioxide; an air toxics standard for major sources of oil and natural gas production; and an air toxics standard for major sources of natural gas transmission and storage.
- The Clean Air Act requires EPA to set new source performance standards (NSPS) for industrial categories that cause, or significantly contribute to, air pollution that may endanger public health or welfare. EPA is required to review these standards every eight years. The existing NSPS – for VOCs and SO₂ – were issued in 1985.
- EPA also must set standards for emissions of air toxics, also called hazardous air pollutants. Air toxics are pollutants known or suspected of causing cancer and other serious health effects. EPA must review and conduct a residual risk review of these standards once, eight years after the standard issued. The agency must conduct technology reviews of these standards every eight years.
- EPA's existing air toxics standards for oil and natural gas production, and the standards for natural gas transmission and storage were issued in 1999.

Litigation

- In January 2009, WildEarth Guardians and the San Juan Citizens Alliance sued EPA, alleging that the Agency had failed to review the new source performance standards and the major source air toxic standards for the oil and natural gas industry.
- In February 2010, the U.S. District Court for the District of Columbia issued a consent decree that requires EPA to take actions related to the review of these standards. EPA issued the proposed rule July 28, 2011. The consent decree, which was recently revised, required that EPA take final action by April 17, 2012.

Public comment

- EPA held two public meetings as it was developing the rules and three public hearings on the proposal. The agency received more than 156,000 comments on the proposal.
- EPA's Natural Gas STAR program has been working with U.S. oil and gas companies since 1993 to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce methane emissions. Many Gas STAR partners already are using the green completions that EPA is now requiring across the industry. For more information on EPA's Natural Gas STAR program, visit <http://www.epa.gov/gasstar/index.html>

- Additional information about hydraulic fracturing and EPA's work is available at <http://www.epa.gov/hydraulicfracture/>

FOR MORE INFORMATION ABOUT TODAY'S ACTION:

- The rule and other background information are posted at <http://www.epa.gov/airquality/oilandgas>. Information also is available at EPA's electronic public docket and comment system (<http://www.regulations.gov>) using Docket ID Number EPA-HQ-OAR-2010-0505.
- The rule and materials also are available in hard copy at the EPA Docket Center's Public Reading Room, room 3334 in the EPA West Building, located at 1301 Constitution Avenue, NW, Washington, DC. Hours of operation are 8:30 a.m. to 4:30 p.m. eastern time, Monday through Friday, excluding federal holidays.
- Visitors are required to show photographic identification, pass through a metal detector, and sign the EPA visitor log. All visitor materials will be processed through an X-ray machine as well. Visitors will be provided a badge that must be visible at all times

EPA's Air Rules for the Oil & Natural Gas Industry

SUMMARY OF KEY CHANGES

TO THE NEW SOURCE PERFORMANCE STANDARDS

On April 17, 2012, the U.S. Environmental Protection Agency (EPA) issued cost-effective regulations, required by the Clean Air Act, to reduce harmful air pollution from the oil and natural gas industry while allowing continued, responsible growth in U.S. oil and natural gas production. The final rules include the first federal air standards for natural gas wells that are hydraulically fractured, along with requirements for several other sources of pollution in the oil and gas industry for which there are currently no federal standards. The rules for fractured gas wells rely on proven, cost-effective technology and practices used by industry leaders today, including those in EPA's Natural Gas STAR Program.

After considering the extensive comments received on the proposed rule, the final rule increases compliance flexibility for well owners and operators; streamlines notification, reporting, and recordkeeping; avoids unnecessary spending of state and private resources; enhances transparency and accountability; and maintains comparable environmental benefits.

KEY PROVISIONS IN THE FINAL RULE

- Green completions, also called reduced emission completions (or RECs), continue to be identified as the best system of emission reduction, but EPA has identified a transition period (until January 1, 2015) to ensure green completion equipment is broadly available. During this transition period, fractured and refractured wells must reduce their emissions through combustion devices (flares). To recognize the leadership of owners and operators who have already adopted green completions as a best management practice and to encourage others to become early adopters, while at the same time eliminating unnecessary expenditures of state resources, the final rule redefines actions that constitute modifications under the New Source Performance Standard program (NSPS).

COMMENTS SUBMITTED ON THE PROPOSED RULE

- Substantive comments were received on the proposed rule including a significant amount of new data. This information focused on a number of key issues, including:
 - The intended breadth and impact of the rule including clarification of the definitions of natural gas well and reduced emission completions;
 - The technical feasibility and cost effectiveness of reduced emission completions, including the availability of equipment need to perform green completions;
 - The rule's alignment with existing state permitting programs;
 - The advisability of pre-notification and annual reporting requirements; and
 - A variety of technical issues related to proposed controls of pipeline gas, pneumatic controllers, and storage tanks.

CHANGES MADE IN THE FINAL RULE

- ***The definition of natural gas well was clarified.***
 - In response to questions about the intended breadth of the rule, the definition of a natural gas well was expanded to provide more certainty to the regulated community as well as state regulators. Language was added to identify key indicators of natural gas wells, including the availability of appropriate gas collection infrastructure as well as drilling locations within the four geologic formation types generally accepted as gas-producing. The four formation types are high permeability gas, shale gas, other tight reservoir rock, and coal seam.
- ***The definition of green completion was clarified to focus on performance rather than identifying specific required technology for these completions.***
 - The changes allow greater flexibility, lower costs, and reduced burden on equipment manufacturing and distribution, while maintaining the intended emission reductions.
- ***Low-pressure wells were identified and exempted from green completion requirements.***
 - In addition to wildcat and delineation wells, the final rule exempts non-wildcat and non-delineation low-pressure wells from the need to conduct green completions because of technical infeasibility. Information gathered by EPA indicates that green completions are not feasible to conduct in approximately 87 percent of the natural gas wells fractured in coal bed methane formations. The change reduces approximately 10 percent of the fractured natural gas wells overall, which recognizes current technology limitations, lowers expected compliance costs of the rule and reduces anticipated burdens on equipment manufacturing and distribution.
- ***A transition period was identified before green completions would be required.***
 - The final rule allows affected sources until January 1, 2015 before they need to conduct green completions, ensuring sufficient time for needed cost-effective control equipment and trained operators to become broadly available. During this transition period, flaring will be required to reduce VOC emissions by 95 percent and thus preserves comparable environmental benefits.
- ***Early adoption of green completions will be encouraged.***
 - The definition of modifications was revised to recognize the leadership of well owners and operators who have already adopted green completions as best management practices and to encourage others to become early adopters. Given that green completions minimize emission increases that would otherwise trigger requirements for modifications under NSPS, owners and operators of existing wells can choose to conduct refracturing activities without changing their state permit status. This revision also has the advantage of maintaining flexibility in the application of state permitting authority and resources without compromising emission reductions. Lastly, as an incentive for early installation of green

completion equipment, this change could have the effect of increasing its availability in ways that benefit supply and price.

- ***Pre-notification requirements were streamlined and annual reports were revised to enhance transparency and accountability.***
 - Pre-notification has been simplified to sending an email no later than 2 days prior to completion following the hydraulic fracturing or refracturing of a gas well. State pre-notification requirements were also determined to be sufficient for compliance as a way to avoid unnecessary duplication. Transparency and accountability have been enhanced by requiring a senior official to certify the accuracy of annual reports. In addition, the agency has provided more flexible and streamlined options for industry to structure their annual compliance reports, including allowing them to report emissions by company, not by source as was the case in the proposed rule.

- ***Does not finalize requirements for compressors and pneumatic controllers in the transmission segment of this industry***
 - Based on public comment, the agency concluded it needed additional information in order to set cost-effective standards for compressors and controllers in this segment, where VOC content of the gas generally is low.

- ***A variety of changes were made to encourage leak reductions from existing equipment and from storage vessels in response to technical comments.***
 - A number of technical changes were made as a result of comments received. Most notably, the final rule exempted from regulation low-bleed controllers (with bleed rates below 6 standard cubic feet per hour) located between the well-head and the point where the gas enters the transmission line, to encourage a quicker transition from high-bleed controllers. The requirements for high-bleed controllers were also phased in over one year to give manufacturers of these devices the time needed to test and document the gas bleed rate. A different metric was also identified to simplify the determination of which storage tanks are covered by the standards. Instead of the proposed throughput measurement, the final rule identified a regulatory cutoff of 6 tons of VOC emissions annually for storage tanks. In addition, the final rule provides a one year phase-in for required storage vessel combustion devices to ensure equipment availability.

EPA's Air Rules for the Oil & Natural Gas Industry

SUMMARY OF REQUIREMENTS FOR PROCESSES AND EQUIPMENT AT NATURAL GAS WELL SITES

Equipment and processes at the well site may be covered by requirements under the New Source Performance Standards (NSPS) for volatile organic compounds, and the National Emissions Standard for Hazardous Air Pollutants (NESHAP) for oil and natural gas production. EPA has made a number of changes to these final rules based on public comments.

VOC REDUCTIONS DURING NATURAL GAS WELL COMPLETIONS

NSPS Requirements for New Hydraulically Fractured Wells (drilled after Aug. 23, 2011)

- To ensure that smog-forming volatile organic compounds (VOCs) are controlled without slowing natural gas production, EPA's final NSPS for VOCs establishes two phases for reducing VOCs during well completion. This approach will provide industry time to order and manufacture enough equipment to capture natural gas using a process called *green completions*, also known as "reduced emissions completions."
- EPA established the phased approach to address concerns raised in comments related to the availability of equipment and operators to conduct green completions in time to meet compliance dates in the proposed rule.
 - **Phase 1:** In the first phase (before Jan. 1, 2015), industry must reduce VOC emissions either by flaring using completion combustion device or by capturing the gas using green completions with a completion combustion device (unless combustion is a safety hazard or is prohibited by state or local regulations).
 - A completion combustion device burns off the gas that would otherwise escape during the well-completion period (combustion generally would occur through pit flaring). Industry may use completion combustion devices to reduce VOC emissions until Jan. 1, 2015, unless state or local requirements prohibit the practice or require more stringent controls. EPA encourages industry to begin using green completions during this time.
 - **Phase 2:** Beginning Jan. 1, 2015, operators must capture the gas and make it available for use or sale, which they can do through the use of green completions.
 - EPA estimates that use of green completions for the three- to 10-day flowback period reduces VOC emissions from completions and recompletions of hydraulically fractured wells by 95 percent at each well.
 - Both combustion and green completions will reduce the VOCs that currently escape into the air during well completion. However, capturing the gas through a green completion prevents a valuable resource from going to waste and does not generate NO_x, which is a

byproduct of combustion.

- Methane, a potent greenhouse gas, and air toxics, which are linked to cancer and other serious health effects, also would be significantly reduced as a co-benefit of reducing VOCs.
- **Exceptions for new wells:**
Green completions are not required for:
 - New exploratory (“wildcat”) wells or delineation wells (used to define the borders of a natural gas reservoir), because they are not near a pipeline to bring the gas to market.
 - Hydraulically fractured low-pressure wells, where natural gas cannot be routed to the gathering line. Operators may use a simple formula based on well depth and well pressure to determine whether a well is a low-pressure well.
 - Owners/operators must reduce emissions from these wells using combustion during the well-completion process, unless combustion is a safety hazard or is prohibited by state or local regulations.

NSPS Requirements for Refractured Natural Gas Wells

- Natural gas wells can be re-fractured to stimulate production or to produce natural gas from a different production zone. Today’s rules provide an incentive for owners and operators of existing wells to use green completions earlier than required:
 - Gas wells that are refractured and recompleted ***will not be considered to be “modified”*** if well owners and operators use green completions rather than flaring to reduce emissions, and they meet notification and reporting requirements for new wells.
 - In a number of states, this will allow owners/operators to refracture wells without triggering state permitting requirements. This flexibility reduces burden both to industry and permitting agencies, without compromising the environmental benefits of today’s rule.
 - Owners/operators of refractured gas wells may choose to reduce emissions through flaring until January 1, 2015, when they must use green completions. These wells would be considered to be modified under today’s rule.

NSPS Notification and Reporting Requirements for Well Completions

- EPA has added notification and reporting requirements that improve accountability while reducing burden to owners and operators.
- **Notification:**
 - Owners or operators of hydraulically fractured and refractured natural gas wells must notify EPA (or in some cases, a state or local air agency) by e-mail no later than two days before completion work begins. The notification must include geographic coordinates of the affected wells and the estimated date that well completion will begin. In response to comments, EPA did not finalize a 30-day notification requirement.

- Well owners/operators who are subject to state advance notification requirements for well completions will meet EPA's requirements by meeting the state notification requirements.
- **Reporting :**
 - Each year, owners/ operators must submit a report on their well completions that is certified by a senior company official attesting to the report's truth, accuracy and completeness. This report may be submitted in two forms:
 - A traditional report detailing each well completion, along with information on compressors, pneumatic controllers and storage tanks constructed, modified or reconstructed during the year. The report also must report any deviation from the requirements in today's rules.
 - In lieu of the traditional report for well completions, owners/operators may submit a list of well completions accompanied by a digital photograph of each green completion in progress. The photo must include digital stamps the geographic coordinates of the well and the date of the well completion.

REQUIREMENTS FOR OTHER EQUIPMENT AT NATURAL GAS WELL SITES

NSPS Requirements for New & Modified Pneumatic Controllers

- Pneumatic controllers are automated instruments used for maintaining a condition such as liquid level, pressure, and temperature at wells and gas processing plants, among other locations in the oil and gas industry. These controllers often are powered by high-pressure natural gas and may release gas (including VOCs and methane) with every valve movement, or continuously in many cases as part of their normal operations.
- The final rule affects high-bleed, gas-driven controllers (with a gas bleed rate greater than 6 standard cubic feet per hour) that are located between the wellhead and the point where gas enters the transmission pipeline.
 - Today's rule sets limits for controllers based on location. For controllers used at the well site, the gas bleed limit is 6 cubic feet of gas per hour at an individual controller.
 - The final rule phases in this requirement over one year, to give manufacturers of pneumatic controllers time to test and document that the gas bleed rate of their pneumatic controllers is below 6 cubic feet per hour.
 - Low-bleed controllers used at well sites (with a gas bleed rate less than 6 standard cubic feet per hour) are not subject to this rule.
- The final rule includes exceptions for applications requiring high-bleed controllers for certain purposes, including operational requirements and safety. The rule also includes requirements for initial performance testing, recordkeeping and annual reporting.

Requirements for Storage Vessels at the Well Site

- Storage tanks at natural gas well sites are commonly used to store condensate, crude oil and produced water. These tanks may be subject to two standards: the NSPS for VOCs, and the major source air toxics standards (NESHAP) for Oil and Natural Gas Production.

- **NSPS requirements:** New storage tanks with VOC emissions of 6 tons a year or more must reduce VOC emissions by at least 95 percent. EPA expects this will generally be accomplished by routing emissions to a combustion device.
 - To ensure enough combustion devices are available, the final rule provides a one-year phase-in for this requirement.
 - After one year, owners/operators of new storage tanks at sites with wells in production must comply. Owners/operators at sites with no wells in production will have 30 days to determine the emissions from a tank; and another 30 days to install controls.
- **Air toxics requirements:** In response to public comments, EPA did not finalize proposed air toxics standards for storage vessels *without* the potential for flash emissions, which currently are not regulated under the NESHAP for Oil and Natural Gas Production. The agency determined that it needs additional data in order to establish emission standards for this type of storage vessel. The previous standards for storage tanks *with* the potential for flash emissions remain in place.
- The final rule amends the definition of “associated equipment,” meaning that emissions from all storage vessels now will be counted toward determining whether a facility is a major source under the NESHAP for Oil and Natural Gas Production

Air Toxics Requirements for Glycol Dehydrators at the Well Site

- Glycol dehydrators, used to remove water vapor from gas, are subject to one of two air toxics standards, depending on their location. Dehydrators located at the well site are subject to the NESHAP for Oil & Natural Gas Production.
- Today’s rule retains the existing standards for large glycol dehydrators and sets new standards for small glycol dehydrators. A glycol dehydrator is used to remove excess water vapor from natural gas.
 - **Large dehydrators:** The final rule also retains the existing the 1-ton-per year benzene compliance option for large glycol dehydrators, meaning operators may reduce benzene emissions from large dehydrators to less than 1 ton per year as an alternative to reducing total air toxics emissions by 95 percent.
 - **Small dehydrators:** A dehydrator is considered small if it has an annual average natural gas throughput of less than 85,000 standard cubic meters per day, or actual annual average benzene emissions of less than 1 ton per year.
 - Both existing and new small glycol dehydrators must meet a unit-specific limit for emissions of BTEX (benzene, toluene, ethylbenzene and xylene) that is based on the unit’s natural gas throughput and gas composition. The limit is determined by applying a formula set out in the final rule.
- New small glycol dehydrators must comply with the air toxics requirements immediately upon startup or within 60 days after the final rule is published in the Federal Register, whichever is later. Existing small glycol dehydrators must comply within three years after the effective date of the rule. A small glycol dehydrator is considered existing if construction or reconstruction

began before Aug. 23, 2011.

- Today's rule applies only to sources that are considered "major sources" of air toxics. A major source emits 10 or more tons a single air toxic and 25 tons or more of a combination of toxics in a year.

MORE INFORMATION

- For summary information on requirements for other types of facilities, or to read the final rules, visit www.epa.gov/airquality/oilandgas

EPA's Air Rules for the Oil & Natural Gas Industry

SUMMARY OF REQUIREMENTS FOR PROCESSES AND EQUIPMENT AT NATURAL GAS GATHERING & BOOSTING STATIONS

A gathering and boosting station collects gas from multiples wells and moves it toward the natural gas processing plant. Equipment and processes at gathering and boosting stations may be covered by requirements under the New Source Performance Standards (NSPS) for volatile organic compounds, and the National Emissions Standard for Hazardous Air Pollutants (NESHAP) for oil and natural gas production. EPA has made a number of changes to these final rules based on public comments.

REQUIREMENTS TO REDUCE VOCs

NSPS Requirements for New and Modified Compressors

- Compression is necessary to move natural gas along a pipeline. EPA's final rules will reduce VOC emissions from two types of compressors used at gathering and boosting stations: centrifugal compressors and reciprocating compressors.
- **Centrifugal compressors** - Centrifugal compressors are equipped with either wet seal systems, or dry seal systems.
 - Compressors with wet seals use oil as a barrier to keep gas from escaping. The gas that becomes absorbed in the oil is continuously vented, along with the VOCs and air toxics it contains. The final rule requires a 95 percent reduction in VOC emissions from compressors with wet seal systems. This can be accomplished through flaring, or by routing captured gas back to a compressor suction or fuel system.
 - EPA sought comments on the proposed requirements for compressors using dry seal systems, which have low VOC emissions. As a result of those comments, today's final rule does not apply to compressors using dry seals, meaning these compressors are not "affected facilities." EPA encourages owners/operators to use compressors with dry seal systems where possible.
- **Requirements for reciprocating compressors** – Today's final rule requires the replacement of replace rod packing systems in reciprocating compressors. Over time, these packing systems can wear, leaking gas and VOCs.
 - The rule provides two options for replacing rod packing:
 - Every 26,000 hours of operation (operating hours must be monitored and documented); or
 - Every 36 months (monitoring and documentation of operating hours not required).
- Today's rule also includes requirements for initial performance testing, recordkeeping and annual reporting.

- The compliance date for compressors is at initial startup, or 60 days after the final rule is published in the Federal Register, whichever is later.

NSPS Requirements for New and Modified Pneumatic Controllers

- Pneumatic controllers are automated instruments used for maintaining liquid levels, pressure, and temperature at wells and gas processing plants, among other locations in the oil and gas industry. These controllers often are powered by high-pressure natural gas and may release gas (including VOCs and methane) with every valve movement, or continuously in many cases as part of their normal operations.
- The final rule affects high-bleed, gas-driven controllers (with a gas bleed rate greater than 6 standard cubic feet per hour) that are located between the wellhead and the point where gas enters the transmission pipeline.
 - Today's rule sets limits for controllers based on location. For controllers used at gathering and boosting stations, the gas bleed limit is 6 standard cubic feet of gas per hour at an individual controller.
 - The final rule phases in this requirement over one year, to give manufacturers of pneumatic controllers time to test and document that the gas bleed rate of their pneumatic controllers is below 6 cubic feet per hour.
 - Low-bleed controllers used at gathering and boosting stations (with a gas bleed rate less than 6 standard cubic feet per hour) are not subject to this rule.
- The final rule includes exceptions for applications requiring high-bleed controllers for certain purposes, including operational requirements and safety. The rule also includes requirements for initial performance testing, recordkeeping and annual reporting.

Requirements for Storage Vessels at Gathering & Boosting Stations

- Storage tanks at gathering and boosting stations generally are used to store condensate. These tanks may be subject to two standards: the NSPS for VOCs, and the major source air toxics standards (NESHAP) for Oil and Natural Gas Production.
- **NSPS requirements:** Storage tanks with VOC emissions of 6 tons a year or more must reduce VOC emissions by at least 95 percent. EPA expects this will generally be accomplished by routing emissions to a combustion device.
 - To ensure enough combustion devices are available to meet this requirement, the final rule provides a one-year phase-in for this requirement.
- **Air toxics requirements:** In response to public comments, EPA did not finalize proposed air toxics standards for storage vessels *without* the potential for flash emissions, which currently are not regulated under the NESHAP for Oil and Natural Gas Production. The agency determined that it needs additional data in order to establish emission standards for this type of storage vessel. The previous standards for storage tanks *with* the potential for

flash emissions remain in place.

- The final rule amends the definition of “associated equipment,” meaning that emissions from all storage vessels now will be counted toward determining whether a production field facility is a major source under the NESHAP for Oil and Natural Gas Production

Air Toxics Requirements for Glycol Dehydrators

- Glycol dehydrators, used to remove water vapor from gas, are subject to one of two air toxics standards, depending on their location. Dehydrators located at gathering & boosting stations are subject to the NESHAP for Oil & Natural Gas Production.
- Today’s rule retains the existing standards for large glycol dehydrators and sets new standards for small glycol dehydrators. A glycol dehydrator is used to remove excess water vapor from natural gas.
 - **Large dehydrators:** The final rule also retains the existing the 1-ton-per year benzene compliance option for large glycol dehydrators, meaning operators may reduce benzene emissions from large dehydrators to less than 1 ton per year as an alternative to reducing total air toxics emissions by 95 percent.
 - **Small dehydrators:** A dehydrator is considered small if it has an annual average natural gas throughput of less than 85,000 standard cubic meters per day, or actual annual average benzene emissions of less than 1 ton per year.
 - Both existing and new small glycol dehydrators must meet a unit-specific limit for emissions of BTEX (benzene, toluene, ethylbenzene and xylene) that is based on the unit’s natural gas throughput and gas composition. The limit is determined by applying a formula set out in the final rule.
- New small glycol dehydrators must comply with the air toxics requirements immediately upon startup or within 60 days after the final rule is published in the Federal Register, whichever is later. Existing small glycol dehydrators must comply within three years after the effective date of the rule. A small glycol dehydrator is considered existing if construction or reconstruction began before Aug. 23, 2011.
- Today’s rule applies only to sources that are considered “major sources” of air toxics. A major source emits 10 or more tons of a single air toxic or 25 tons or more of a combination of toxics in a year.

MORE INFORMATION

- For summary information on requirements for other types of facilities, or to read the final rules, visit www.epa.gov/airquality/oilandgas

EPA's Air Rules for the Oil & Natural Gas Industry

SUMMARY OF REQUIREMENTS FOR PROCESSES AND EQUIPMENT AT NATURAL GAS PROCESSING PLANTS

Natural gas processing plants remove impurities from "raw" gas to prepare it for use by industrial and residential for the pipeline. Equipment and processes at natural gas processing plants may be covered by requirements under the New Source Performance Standards (NSPS) for volatile organic compounds, and the National Emissions Standard for Hazardous Air Pollutants (NESHAP) for oil and natural gas production. EPA has made a number of changes to these final rules based on public comments.

NSPS Requirements for New and Modified Compressors

- Compression is necessary to move natural gas along a pipeline. The final rule will reduce VOC emissions from two types of compressors: centrifugal compressors and reciprocating compressors.
- The final rule establishes requirements for two types of compressors that may be used at gas processing plants located between the wellhead and the point at which gas enters the transmission pipeline:
- **Centrifugal compressors** - Centrifugal compressors are equipped with either wet seal systems, or dry seal systems.
 - Compressors with wet seals use oil as a barrier to keep gas from escaping. The gas that becomes absorbed in the oil is continuously vented, along with the VOCs and air toxics it contains. The final rule requires a 95 percent reduction in VOC emissions from compressors with wet seal systems. This can be accomplished through flaring, or by routing captured gas back to a compressor suction or fuel system.
 - EPA sought comments on the proposed requirements for compressors using dry seal systems, which have low VOC emissions. As a result of those comments, today's final rule does not apply to compressors using dry seals, meaning these compressors are not "affected facilities." EPA encourages owners/operators to use compressors with dry seal systems where possible.
- **Requirements for reciprocating compressors** – Today's final rule requires the replacement of replace rod packing systems in reciprocating compressors. Over time, these packing systems can wear, leaking gas and VOCs.
 - The rule provides two options for replacing rod packing:
 - Every 26,000 hours of operation (operating hours must be monitored and documented); or
 - Every 36 months (monitoring and documentation of operating hours not required).

- Today's rule also includes requirements for initial performance testing, recordkeeping and annual reporting.
- The compliance date for compressors is at initial startup, or 60 days after the final rule is published in the Federal Register, whichever is later.

NSPS Requirements for New and Modified Pneumatic Controllers

- Pneumatic controllers are automated instruments used for maintaining a condition such as liquid level, pressure, and temperature at wells and gas processing plants, among other locations in the oil and gas industry. These controllers often are powered by high-pressure natural gas and may release gas (including VOCs and methane) with every valve movement, or continuously in many cases as part of their normal operations.
- The final rule affects continuous-bleed, gas-driven controllers located at gas processing plants. The VOC emission limit for these controllers is zero.
- The final rule includes exceptions for applications requiring high-bleed controllers for certain purposes, including operational requirements and safety. The rule also includes requirements for initial performance testing, recordkeeping and annual reporting.

Leak Detection and Repair Requirements

- The final regulations strengthen the leak detection and repair requirements that apply to existing natural gas processing plants. The compliance date for new sources for this requirement is 60 days after the final rule is published in the Federal Register; existing sources covered by the air toxics rule have an additional year to comply.

Sulfur Dioxide (SO₂) Requirements for New & Modified Sweetening Units

- A sweetening unit is removes sulfur from natural gas. Today's final rule strengthens the previous standards by requiring sweetening units at natural gas processing plants to reduce SO₂ emissions by 99.9 percent. This requirement applies to units with a sulfur production rate of at least five long tons per day.

Requirements for Storage Vessels at Natural Gas Processing Plants

- Storage tanks at natural gas processing plants generally are used to store condensate. These tanks may be subject to two standards: the NSPS for VOCs; and the major source air toxics standards (NESHAP) for Oil and Natural Gas Production.
- **NSPS requirements:** New storage tanks with VOC emissions of 6 tons a year or more must reduce VOC emissions by at least 95 percent. EPA expects this will generally be accomplished by routing emissions to a combustion device.
 - To ensure enough combustion devices are available to meet this requirement, the final rule provides a one-year phase-in for this requirement.

- **Air toxics requirements:** In response to public comments, EPA did not finalize proposed air toxics standards for storage vessels *without* the potential for flash emissions, which currently are not regulated under the NESHAP for Oil and Natural Gas Production. The agency determined that it needs additional data in order to establish emission standards for this type of storage vessel. The previous standards for storage tanks *with* the potential for flash emissions remain in place.

Air Toxics Requirements for Glycol Dehydrators

- Glycol dehydrators, used to remove water vapor from gas, are subject to one of two air toxics standards, depending on their location. Dehydrators located at natural gas processing plants are subject to the NESHAP for Oil & Natural Gas Production.
- Today's rule retains the existing standards for large glycol dehydrators and sets new standards for small glycol dehydrators. A glycol dehydrator is used to remove excess water vapor from natural gas.
 - **Large dehydrators:** The final rule also retains the existing the 1-ton-per year benzene compliance option for large glycol dehydrators, meaning operators may reduce benzene emissions from large dehydrators to less than 1 ton per year as an alternative to reducing total air toxics emissions by 95 percent.
 - **Small dehydrators:** A dehydrator is considered small if it has an annual average natural gas throughput of less than 85,000 standard cubic meters per day, or actual annual average benzene emissions of less than 1 ton per year.
 - Both existing and new small glycol dehydrators must meet a unit-specific limit for emissions of BTEX (benzene, toluene, ethylbenzene and xylene) that is based on the unit's natural gas throughput and gas composition. The limit is determined by applying a formula set out in the final rule.
- New small glycol dehydrators must comply with the air toxics requirements immediately upon startup or within 60 days after the final rule is published in the Federal Register, whichever is later. Existing small glycol dehydrators must comply within three years after the effective date of the rule. A small glycol dehydrator is considered existing if construction or reconstruction began before Aug. 23, 2011.
- Today's rule applies only to sources that are considered "major sources" of air toxics. A major source emits 10 or more tons of a single air toxic or 25 tons or more of a combination of toxics in a year.

MORE INFORMATION

- For summary information on requirements for other types of facilities, or to read the final rules, visit www.epa.gov/airquality/oilandgas

EPA's Air Rules for the Oil & Natural Gas Industry

SUMMARY OF REQUIREMENTS FOR EQUIPMENT AT NATURAL GAS COMPRESSOR STATIONS

Natural gas compressor stations move gas along a pipeline. In addition to compressors, compressor stations often include equipment to remove and store water vapor, condensate and other remaining impurities. Equipment and processes at natural gas compressor stations may be covered by requirements under the New Source Performance Standards (NSPS) for volatile organic compounds, and the National Emissions Standard for Hazardous Air Pollutants (NESHAP) for Natural Gas Transmission and Storage. EPA has made a number of changes in the final rules based on public comments.

NSPS Requirements for Compressors and Pneumatic Controllers Do Not Apply

- EPA is not finalizing standards for compressors or pneumatic controllers in the transmission segment of this industry. Based on public comment, the agency concluded it needed additional information in order to set cost-effective standards for compressors and controllers in this segment, where VOC content of the gas generally is low.

REQUIREMENTS FOR OTHER EQUIPMENT

NSPS Requirements for Storage Vessels at Compressor Stations

- Storage tanks at compressor stations are commonly used to store condensate, and water. New storage tanks with VOC emissions of 6 tons a year or more must reduce VOC emissions by at least 95 percent. EPA expects this will generally be accomplished by routing emissions to a combustion device.
 - To ensure enough combustion devices are available to meet this requirement, the final rule provides a one-year phase-in for this requirement.

Air Toxics Requirements for Glycol Dehydrators

- Glycol dehydrators, used to remove water vapor from gas, are subject to one of two air toxics standards, depending on their location. Glycol dehydrators located at compressor stations are subject to the NESHAP for Natural Gas Transmission and Storage.
- Today's rule retains the existing standards for large glycol dehydrators and sets new standards for small glycol dehydrators. A glycol dehydrator is used to remove excess water vapor from natural gas.
 - **Large dehydrators:** The final rule also retains the existing the 1-ton-per year benzene compliance option for large glycol dehydrators, meaning operators may reduce benzene emissions from large dehydrators to less than 1 ton per year as an alternative to reducing total air toxics emissions by 95 percent.
 - **Small dehydrators:** A dehydrator is considered small if it has an annual average natural gas flow rate of less than 283,000 standard cubic meters per day or

annual average benzene emissions of less than 1 ton.

- Both existing and new small glycol dehydrators must meet a unit-specific limit for emissions of BTEX (benzene, toluene, ethylbenzene and xylene) that is based on the unit's natural gas throughput and gas composition. The limit is determined by applying a formula set out in the final rule.
 - New small glycol dehydrators must comply with the air toxics requirements immediately upon startup or within 60 days after the final rule is published in the Federal Register, whichever is later. Existing small glycol dehydrators must comply within three years after the effective date of the rule. A small glycol dehydrator is considered existing if construction or reconstruction began before Aug. 23, 2011.
- Today's air toxics standards apply only to sources that are considered "major sources" of air toxics. A major source emits 10 or more tons of a single air toxic or 25 tons or more of a combination of toxics in a year.

MORE INFORMATION

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EPA's Air Rules for the Oil & Natural Gas Industry

SUMMARY OF REQUIREMENTS FOR EQUIPMENT USED IN OIL PRODUCTION

In general, this rule has no direct impact on oil wells. Under some circumstances, however, certain equipment downstream from oil wells may be covered by requirements under the New Source Performance Standards (NSPS) for volatile organic compounds issued April 17, 2012. EPA has made a number of changes to these final rules based on public comments.

NSPS Requirements for Well Completions Do Not Apply

- EPA's final NSPS for well completions applies to natural gas wells that are hydraulically fractured. It does not apply to oil wells.

REQUIREMENTS FOR EQUIPMENT USED IN OIL PRODUCTION

NSPS Requirements for New & Modified Pneumatic Controllers

- Pneumatic controllers are automated instruments used for maintaining liquid levels, pressure, and temperature at wells and gas processing plants, among other locations in the oil and gas industry. These controllers often are powered by high-pressure natural gas and may release gas (including VOCs and methane) with every valve movement, or continuously in many cases as part of their normal operations.
- The final rule affects high-bleed, gas-driven controllers (with a gas bleed rate greater than 6 standard cubic feet per hour).
- Today's rule sets limits for controllers based on location. For controllers used at the well site, the gas bleed limit is 6 cubic feet of gas per hour at an individual controller. A controller is subject to this rule if it was in stock or ordered after Aug. 23, 2011.
 - The final rule phases in this requirement over one year, to give manufacturers of pneumatic controllers time to test and document that the gas bleed rate of their pneumatic controllers is below 6 cubic feet per hour.
 - Low-bleed controllers (with a gas bleed rate less than 6 standard cubic feet per hour) are not subject to this rule.
- The final rule includes exceptions for applications requiring high-bleed controllers for certain purposes, including operational requirements and safety. The rule also includes requirements for initial performance testing, recordkeeping and annual reporting.

Requirements for Storage Vessels at the Well Site

- Storage tanks at natural gas wells are commonly used to store condensate, crude oil and produced water. These tanks may be subject to two standards: the NSPS for VOCs, and the major source air toxics standards (NESHAP) for Oil and Natural Gas Production.
- **NSPS requirements:** New storage tanks with VOC emissions of 6 tons a year or more must reduce VOC emissions by at least 95 percent. EPA expects this will generally be accomplished by routing

emissions to a combustion device.

- To ensure enough combustion devices are available to meet this requirement, the final rule provides a one-year phase-in for this requirement. After one year, owners/operators of new storage tanks will have 30 days to determine the emissions from a tank; and another 30 days to install controls.
- **Air toxics requirements:** In response to public comments, EPA did not finalize proposed air toxics standards for storage vessels *without* the potential for flash emissions, which currently are not regulated under the NESHAP for Oil and Natural Gas Production. The agency determined that it needs additional data in order to establish emission standards for this type of storage vessel. The previous standards for storage tanks *with* the potential for flash emissions remain in place.
- The final rule amends the definition of “associated equipment,” meaning that emissions from all storage vessels now will be counted toward determining whether a facility is a major source under the NESHAP for Oil and Natural Gas Production.

Petroleum Refineries

- Petroleum refineries are addressed under separate regulations.

MORE INFORMATION

- For summary information on requirements for other types of facilities, or to read the final rules, visit www.epa.gov/airquality/oilandgas

EPA's Air Rules for the Oil & Natural Gas Industry

**INFORMATION FOR STATES ON
ATTAINMENT PLANNING, PERMITTING AND COMPLIANCE**

For the first time EPA is regulating volatile organic compound (VOC) emissions generated during the completion stage of hydraulically fractured natural gas wells. Under the final New Source Performance Standards (NSPS) for the Oil and Natural Gas Sector, these activities will be subject to work practice standards that take advantage of cost-effective technologies in common use today by many oil and gas well owners and operators.

- **New wells.** The NSPS has identified green completions, also called reduced emission completions (RECs) and combustion of escaping gas as the Best System of Emission Reduction. Combustion controls (flaring) will also be allowed as a work practice standard until January 1, 2015, to allow time for REC equipment to be broadly available.
- **Modified wells.** Refractured gas wells that use RECs and conform to the notification and reporting requirements for new sources will not be subject to the NSPS. Wells that do not use RECs will be subject to the NSPS provisions for modified wells, which are the same as the requirements for new wells (RECs or combustion controls prior to January 2015, and RECs after that date).
- The NSPS constitutes a federally required minimum level of control. States have the flexibility to put their own programs in place or implement existing programs as long as they are at least as protective as the NSPS.
- EPA will soon be designating areas as nonattainment for the 2008 ozone National Ambient Air Quality Standards (NAAQS) ozone NAAQS. Nonattainment means an area is not meeting the national standards for outdoor air quality. Some of these areas have significant oil and gas sector activities. The nonattainment areas will be required to submit state implementation plans (SIPs) in 2015 and to attain the standard by 2015 and 2018 for areas classified as "Marginal" and "Moderate," respectively. A few areas classified as "Serious" must attain by 2021. States can take credit for federal measures including this NSPS in their nonattainment planning.
- Meeting the oil and gas NSPS using either flaring or RECs will reduce emissions of VOCs, which are a key ingredient in forming smog that threatens air quality and harms public health. Flaring during the transitional period will result in some increases of nitrogen oxides (NOx). The new rule also includes requirements for reducing emissions of air toxics.

Implications for Attainment Planning

- The Oil and Gas Sector NSPS will help states make progress in attaining the ozone NAAQS in nonattainment areas where there is significant well development. States can include the

federal NSPS as a federally enforceable strategy in their nonattainment SIPs. States may "take credit" for the NSPS in their SIPs towards meeting two requirements:

- This rule is expected to achieve 95 percent control of new VOC emissions from new gas wells, making it easier for states to obtain the overall reduction in emissions they need to attain the ozone NAAQS without adding any federal or state permitting requirements.
- SIPs in Moderate and Serious areas must also show "reasonable further progress" in controlling emissions in the years before they attain the ozone NAAQS. In most areas, states will choose to measure this progress relative to emissions in 2011. In areas that had wells drilled in 2011 and will continue to have more wells drilled in the years ahead, the 95 percent control from the NSPS will provide emission reductions that can be credited toward the reasonable further progress requirement. In areas that had no or few wells drilled in 2011 but that will see drilling activity in the future, the 95 percent control from the NSPS will ensure that emissions from new well development do not impede meeting the reasonable further progress requirement.
- The NSPS will also help areas that now meet the ozone standards to continue to meet those standards, even if well development in the area increases.

Implications for Permitting

- While the NSPS regulates new wells with uncontrolled emissions that are below the existing thresholds that define a major source for pre-construction permit and Title V operating permit purposes, EPA is not changing in any way the actual emission thresholds that trigger the requirements for major source permitting.
- In the absence of the NSPS, some fractured gas wells could have emissions above the thresholds that trigger major source pre-construction and Title V permitting requirements in some ozone nonattainment areas. Federally enforceable emissions limits, such as those in the NSPS, are counted when determining whether a well's emissions exceed these applicability thresholds. Wells complying with the NSPS will not trigger major source permitting thresholds.
- Wells complying with the NSPS may also have emissions low enough to avoid needing a minor source permit from the state.
- The NSPS recognizes that some state permitting programs already regulate these wells, such as Wyoming and Texas. States that do not already have a permitting program for these wells are free to determine whether they want to have one.
- Some states require any source subject to a federal NSPS to get a state minor source air permit. The final NSPS provides a path (RECs) for existing wells that are refractured to avoid falling under the scope of the NSPS at all, thereby avoiding any automatic requirement to

get a state minor source permit. However, states may include modified wells in their minor source permitting rules if they choose.

- In Indian country, EPA is developing a general permit for these sources, which will need to get a minor source permit from their EPA regional office by 2013.

Implications for Compliance

- The NSPS also reduces compliance burdens on states and industry and takes advantage of existing state compliance mechanisms. To minimize reporting burden to states and industry, the final rule requires pre-notification by email no later than two days prior to the start of hydraulic fracturing of gas wells rather than the 30-day advance notice and two-day confirmation that EPA had proposed.
- The final rule also offers an alternative to the traditional annual compliance report, allowing industry to maintain a list of completed wells and to document well completion using photographs that are digitally stamped with the date, time and latitude/longitude of the completion. If a state has its own advance notice system, that system can be used instead of requiring the source to report to EPA.

