

**PROPOSED AMENDMENTS TO AIR REGULATIONS  
FOR THE OIL AND NATURAL GAS INDUSTRY**

**FACT SHEET**

**OVERVIEW OF ACTION**

- On July 28, 2011, the U.S. Environmental Protection Agency (EPA) proposed a suite of highly cost-effective regulations that would 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 proposal is based on proven technology and best practices that the oil and gas industry is using in some states today. It includes the first federal air standards for 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.
- Today's proposal includes four air regulations for the oil and natural gas industry: a new source performance standard for VOCs; a new source performance standard for sulfur dioxide; an air toxics standard for oil and natural gas production; and an air toxics standard for natural gas transmission and storage.
- The proposal would cut smog-forming volatile organic compound (VOC) emissions by nearly one-fourth across the oil and gas industry, including a nearly 95 percent reduction in VOCs emitted from new and modified hydraulically fractured gas wells. This significant reduction would be accomplished primarily through use of a proven technology to capture natural gas that currently escapes to the air. That gas would then be made available for sale.
- The estimated revenues from selling the gas that currently goes to waste are significant – so much so that today's proposed rule is anticipated to quickly result in a net savings of nearly \$30 million annually, while significantly reducing pollution from this expanding industry.
- The VOC emission reductions from wells, combined with reductions from storage tanks and other equipment, are expected to help reduce ozone levels 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. 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.
- The proposed changes also would reduce cancer risks from emissions of several air toxics such as benzene.
- EPA estimates the following combined annual emission reductions when the proposed amendments are fully implemented:
  - VOCs: 540,000 tons, an industry-wide reduction of 25 percent

- Methane – 3.4 million tons, which is equal to 65 million metric tons of carbon dioxide equivalent (CO<sub>2</sub>e), a reduction of about 26 percent.
- Air Toxics –38,000 tons, a reduction of nearly 30 percent.
- The proposed rules would apply to the more than 25,000 wells that are fractured and refractured each year, as well as to storage tanks and other pieces of equipment. As part of today’s proposal, EPA is seeking comment on several steps to reduce the compliance burdens of the rule to industry and to state, local and tribal air agencies.
- Today’s proposal continues EPA’s efforts to support responsible oil and natural gas exploration and production that protects public health and the environment. In June, 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.
- EPA will accept public comment on the proposed amendments for 60 days after publication in the Federal Register. Information on submitting written comments is included at the end of this fact sheet. The Agency also will hold three public hearings on the proposals in the Dallas, Denver, and Pittsburgh areas. Additional information on the hearings will be announced in a separate notice.
- The Clean Air Act requires EPA to periodically review these rules. EPA must take final action by Feb. 28, 2012.

#### **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 wells drilled today produce gas, and the majority of those new wells 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; another 14,000 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.
- Some of the largest air emissions in the oil and 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.

## **SUMMARY OF PROPOSED REQUIREMENTS**

### **New Source Performance Standards**

- 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. Oil and gas production, processing, transmission and storage are significant sources of VOCs, which contribute to the formation of ground-level ozone (smog).
- The law requires EPA to review new source performance standards every eight years.

### ***New Source Performance Standards for Volatile Organic Compounds (VOCs)***

- The oil and gas industry is a significant source of VOCs, which contribute to the formation of ground-level ozone (smog). EPA's existing NSPS for VOCs were issued in 1985. The existing standards address only VOC leak detection and repair at new and modified natural gas process processing plants, meaning significant sources of VOC emissions in the oil and gas industry currently are not subject to nationwide regulation.
- EPA is proposing new standards for several processes or pieces of equipment used in oil and gas production that have not previously been subject to federal regulation. These include well completions at new hydraulically fractured natural gas wells and at existing wells that are fractured or "re-fractured." These processes are the source of an estimated 500,000 tons of VOC emissions each year.
- The proposal would require VOC reductions from:
  - 1) *Completions of new hydraulically fractured natural gas wells and re-completions of existing natural gas wells that are fractured or refractured.***
    - VOC emissions would be minimized through the use of "green completions," also called "reduced emissions completions." 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 sold.
    - Some states, such as Wyoming and Colorado, require green completions, and a number of companies are voluntarily using this process through EPA's Natural Gas STAR program. In addition, green completions have been identified as an option for thousands of new gas wells in the Uintah Basin in Utah to address concerns about air quality impacts associated with natural gas development in the region.
    - EPA estimates that use of this equipment for the three- to 10-day flowback period reduces VOC emissions from completions and recompletions of hydraulically fractured wells by 95 percent.

- When gas cannot be collected, VOCs would be reduced through pit flaring, unless it is a safety hazard.
- Methane, a potent greenhouse gas, also would be significantly reduced as a co-benefit of reducing VOCs.
- The green completion requirements would not apply to exploratory wells or delineation wells (used to define the borders of a natural gas reservoir), because they are not near a sales line. Those wells must use pit flaring to burn off their emissions, unless it is a safety hazard.

**2) Compressors**

- Compression is necessary to move natural gas along a pipeline. The proposed rule would reduce VOC emissions from two types of compressors:
  - *Centrifugal compressors* would have to be equipped with dry seal systems.
  - Owners/operators of *reciprocating compressors* would have to replace rod packing systems every 26,000 hours of operation.

**3) Pneumatic controllers**

- Pneumatic controllers are automated instruments used for maintaining a condition such as liquid level, pressure, and temperature at wells, gas processing plants, compressor stations, among other locations. These controllers often are powered by high-pressure natural gas. These gas-driven pneumatic controllers may release natural gas (including VOCs and methane) with every valve movement, or continuously in some cases.
- EPA is proposing VOC emission limits for pneumatic controllers.
  - For new or replaced pneumatic controllers at gas processing plants, the proposed limits would eliminate VOC emissions. These limits could be met through using controllers that are not gas-driven.
  - For controllers used at other sites, such as compressor stations, the emission limits could be met by using controllers that emit no more than six cubic feet of gas per hour.
- The proposed amendments include exceptions for controllers in applications requiring high-bleed controllers for certain purposes, including operational requirements and safety.

**4) Condensate and crude oil storage tanks**

- Tanks with a throughput of at least 1 barrel per day of condensate or 20 barrels per day of crude oil (equivalent to about 6 tons of VOC emissions per year) must reduce VOC emissions by 95 percent.

**5) Natural gas processing plants**

- EPA is proposing to amend the existing NSPS for natural gas processing plants to strengthen the leak detection and repair requirements that apply to these plants to reduce VOC emissions.

### ***New Source Performance Standards for Sulfur Dioxide***

- The new source performance standards for sulfur dioxide (SO<sub>2</sub>) were issued in 1985 and apply to natural gas processing plants. The Agency is proposing to strengthen the performance standards for plants processing gas with the highest hydrogen sulfide content (at least 50 percent), in order to further reduce sulfur dioxide emissions from these facilities.

### **Air Toxics Standards**

- Air toxics are pollutants known to, or suspected of, causing cancer and other serious health effects. The Clean Air Act requires EPA to conduct two types of reviews of air toxics standards for major sources:
  - **A residual risk assessment:** This assessment must be conducted one time, eight years after a standard is issued, to determine what risks remain, and whether more protective standards are necessary to protect public health.
  - **A technology review:** This review must be conducted every eight years after an air toxics standard is issued to determine if better emission control practices, processes or technologies have become cost-effective or available that would warrant revising the standard.
  - EPA reviewed both the air toxics standards for oil and natural gas production, and the standards for natural gas transmission and storage. Both of the existing standards were issued in 1999.

### ***Air Toxics Standards for Oil & Natural Gas Production***

- EPA's residual risk review found that the current maximum individual cancer risk from oil and natural gas production – is 40 in 1 million, which falls within a range EPA considers acceptable.
- However, the review also found that the level of emissions *allowed* under the existing air toxics standard could drive that risk significantly higher – as high as 400 in 1 million, which EPA does not consider acceptable. To prevent this from occurring, EPA is proposing changes to the standards for major sources to ensure that cancer risk does not increase beyond current levels.
- To address this potential risk, EPA is proposing to remove the 1 ton per year benzene compliance option for large glycol dehydrators (used to remove excess water vapor from natural gas). Under the revised requirements, all large dehydrators would have to reduce air toxics their emissions by 95 percent.
- In addition, EPA is proposing to:
  - Establish emission limits for small glycol dehydrators at major sources. A dehydrator would be considered small if it has an annual average natural gas throughput of less than 3 million cubic feet per day, or actual annual average benzene emissions of less than 1 ton per year.
  - Require all crude oil and condensate tanks at major sources to control their air toxics by

at least 95 percent. In addition, emissions from these tanks will be counted toward determining whether a facility is a major source.

- Tighten the definition of a leak for valves at natural gas processing plants. This change is a result of the technology review.
- The proposed changes to this rule do not apply to sources that are considered “area sources,” meaning they have fewer than 10 tons a year of emissions of a single air toxic and less than 25 tons a year of a combination of toxics. Standards for these sources were issued in 2007.

#### ***Air Toxics Standards for Natural Gas Transmission and Storage***

- EPA’s technology review of these standards did not identify controls that warranted changes to the current standards. However, the Agency’s residual risk review of these standards estimates the current maximum individual cancer risk from air toxics emissions from natural gas transmission and storage is 90 in 1 million, a risk level that EPA considers acceptable.
- To protect public health with an ample margin of safety, EPA is proposing changes to this standard that would reduce the maximum risk level to 20 in 1 million.
- The proposed changes would remove the 1 ton per year benzene compliance alternative for large glycol dehydrators and establish emission limits for small glycol dehydrators at major sources. For this rule, a glycol dehydrator would be considered small if it has an annual average natural gas throughput of less than 10 million cubic feet per day or annual average benzene emissions of less than 1 ton.

#### **REDUCING COMPLIANCE BURDENS**

- To reduce the compliance burden to industry, state and local governments and tribes, EPA also is proposing to exempt certain sources from Title V permitting requirements that would be triggered by the proposed rule.
- The proposed exemption would apply only to sources covered by the NSPS that are not major sources and that do not have to obtain Title V permits for another reason. EPA believes the recordkeeping and reporting requirements included in the proposed standards are sufficient to assure compliance.
- VOC sources generally are considered “non-major” if they emit less than 100 tons per year. That emissions threshold is lower in certain nonattainment areas, however.
- EPA also is seeking comment on additional approaches to provide the industry and regulatory agencies with more efficient and effective tools for maximizing transparency compliance with the proposed regulations. These include submitting performance test results to an EPA electronic database, and third-party compliance verification.

#### **COSTS AND BENEFITS**

- Today’s proposed rules would be extremely cost-effective, yielding significant reductions in air pollution at a net savings to the industry. EPA estimates the combined annual costs of meeting the

proposed requirements would be \$754 million in 2015. The estimated value of the natural gas and condensate that would be made available for sale is \$783 million – a net savings of \$29 million when the rules are combined.

- For the new source performance standards, the annual costs are estimated at \$738 million, with the value the natural gas and condensate yielding an annual net savings of \$45 million as a result of those rules.
  - For the air toxics standards, EPA estimates the annual costs of compliance at \$16 million.
- The industry is expected to recover its costs quickly – in about 60 days for green completions, and within about one year for other equipment.
  - The VOCs and air toxics reductions in the proposed rule are expected to improve outdoor air quality, reduce cancer risk from air toxics emissions and reduce health effects associated with exposure to ground-level ozone (smog) and fine particles (particle pollution). Exposure to both pollutants is linked to increased asthma attacks, hospital admissions and emergency room visits, and premature death. These rules also are anticipated to yield significant climate co-benefits by significantly reducing emissions of methane, a potent greenhouse gas. 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 proposed 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 benefits that would result from this reduction at \$1.6 billion annually by 2015. This includes the value of climate-related benefits such as avoided health impacts, crop damage and damage to coastal properties.

## **BACKGROUND**

- 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 air toxic standards for the oil and natural gas industry.
- In February 2010, the U.S. Court of Appeals for the D.C. Circuit entered a consent decree that requires EPA to sign proposals related to the review of these standards. EPA must sign the proposal by July 28, 2011 and issue final standards by Feb. 28, 2012.
- 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 has proposed to require across the industry. For more information on EPA's Natural Gas STAR program, visit <http://www.epa.gov/gasstar/index.html>

## **HOW TO COMMENT**

- Comments, identified by Docket ID Number EPA-HQ-OAR-2010-0505, may be submitted by one of the following methods:
  - [www.regulations.gov](http://www.regulations.gov): follow the on-line instructions for submitting comments.
  - E-mail: Comments may be sent by electronic mail (e-mail) to [a-and-r-Docket@epa.gov](mailto:a-and-r-Docket@epa.gov).
  - Fax: Fax your comments to: (202) 566-9744.

- Mail: Send your comments to: Air and Radiation Docket and Information Center, Environmental Protection Agency, Mail Code: 2822T, 1200 Pennsylvania Ave., NW, Washington, DC 20460.
- Hand Delivery or Courier: Deliver your comments to: EPA Docket Center, 1301 Constitution Ave., NW, Room 3334, Washington, D.C. 20004. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

#### **FOR MORE INFORMATION**

- Today's proposed rule and other background information is available <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.