

# Benzol Air Program

40 CFR Part 60 Subpart OOOO (aka Quad O) Compliance



# 40 CFR Part 60 Subpart OOOO – aka Quad O

## What is the Purpose?

- The purpose of Quad O is to reduce VOC emissions produced by onshore oil and natural gas production, storage, and transmission by requiring vapor control technologies and emission reduction practices to prevent excess emissions from:
  - Gas well completions
  - Compressors
  - Pneumatic devices
  - Storage vessels
  - Equipment leaks

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## How Did We Get Here?

- Clean Air Act – NSPS
  - reviewed and update every 8 years
- Adoption of FLIR technology in the oil patch for LDAR
  - made emissions visible and raised public awareness
- 2008 NSPS reviewed but not updated
- January 2009 - EPA sued and asked to provide revisions to NSPS.
- February 2010 - EPA enters into a Consent Decree; agrees to revise NSPS
- August 2011 - Proposal published in the Federal Register
- August 2012 – Final publishing of NSPS subpart OOOO in the Federal Register



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## Who Does It Apply To?

- All onshore oil and natural gas production, processing, and transmission facilities constructed or modified after August 23, 2011 are subject to Quad O.
- Modifications constitute a physical change or an operational change that will increase the amount of any air pollutant. The below table lists common modifications.

<b>Modifications that DO Increase Air Pollutants</b>	<b>Modifications that DO NOT Increase Air Pollutants</b>
Work Over to Increase Production	Replacing Equipment with Identical Parts
Removing or Reducing the use of a Control Device	Workovers without Increasing Production
Addition of Equipment on Site that Increases Emissions (IC Compressor)	Adding a Control Device

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## What Do Operators Have to Do?

- Compliance process is different for each category of “affected facility”
- Categories of “affected facilities”:
  - Gas well completions
  - Pneumatic devices
  - Storage vessels

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## What Do Operators Have to Do? – Gas Well Completions

- Submit a notification to State
- Reduced Emissions Completion (REC) / Green Completion
  - Route flowback liquids back to a separation process
    - Send gas to a sales line or combustion device

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## What Do Operators Have to Do? – Pneumatic Device

- Continuous bleed pneumatic controllers between the wellhead and a natural gas processing plant must have a bleed rate  $\leq 6$  scfh (standard cubic feet per hour)
  - Applies to all PD's installed post August 23<sup>rd</sup>, 2011
  - Manufacturer may have a retro-fit kit
- Each affected PD's should be tagged with the month and year of installation



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## What Do Operators Have to Do? – Storage Vessels

- Any storage unit designed to hold fluid that contains unrefined hydro-carbons (oil, condensate, and produced water tanks)
- All affected storage vessels are required to calculate VOC emissions 30 days after production startup
- All affected storage vessels with VOC emissions  $\geq 6$  tpy (tons per year) must reduce VOC emissions by at least 95% via a control device within 60 days after production startup



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## Definition of Storage Vessel – December 31, 2014

- New definition of storage vessel as of December 31, 2014:
  - Storage Vessel is defined as two or more storage vessels connected in parallel.
- Prior to the December 31, 2014 definition change, facilities were able to claim (in some cases) that the tank emissions could be divided by the number of tanks. This is no longer the case.
- As a result of this definition change, facilities that were previously not subject to Quad O will now have to re-evaluate emissions to determine applicability.

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## Federally Enforceable Emission Limits

- If emission controls are implemented and those reduced emissions are made federally enforceable by a federal, state, local or tribal permit, then that facility may use the reduced emissions to determine Quad O applicability per 40 CFR 60.5365(e).
- It is recommended that facilities with storage vessel emissions in excess of 6 tpy install emission control equipment to reduce the storage vessel emission rate to below 6 tpy AND make the reduced emissions federally enforceable under a state permit.
- Facilities with federally enforceable emission limits will not be subject to the reporting and recordkeeping requirements of Quad O.

# Example of Using a Control Device to create Federally Enforceable Emission Limits

*Uncontrolled Facility Wide Emissions by EPN*

EPN	VOC C1+ (TPY)	VOC C3+ (TPY)	BTEX (LB/YR)
OIL1	12.02	9.41	39.86
OIL2	12.02	9.41	39.86
OIL3	12.02	9.41	39.86
OIL4	12.02	9.41	39.86
OIL5	12.02	9.41	39.86
OIL6	12.02	9.41	39.86
OIL7	12.02	9.41	39.86
OIL8	12.02	9.41	39.86
OIL9	12.02	9.41	39.86
PW1	1.99	1.47	22.66
PW2	1.99	1.47	22.66
PW3	1.99	1.47	22.66

*Facility Wide Emissions by EPN with Proposed Control Device*

EPN	VOC C1+ (TPY)	VOC C3+ (TPY)	BTEX (LB/YR)	GHG (TPY)
OIL1	0.60	0.47	1.99	0.03
OIL2	0.60	0.47	1.99	0.03
OIL3	0.60	0.47	1.99	0.03
OIL4	0.60	0.47	1.99	0.03
OIL5	0.60	0.47	1.99	0.03
OIL6	0.60	0.47	1.99	0.03
OIL7	0.60	0.47	1.99	0.03
OIL8	0.60	0.47	1.99	0.03
OIL9	0.60	0.47	1.99	0.03
PW1	0.10	0.07	1.13	0.01
PW2	0.10	0.07	1.13	0.01
PW3	0.10	0.07	1.13	0.01

- Uncontrolled VOC C3+ storage vessel emissions = 89.10 tpy
- Controlled VOC C3+ storage vessel emissions = 4.44 tpy

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## Initial Steps to Compliance

- Inventory all production sites to categorize facilities as affected or not affected based on construction / modification date – August 23<sup>rd</sup>, 2011
- Calculate emissions at affected facilities
- Perform any necessary initial performance tests on affected compressors
- Install appropriately sized and designed controls based off emission calculations
- Apply for minor source permits with federally enforceable controlled emission limits.

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## Maintained Compliance

- After compliance has been achieved, a maintenance program should be deployed to ensure that compliance is met on an ongoing basis.
- An air compliance maintenance program should involve the following activities:
  - Annual air compliance review.
  - Permit updates.
  - Annual reporting/recordkeeping.

# Regulatory Enforcement

- Infrared Imaging
  - Calibrated to detect VOC vapors.
  - Used to document excess emissions coming from oil and gas production facilities.
- Air Reconnaissance
  - Some state agencies have commissioned helicopters and have outfitted them with Infrared Imaging systems.
  - Air reconnaissance allows the regulators to observe large numbers of facilities in short periods of time. This rapid observation technique allows regulators to find non-compliant facilities.
- Ground Follow-up
  - Once air reconnaissance operations have been complete, a ground team will go in and complete the preliminary investigation for the issuance of a “Records Request” or a “Notice of Violation”.



# Additional Questions

Please direct additional questions to:

Travis Gaines, Air Emissions Consultant at Benzol Group

405-757-4908 ext. 133

[travis.gaines@benzolgroup.com](mailto:travis.gaines@benzolgroup.com)

Ian Green, Director of Air Compliance at Benzol Group

855-236-9651 ext 150

[ian.green@benzolgroup.com](mailto:ian.green@benzolgroup.com)