

Oil and Gas Exploration & Production Regulation No. 7 Requirements

An Overview of Air Quality Regulations

The oil and gas extraction industry plays an important role in the energy supply of the United States. Petroleum and natural gas supply 65% of the energy consumed in the United States, and domestic producers supply approximately 40% of the petroleum and 90% of the natural gas (Environmental Protection Agency (EPA) Sector Notebook, October 2000). According to the Colorado Oil and Gas Conservation Commission, Colorado had approximately 46,000 active wells in operation in September 2011.

This fact sheet provides an overview of the air quality requirements affecting oil and gas exploration and production (E&P) condensate tanks, tank batteries, engines, dehydrators and the wells serviced by these tanks and tank batteries in Colorado. This guidance is not intended to completely cover each requirement of Regulation No. 7. The Air Pollution Control Division (APCD) at the Colorado Department of Public Health and Environment (CDPHE) administers and enforces these requirements. For more information on air quality requirements for oil and gas E&P operations, or for information on non-E&P oil and gas operations, contact the APCD at 303-692-3150 or visit the APCD oil and gas sector web page at <http://www.cdphe.state.co.us/ap/oilgas.html>.

Definition of Condensate:

For the purposes of this rule, condensate is a hydrocarbon liquid with an API gravity greater than or equal to 40 API at 60° F.

➤ **Air Pollutant Emission Notices (APENs)**

Under Colorado air quality regulations, owners or operators of all E&P condensate tanks (or multiple tanks manifolded together to create a tank battery) with volatile organic compound (VOC) emissions greater than or equal to one ton per year in a non-attainment

area or VOC emissions greater than or equal to two tons per year in an attainment area must report VOC emissions for the tank or tank battery to the APCD through the submission of an Air Pollutant Emission Notice (APEN).

Emissions for tanks installed or modified after December 30, 2002 must be reported to the APCD within 30 days after the first production report is submitted to the Colorado Oil and Gas Conservation Commission, but not more than 90 days following the first day of production.

The APEN form for E&P tanks is available through the APCD and downloadable at <http://www.cdphe.state.co.us/ap/oilgaspermitting.html>

The APEN form requests information such as the site location and ownership, detailed information regarding site-specific process equipment, and information regarding air pollution control measures. When an air permit is required, the APCD uses the information provided on the APEN to prepare the air permit. APENs must be revised at least every 5 years, and may need to be revised sooner (for more details about what activities triggers an APEN update, see Regulation No. 3, Part A, Section II.C).

➤ **Air Permits**

Condensate tanks and tank batteries with a capacity less than 40,000 gallons that were in existence prior to December 30, 2002 and have not since been modified are exempt from air permitting requirements (“grandfathered”). Grandfathered tanks are not exempt from APEN requirements. All other condensate tanks and tank batteries must obtain an air permit if the tanks meet or exceed permit thresholds: uncontrolled actual VOC emissions greater than or equal to two tons per year in a non-attainment area or greater than or equal to five tons per year in an attainment area.

Has the Tank Battery Been Modified?

Modifications include but are not limited to: adding or replacing a tank at the site, piping a new well into the tank, significant changes to the tank or associated equipment, re-frac or re-completion of an existing well, or otherwise stimulating existing wells.

When completing the APEN, operators may choose either the General Permit (if the General Permit eligibility requirements are met) or an Individual Permit. The General Permit is designed to streamline the

permitting process. A General Permit may be issued when the following conditions are met:

- 1) The E&P condensate tank or tank battery has a design capacity less than or equal to 10,000 barrels per tank;
- 2) Combined actual emissions of VOCs from all tank batteries that are co-owned or operated and co-located at a common well pad do not exceed 39 tons per year of VOC, 8 tons per year of an individual hazardous air pollutant (HAP), or 20 tons per year for the total of all HAPs; and
- 3) The tank or tank battery is located at minor or synthetic minor facility and is not subject to major source (Title V) or other federal (i.e., MACT, NSPS) air requirements.

When the General Permit is not applicable or does not meet the unique needs of a facility, an Individual Permit is issued through the traditional construction permit process. The General Permit is available for review through the APCD and downloadable at <http://www.cdphe.state.co.us/ap/conperm.html>.

➤ **Applicable Fees**

APEN Filing Fee: Generally, the APEN filing fee is \$152.90 per APEN. However, up to five tank battery APENs may be submitted for one fee of \$152.90 for tank batteries.

Annual Emission Fee: All sources required to file APENs must pay annual air emission fees. The APCD bills each source subject to an APEN an annual fee of \$22.90 per ton of criteria pollutants emitted and \$152.90 per ton of non-criteria (HAPs) emitted. Invoices are mailed from March through June of each year for the previous calendar years emissions. Fees are subject to change by the Colorado legislature on an annual basis.

Permitting Fee: APCD assesses a permitting fee of \$250.00 for condensate storage tank General Permits. The fee for Individual Permits is based on the amount of time it takes the APCD to process the application. The current processing fee is \$76.45 per hour. Fees are subject to change.

➤ **Emission Estimates**

Owners or operators of E&P condensate, crude oil, and produced water tanks must estimate annual emissions of VOCs and HAPs when submitting APENs or demonstrating compliance with permit conditions.

The APCD has established the state-approved emission factors shown in Table 1.

These emission factors are applicable where the calculated actual uncontrolled VOC emissions are less than 80 tons per year. If uncontrolled VOC emissions from an E&P tank battery, as calculated using the State emission factors, are greater than or equal to 80 tons per year, emission estimates must be based on site-specific sampling and analysis.

Facility County	Tank Type	VOC	Benzene	n-Hexane
Adams, Arapahoe, Boulder, Broomfield, Crowley, Denver, Douglas, El Paso, Elbert, Jefferson, Larimer, Logan, Morgan, Philips, Pueblo, Sedgwick, Washington, Weld, Yuma	C ¹	13.7	0.024	0.210
	PW ²	0.262	0.007	0.022
Garfield, Mesa, Rio Blanco, Moffat	C ¹	10.0	0.048	0.140
	PW ²	0.178	0.004	0.010
Cheyenne, Kiowa, Kit Carson, Lincoln	C ¹	3.0	0.004	0.070
	PW ²	0.262	0.007	0.022
Remainder of Colorado	C ¹	11.8	0.034	0.185
	PW ²	0.262	0.007	0.022

Notes:
1. C = Condensate Tanks 2. PW = Produced Water Tanks

➤ **Requirements for Colorado's 8-Hour Ozone Non-Attainment Area**

Colorado's 8-Hour Ozone Early Action Compact Area includes all of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson counties, and parts of Larimer and Weld counties. A map of the 8-Hour Ozone Area is available on the APCD oil and gas sector web page at:

<http://www.cdphe.state.co.us/ap/images/ozoneareamap.gif>



On November 20, 2007, the US EPA classified the Denver-metro area and the northern Front Range as non-attainment for ozone. Rules amending Regulation Number 7 passed in December 2008 by the Colorado Air Quality Control Commission mandate specific requirements for condensate tanks in the Non-Attainment area. As part of this rule-making, oil and gas condensate tanks or tank batteries are subject to more rigorous VOC control and recordkeeping requirements (commonly referred to as system-wide requirements) than other similar condensate tanks in Colorado if those tanks meet the following criteria: 1) share a common owner or operator, 2) located in Colorado's 8-Hour Non-Attainment Area, 3) exceed APEN reporting thresholds and, 4) cumulatively result in actual uncontrolled VOC emissions greater than or equal to 30 tons per year.

Requirements for oil and gas condensate tanks are provided in Colorado Regulation Number 7, Section XII, which is available at: <http://www.cdphe.state.co.us/regulations/airregs/>. Emission control, recordkeeping, and reporting requirements described in Regulation Number 7, Section XII are summarized in the next three sections.

➤ **8-Hour Ozone Non-Attainment Area
VOC Control Requirements**

Owners or operators of tanks or tank batteries in the Non-Attainment Area must use air pollution control equipment to reduce VOC emissions from some tanks within their system of tanks. Owners or operators must meet system-wide VOC emission reduction requirements. It is not necessarily required to install control equipment on each tank within the system. The required VOC reductions vary with the calendar year as follows:

<p align="center">2011 and 2012 Ozone Season (May 1 – September 30)</p> <p>VOC emissions must be reduced by 90% from uncontrolled actual VOC emissions on a weekly basis.</p>
<p align="center">20011 and 2012 Non-Ozone Season (January 1 – April 30, October 1 – December 31)</p> <p>VOC emissions must be reduced by 70% from uncontrolled actual VOC emissions on a monthly basis.</p>
<p align="center">Auto-Igniters Shall Be Installed on Tank Batteries Controlled with Combustion Devices under these circumstances:</p> <p><i>Uncontrolled VOC emissions greater than or equal to 50 tons/year – Install by May 1, 2009</i></p> <p><i>Uncontrolled VOC emissions less than 50 tons/year – Install by May 1, 2010</i></p> <p><i>Tanks with newly installed combustion devices – Install within 180 days or by the above deadlines</i></p>

Any condensate tank or tank battery installed after February 1, 2009 that is controlled with a combustion device is required to be equipped with an auto-igniter upon startup. Any existing condensate tank or tank battery operating prior to February 1, 2009 that is controlled with a combustion device is required to be equipped with an auto-igniter as follows: Condensate tanks or tank batteries associated with new, re-completed, refractured, or otherwise stimulated wells are required to be controlled for the first 90 days of production following the drilling of a new well, re-completion of a well, refracture of a well, or otherwise stimulated well. The control device may be removed following the first 90 days, provided that the source can demonstrate compliance with the system-wide control requirement.

Condensate tanks or tank batteries with uncontrolled emissions of 100 tons per year or greater shall employ surveillance systems. A surveillance system may be electronic or monitoring may be done manually. Monitoring shall be done at least once per day.

Signage is required at each tank or tank battery facility identifying each subject tank or tank battery with the applicable AIRS ID number as well as a sign at each control device identifying the AIRS ID of the tank(s) that are controlled by that device.

Pneumatic controllers installed after February 1, 2009 are required to meet the definition of a low bleed controller (≤6 standard cubic feet per hour of natural gas). Pneumatic controllers operating prior to February 1, 2009 are required to be retrofitted so that the emissions are less than or equal to the low bleed design by May 1, 2009, unless APCD grants approval for the high bleed controller to remain in operation due to safety or process reasons.

➤ **8-Hour Ozone Non-Attainment Area
Recordkeeping Requirements**

Owners or operators tanks or tank batteries that are located in the Non-Attainment Area must demonstrate compliance with the required VOC emission reductions by maintaining a compliance spreadsheet. This compliance spreadsheet must include, but is not limited to:

- AIRS ID (if available) of each condensate tank;
- Location of each tank;
- Emission factors used for each tank;
- Weekly production at each tank;
- Weekly production that occurred during control equipment downtime, if any, at each tank

- Weekly efficiency of emission controls for each tank;
- Weekly controlled and uncontrolled VOC emissions; and
- Date, time, and duration of scheduled and unscheduled air pollution control equipment shutdowns.

The APCD requires sources to use the Excel spreadsheet template to track the above information. This spreadsheet template is available through the APCD and can be downloaded from:

<http://www.cdphe.state.co.us/ap/oilgas.html>

8-Hour Ozone Non-Attainment Area Reporting Requirements

Owners or operators of Non-Attainment Area tanks or tank batteries must submit semi-annual compliance reports to the APCD by November 30 (ozone season data) and April 30 (calendar year data) of each year. These reports are made up of a completed compliance spreadsheet and a Responsible Official Signature Form, which indicates if the required emission reductions were achieved. The Responsible Official form can be downloaded from:

<http://www.cdphe.state.co.us/ap/oilgas.html>

Beginning in 2007, on or before April 30 of each year, the owner or operator shall submit a control equipment status report (list identifying the name and AIRS ID each condensate storage tank that is being controlled). On the last day of each month during the ozone season and on November 30 and February 28 the owner or operator shall submit an update report identifying any condensate tank for which the control status has changed since the last report submission, if any changes have occurred.

Beginning in June 2007, the owner or operator of any condensate tank that has a control device shall submit a monthly downtime report on or before the last day of each month notifying APCD of any instances where the control device was not functioning properly.

State-wide Regulation No. 7 Revisions

Owners and operators of condensate tanks, natural gas fired reciprocating internal combustion engines (RICE), and glycol natural gas dehydrators in the state of Colorado are subject to the following emission control requirements:

- Beginning May 1, 2008, condensate tanks with uncontrolled actual emissions of 20 tons per

year of VOC or more must control emissions by 95%.

- Beginning May 1, 2008 glycol dehydrators with uncontrolled actual VOC emissions of 15 tons per year or more must control emissions by 90%.
- Owners and operators of RICE must comply with emission rates as outlined in this table:

Max. HP	Construction or Relocation Date	Emission Standards in G/hp-hr		
		NOx	CO	VOC
100<HP<500	1/1/08	2.0	4.0	1.0
	1/1/11	1.0	2.0	0.7
≥ 500 HP	7/1/07	2.0	4.0	1.0
	7/1/10	1.0	2.0	0.7

Air Inspections and Enforcement

APCD enforcement staff conducts routine inspections of E&P condensate tanks to ensure that reported emissions controls such as flares are in place and operational. The APCD also reviews semi-annual compliance reports to ensure compliance with the requirements. When a permit violation or noncompliance issue leads to enforcement proceedings, corrective action is required and fines up to \$15,000 per day may be assessed.

Questions?



The APCD is available to help answer questions on air quality requirements for oil and gas E&P condensate tanks and tank batteries. Contact the APCD at 303-692-3150.

Additional Resources

The following are available at:

<http://www.cdphe.state.co.us/ap/psmemo.html>

- PS Memo 05-01: "Oil and Gas Atmospheric Condensate Storage Tank Batteries Regulatory Definitions and Permitting Guidance"
- PS Memo 09-02: "Oil and Gas Produced Water Tank Batteries"
- PS Memo 10-02: "Oil and Gas Atmospheric Condensate Storage Tank Batteries System Reporting Guidance"
- PS Memo 11-1: "Guidance on State-wide RICE requirements"
- PS Memo 11-03: "Permitting Guidance for Oil and Gas Industry – Natural Gas Fired Reciprocating Internal Combustion Engine (RICE) General Permit GP02"