



New Mexico Environment Department Testimony in EIB 21-27 (R)

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Section 20.2.50.118 – Glycol Dehydrators



Overview of Glycol Dehydrators

- ❑ Glycol dehydrators remove water from natural gas and natural gas liquids.
- ❑ Failure to remove water results in formation of hydrates, which can block pipelines, jam valves and pipeline equipment and instrumentation.
- ❑ Glycol absorbs water and VOCs from the gas. The glycol is then regenerated by heating it to release the absorbed compounds.
- ❑ The reboiler of a large glycol dehydrator can discharge more than one hundred tons per year of VOCs, including benzene, toluene, ethylbenzene and xylene (collectively known as “BTEX”).



Control Options for Dehydrators

- Still vent and flash tank emissions can be routed to the reboiler firebox, a condenser, combustion control device, to a process point that either recycles or recompresses the emissions or uses the emissions as fuel, or to a vapor recovery unit (VRU) that reinjects the VOC emissions back into the process stream or a natural gas gathering pipeline



Applicability and Emissions Standards

- ❑ Existing dehydrators with a PTE greater than 2 tpy VOC are required to reduce VOC emissions from the still vent and flash tank by at least 95% no later than two years after the effective date of the rule.
- ❑ New glycol dehydrators with a PTE greater than 2 tpy VOC are required to reduce VOC emissions from the still vent and flash tank by at least 95% upon startup.
- ❑ For both new and existing dehydrators, the combustion device (if used) must meet a minimum 98% destruction efficiency.



Summary of Rule Provisions for Glycol Dehydrators

- Still vent and flash tank emissions must be routed to a control device, a process point that either recycles or recompresses the emissions or uses the emissions as fuel, or to a VRU that reinjects the VOC emissions back into the process stream or natural gas gathering pipeline.
- If a VRU is used, it must be operational at least 95% of the time, resulting in a minimum combined capture and control efficiency of 95%.
- The requirements cease to apply when the actual annual VOC emissions from a new or existing glycol dehydrator are less than 2 tpy VOC.



Basis for Rule Requirements

- The proposed glycol dehydrator requirements are based on requirements adopted by the States of Colorado and Pennsylvania and the US EPA.
- Applicability threshold of 2 tpy of VOC - based on Colorado Reg. 7, Sec. II.D applicability threshold for individual dehydrators, and is comparable to the 2.7 tpy threshold in Pennsylvania's GP-5 and GP-5A.
- Capture and control efficiency requirement of 95% for emissions from an uncontrolled dehydrator's still vent and flash tank – based on the federal National Emissions Standards for Hazardous Air Pollutants (“NESHAP”) regulations for emissions from glycol dehydrators, 40 CFR Part 63, Subpart HH (“NESHAP Subpart HH”), Section 63.765, requiring controls for VOCs.



Estimated Emission Reductions and Costs

- Estimated overall emission reduction of 1,865 tons of allowable VOC from glycol dehydrators as a result of the rule.
- Estimated cost effectiveness of reductions is \$2,034/ton VOC using condensers to control emissions.
- Cost effectiveness is based on total annualized costs of \$21,560/year for a condenser as calculated by the US EPA in developing the 2007 amendments to NESHAP Subpart HH.



Revisions – Applicability and Standards

20.2.50.118 GLYCOL DEHYDRATORS:

A. Applicability: Glycol dehydrators with a PTE equal to or greater than two tpy of VOC and located at wellhead sites, tank batteries, gathering and boosting ~~sites~~stations, natural gas processing plants, and transmission compressor stations are subject to the requirements of 20.2.50.118 NMAC.

B. Emission standards:

(1) Existing glycol dehydrators with a PTE equal to or greater than two tpy of VOC shall achieve a minimum combined capture and control efficiency of ninety-five percent of VOC emissions from the still vent and flash tank (if present) no later than two years after the effective date of this Part. If a combustion control device is used, the combustion control device shall have a minimum design combustion efficiency of ninety-eight percent.

(2) New glycol dehydrators with a PTE equal to or greater than two tpy of VOC shall achieve a minimum combined capture and control efficiency of ninety-five percent of VOC emissions from the still vent and flash tank (if present) upon startup. If a combustion control device is used, the combustion control device shall have a minimum design combustion efficiency of ninety-eight percent.

(3) The owner or operator of a glycol dehydrator shall comply with the following requirements:

(a) still vent and flash tank emissions shall be routed at all times to the reboiler firebox, condenser, combustion control device, fuel cell, to a process point that either recycles or recompresses the emissions or uses the emissions as fuel, or to a VRU that reinjects the VOC emissions back into the process stream or natural gas ~~gathering~~ pipeline;

(b) if a VRU is used, it shall consist of a closed loop system of seals, ducts, and a compressor that reinjects the ~~avapor~~natural gas into the process or the natural gas pipeline. The VRU shall be operational at least ninety-five percent of the time the facility is in operation, resulting in a minimum combined capture and control efficiency of ninety-five percent. The VRU shall be installed, operated, and maintained according to the manufacturer's specifications; and

(c) still vent and flash tank emissions shall not be vented directly to the atmosphere during normal operation.; and



Revisions – Emissions Standards and Monitoring Requirements

~~(d) the owner or operator of a glycol dehydrator shall install an EMT on the glycol dehydrator in accordance with 20.2.50.112 NMAC.~~

(4) an owner or operator complying with the requirements in Subsection B of 20.2.50.118 NMAC through use of a control device shall comply with the requirements in 20.2.50.115 NMAC.

(5) The requirements of Subsection B of 20.2.50.118 NMAC cease to apply when the ~~uncontrolled~~-actual annual VOC emissions from a new or existing glycol dehydrator are less than two tpy VOC.

C. Monitoring requirements:

(1) The owner or operator of a glycol dehydrator shall conduct an annual extended gas analysis on the dehydrator inlet gas and calculate the uncontrolled and controlled VOC emissions in tpy.

(2) The owner or operator of a glycol dehydrator shall inspect the glycol dehydrator, including the reboiler and regenerator, and the control device or process the emissions are being routed, semi-annually to ensure it is operating as initially designed and in accordance with the manufacturer recommended operation and maintenance schedule.

(3) Prior to any monitoring event, the owner or operator shall date and time stamp the event, and the monitoring data entry shall be made in accordance with the requirements of this Part.

~~(4)~~ An owner or operator complying with the requirements in Subsection B of 20.2.50.118 NMAC through the use of a control device shall comply with the monitoring requirements in 20.2.50.115 NMAC.

~~(5)~~ Owners and operators shall comply with the monitoring requirements in 20.2.50.112 ~~of this part~~ NMAC.



Revisions – Recordkeeping Requirements

D. Recordkeeping requirements:

- (1) The owner or operator of a glycol dehydrator shall maintain a record of the following:
 - (a) unique identification number and dehydrator location (latitude and longitude)and identification number;
 - (b) glycol circulation rate, monthly natural gas throughput, and the date of the most recent throughput measurement;
 - (c) data and methodology used to estimate the PTE of VOC (must be a department approved calculation methodology);
 - (d) ~~amount of~~ controlled and uncontrolled VOC emissions in tpy;
 - (e) type, make, model, and unique identification number of the control device or process the emissions are being routed;
 - (f) time and date stamp, including GPS of the location, of any monitoring;
 - (gf) ~~date and~~ results of any equipment inspection, including maintenance or repair activities required to bring the glycol dehydrator into compliance; and
 - (hg) a copy of the glycol dehydrator manufacturer specifications-operation and maintenance recommendations.
- (2) An owner or operator complying with the requirements in Paragraph (1) or (2) of Subsection B of 20.2.50.118 NMAC through use of a control device as defined in this Part shall comply with the recordkeeping requirements in 20.2.50.115 NMAC.
- (3) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. **Reporting requirements:** The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

[20.2.50.118 NMAC - N, XX/XX/2021]



Comments Received

- NMOGA proposal: limit applicability to dehydrators with an actual annual average flowrate greater than 3 MMscfd throughput.
- NMED disagrees with proposal for following reasons:
 - This throughput threshold proposed is taken from NESHAP Subpart HH
 - AQCA expressly allows the Board to impose more stringent requirements than federal regulations to address rising ozone concentrations in the State.
 - Threshold that is appropriate for regulations targeting hazardous air pollutants, but not for rule targeting reductions of VOC emissions.
 - VOC emissions from dehydrators vary by composition of the gas, and less by throughput amount.
 - Dehydrators with throughputs less than 3 MMscfd can still have significant associated VOC emissions.
 - Those units with low VOC emissions are addressed by the PTE thresholds in Subsection B



Comments Received

- NMOGA proposes inclusion of “vapor recovery control unit,” as distinguished from a “vapor control unit” in the provisions of Subsection B, Paragraph 3.
 - NMED disagrees for the reasons stated previously in the rebuttal testimony regarding the proposed definition of the term “vapor recovery control unit” in Section 20.2.50.7.
- NMOGA proposed to allow use of a representative gas analysis in the emissions calculations in lieu of unit-specific inlet analyses.
 - NMED disagrees. Estimated emissions from a source should be based on the most accurate information available. A representative gas analysis may be appropriate for a well that has yet to be constructed, but the requirement in this Section is for an annual calculation for all dehydrators in operation whether they qualify as a “new” or “existing” source under this rule.
 - Calculations based on composition of the actual gas being processed by the subject source are, by definition, more accurate and the Department requires extended gas analyses for its permits.