

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT

RULE 71.5 - GLYCOL DEHYDRATORS

(Adopted 12/13/94)

A. Applicability

This rule is applicable to glycol dehydrators anywhere natural gas is dehydrated.

B. Requirements

1. No person shall operate a gas dehydration system unless the Reactive Organic Compound (ROC) emissions from the glycol regenerator vents are controlled using one of the following:
 - a. Condenser/Vapor Disposal: ROC emissions are collected and condensed by a condenser/separator system that directs all uncondensed ROC emissions to a vapor recovery/disposal system. The vapor disposal portion of the system shall consist of one of the following:
 - 1) A system that directs all vapors to a fuel gas system or a sales gas system, or
 - 2) A flare, incinerator, thermal oxidizer or reboiler, which meets the requirements of Subsection B.1.b, below, or
 - 3) Any other system that processes all vapors and has a ROC vapor destruction or removal efficiency of at least 95 percent, by weight. Systems subject to this requirement shall test for compliance upon installation, and not less than once every 24 months thereafter.
 - b. Flare/Incinerator: All ROC emissions are combusted by a flare or incinerator. This system shall have all of the following features, as a minimum:
 - 1) Operate continually in a smokeless mode.
 - 2) Electronic controlled ignition system with a malfunction alarm system if the pilot flame fails.
 - 3) Liquid knock out system to condense any condensable vapors.
 - 4) Sight glass ports, if the flame is not visible.
 - c. Any other ROC emission control system that controls glycol regenerator vent ROC emissions by at least 95 percent, averaged over 1 hour or that controls glycol regenerator vent ROC emissions to a level no higher than 1.7 pounds of ROC per million dry standard cubic feet of gas dehydrated,

averaged over 1 hour. Systems subject to this requirement shall test for compliance upon installation and not less than once every 24 months thereafter.

The control efficiency shall be determined by the following:

Measurements of ROC emissions from the uncontrolled vent are compared with measurements of ROC emissions from all vapors emitted from the emission control system under the following similar operating conditions: glycol flowrate, reboiler temperature, gas flowrate, and gas moisture removal efficiency.

2. The condensed hydrocarbon liquid stream from the glycol dehydration vents shall be stored and handled in a manner that will not cause or allow evaporation of ROC into the atmosphere, except as allowed by Section D, Exemptions, of Rule 71.1, Crude Oil Production and Separation.
3. Emission control systems shall be maintained in a leak-free condition.

C. Exemption

The requirements of Section B shall not apply to any glycol dehydrator that is operated less than 200 hours per year, as demonstrated and recorded by the continuous measurement of an operating parameter of the unit or by the cumulative measurement of the operating hours of the unit.

D. Recordkeeping

1. The operator of any glycol dehydrator subject to this rule shall maintain a current file of the following information to assist with rule compliance:
 - a. Facility name, APCD permit number
 - b. Location, size of glycol dehydrator reboiler (MMBTU/hr), amount of gas dehydrated (MMSCFD) and type of glycol used
 - c. Description of any installed ROC control system
 - d. Flow diagram of dehydrator and any ROC controls
 - e. Maintenance records of the ROC control system
 - f. Source test reports, as required by Subsections B.1.c or B.1.a.3.
2. Any source claiming the exemption in Section C for units operating less than 200 hours per year shall maintain a monthly record of hours operated.
3. All dated records shall be retained for at least two (2) years from the date of each entry. All records shall be made available to District personnel upon request.

E. Test Methods

1. Glycol Dehydrator Vent Testing:

- a. ROC emissions from a glycol dehydrator vent shall be determined by the glycol material balance method described in Subsection E.1.b or according to a test protocol which shall be submitted to the District and approved in writing by the APCO prior to testing. Such protocols shall be suitable to the specific unit tested and shall provide:
- 1) For the difficulties of determining ROC in the presence of high steam concentrations,
 - 2) Either total capture of condensible and noncondensable exhaust or isokinetic sampling of a representative portion thereof if the the glycol dehydration unit processes 15 MMSCFD or more of natural gas, on a dry basis,
 - 3) For condensation of steam and retention of condensate and a representative portion of noncondensable gas for analysis,
 - 4) For determination of ROC concentration in the noncondensable gas by EPA Method 25, 25A, 25B, or 18,
 - 5) For determination of ROC in condensate by Method 8015 (Total Petroleum Hydrocarbons),
 - 6) For isokinetic sampling and separation of condensibles which conforms to EPA Method 5, and
 - 7) For exhaust flow rate measurements which conform to EPA Method 2 or 2A.
- b. The glycol material balance method may be used if a flash tank is operating upstream of the glycol dehydration vent. The purpose of the flash tank is to remove gas from the glycol. This method is based on a material balance calculation using the difference in ROC content between the rich and lean glycol streams. For the purpose of this calculation, glycol shall not be considered to be an ROC. The glycol circulation rate shall be based on the rated pump output and/or flow rate measurements.
- Samples shall be collected at process pressures using evacuated stainless steel cylinders connected to bypass loops on the rich and lean glycol lines. The glycol shall be circulated through the cylinders for a minimum of 5 minutes. The liquid and gas phases of the glycol samples shall be analyzed separately, and the volumes of the liquid and gas present in the cylinders shall be measured using the following air displacement apparatus:

- 1) Place sample cylinder in a vertical configuration with bottom connected to a glycol drain.
- 2) The top of the cylinder is connected to a three way valve with one exit leading to a tedlar bag for gas collection and the other leading to a 1 liter graduated burette (initially filled with distilled water) followed by a 2 liter separatory funnel.

Gas-phase samples shall be analyzed for nonmethane hydrocarbons (ROC) using gas chromatography (GC) according to EPA Method ASTM E260-91. Gas samples shall be injected directly in the gas chromatograph (GC) followed by a photoionization detector (PID) or flame ionization detector (FID) analyzer.

For the liquid samples, EPA Test Methods SW-846 shall be followed for sample preparation and analysis. Analysis of the sample for ROC content (Total Petroleum Hydrocarbons) shall be determined by EPA Method 8015.

All the C6 through C9 compounds shall be quantified and should include: alkyl pentanes, cyclopentanes, alkyl hexanes, cyclohexane, benzene, toluene, alkyl benzenes, and xylene.

2. Vapor Disposal System Testing:

The ROC emissions from a vapor disposal system in Subsection B.1.a.3 and the ROC emissions from the emission control system in Subsection B.1.c, shall be determined as follows:

- a. Measurement of ROC vapor concentration shall be determined by EPA Method 18, EPA Method 25, or EPA Method 25A.
- b. Measurement of vapor flow through pipes shall be determined by EPA Methods 2 or 2A.

F. Violations

Failure to comply with any provision of this rule, including the requirement to maintain records, shall constitute a violation of this rule.

G. Increments of Progress

Any person required to install or replace equipment to comply with this rule shall submit to the APCO a complete application for an Authority to Construct no later than July 1, 1995, and shall submit to the APCO an application for a Permit to Operate and demonstrate compliance no later than July 1, 1996.