


Emissions Guidelines (EGs) for Greenhouse Gas (GHG) Emissions From Existing Crude Oil & Natural Gas Facilities (40 CFR Part 60 Subpart OOOOc)

Pennsylvania's State Plan

CAC / EJAB

November 12, 2024

Josh Shapiro, Governor

Jessica Shirley, Acting Secretary

EPA ENACTED

- On March 8, 2024, the U.S. Environmental Protection Agency (EPA) finalized its rule targeting methane emissions from the oil and natural gas sector. (The Methane Rule)
  - New Source Performance Standards (NSPS) for facilities built/ modified/ reconstructed after 12/6/2022. (OOOOb)
  - Emissions guidelines (EG) for states to follow in designing and executing state plans to cover existing sources. (OOOOc)

OOOOa-OOOOc TIMELINE

Applicability Dates:
Which infrastructure is covered by which subparts?
[built/modified/reconstructed]

NSPS OOOO	8/23/11 - 9/18/15
NSPS OOOOa	9/18/15 - 12/6/22
NSPS OOOOb	after 12/6/22
EG OOOOc	on or before 12/6/22

MAJOR DIFFERENCES (OOOOb vs c)

- Both include new requirements to address methane emissions from oil and gas operations using the "best system of emission reduction" (BSER).
- BSER- EPA considers technical feasibility, cost, non-air quality health and environmental impacts, and energy requirements.
- NSPS requirements and the presumptive standards for existing facilities are the same as it relates to methane, except for requirements governing new wells and well completions, and flaring requirements.

HOWEVER,...

The major differences between the two programs are

(i) timeframe for compliance,

(ii) the additional requirements for new wells, particularly as it relates to flaring, and well completions

WHO IS SUBJECT TO THE RULE?

The EPA's rule applies to oil and gas facilities involved in:

(i) production and processing, including equipment and processes at well sites, storage tank batteries, gathering and boosting compressor stations, and natural gas processing plants

(ii) natural gas transmission and storage, including compressor stations and storage tank batteries.

WHAT ARE THE KEY POINTS?

EPA's new rule requires frequent monitoring and repair of methane leaks at well sites, centralized production facilities, and compressor stations using established inspection technologies or, at an operator's selection, novel advanced detection technologies.

NEW REQUIREMENTS

The rule imposes several new requirements on reciprocating compressors, centrifugal compressors, pneumatic pumps and controllers (even prohibiting using natural gas in all but a few circumstances) and sweetening units, as well as the completion process and liquids unloading process.

PENNSYLVANIA'S APPROACH

- The rule establishes a federal and state standard.
- Existing sources will be regulated by EGs implemented as part of state programs.
- States can either adopt the OOOOc model rule as a State Plan EG for existing sources, or develop their own standards that are no less stringent as the federal standards.

PENNSYLVANIA'S APPROACH

- Under 25 Pa. Code §122.3 Pennsylvania will incorporate by reference OOOOc and adopt a State Plan based on the Model Rule.
- The EPA set a deadline of March 8, 2026 for states to submit a plan, and Pennsylvania's regulatory timeline generally exceeds two years.
- EPA updated 40 CFR Part 60 Subpart Ba – Adoption and Submittal of State Plans for Designated Facilities on Nov. 17, 2023

MEANINGFUL ENGAGEMENT

- 40 CFR Part 60 Subpart Ba requires State Plans to document meaningful engagement, as outlined in EPA's Meaningful Engagement Policy.
- DEP Advisory Bodies: AQTAC, Small Business Compliance Advisory Committee, Citizens Advisory Council, Oil & Gas Technical Advisory Board
- Environmental Justice (EJ) Communities
- Stakeholder Outreach and Discussion
- Public Hearing(s)

STATE PLAN TIMELINE

3/8/24

rule's effective date
24 months to submit a state plan

3/8/26

DEP's deadline to submit the State Plan to EPA

By 5/2027

EPA has:

-60 days to determine completeness

-Y (12 mos to act on it)

-N (EPA imposes a federal plan within 12 mos)

Q1 2029

Compliance date for owners/operators

MEANINGFUL ENGAGEMENT

VENTING & FLARING

- The rule aims to phase out venting and flaring of gas coming from oil wells.
- According to Agency officials, the most significant emissions reductions will come from this directive.

VENTING & FLARING

Associated gas with Methane Emissions <u>40 tpy or less</u>:

- Route associated gas to a sales line.
- Alternatively, use the gas as an onsite fuel or for another purpose or inject into a well.
- Alternatively, the gas can be routed to a flare or other control device that achieves at least 95 percent reduction in methane emissions.

VENTING & FLARING

Associated gas with Methane Emissions <u>more than 40 tpy</u>:

- Route associated gas to a sales line.
- Alternatively, use the gas as an onsite fuel or for another purpose or inject into a well.
- If above is technically infeasible, the gas can be routed to a flare or other control device that achieves at least 95% reduction in methane emissions.

“SUPER EMITTERS”: EPA’S PURVIEW

The rule creates the “Super Emitter” program (SEP), designed for identifying and addressing significant methane leaks from production facilities, including an avenue for qualified third parties to alert EPA of owners and operators exceeding the emissions standards and for the EPA to require owners/operators to investigate such alerts. A “super emitter” event is defined as emissions of 100 kg (220.5 pounds) of methane per hour or larger.

SEP 3RD PARTY QUALIFICATION

- The 3rd Party must be credentialed by EPA.
- 3rd Party Submits any super emitter detections to EPA for verification, and EPA notifies the operator, not the 3rd party.
- 3rd Parties are only authorized to use remote sensing technologies (i.e. satellites or aerial surveys), not entrance to well sites or other oil and gas facilities.
- The operator is required to investigate the alleged super emitter event within five days and report the results to EPA within 15 days of the notification.

STORAGE TANK BATTERIES

Groups of tanks that are adjacent and receive fluids from the same source

STORAGE VESSEL APPLICABILITY

- Owners/operators of existing tanks or tank batteries also will need to evaluate a new applicability trigger under the emissions guidelines set forth in Subpart OOOOc.

- Under the presumptive standard, for existing storage tanks or tank batteries with a PTE of 20 tons of methane per year or greater, owners/operators will have to reduce their emissions by 95 percent.

NEW LDAR REQUIREMENTS

- EPA's new rule reshapes leak detection and repair (LDAR) requirements based upon the type of facility involved to address methane leaks.

- Affected facilities generally include well sites, centralized production facilities, and compressor stations where components with the potential to emit fugitive emissions of methane are present.

LDAR: WELL SITES

Well sites are broken into several regulatory categories:

- Single wellhead
- Multi-wellhead
- Major Production and Processing Sites: Well sites with major production and processing equipment, including one or more controlled storage vessels or tank batteries, control devices, or natural gas-driven process controllers or pumps, and centralized production facilities

LDAR: SINGLE WELLHEADS

- Single wellhead only well sites require quarterly audible, visual, and olfactory (AVO) inspections.
- Owners and operators have 15 days from detecting a leak to initiate repairs and must complete those repairs within 15 days after the first repair.

LDAR: MULTI-WELLHEAD

- Multi-wellhead only well sites are required to conduct semiannual optical gas imaging (OGI) inspections (or optional EPA Method 21 inspections) and quarterly AVO inspections.

- Repairs of any leaks must commence within 30 days of detection and be completed 30 days after the first repair attempt.

LDAR: MAJOR SITES

- Major sites are required to conduct quarterly OGI inspections (or optional EPA Method 21 alternative inspections) and bimonthly AVO inspections.
- Leak repairs must commence within 30 days and be completed 30 days after the first repair attempt.
- Leaks detected using OGI or EPA Method 21 inspections must be repaired beginning 30 days after detection and finalized 30 days later.

COMPRESSOR STATIONS

LDAR: COMPRESSOR STATIONS

Compressor stations are required to conduct Quarterly OGI inspections (or EPA Method 21 alternative inspections) and monthly AVO inspections.

- Repair for leaks found during **AVO inspection:** first repair attempt within 15 days after detection and final repair within 15 days after that.
- With **OGI or EPA Method 21:** first repair attempt within 30 days after detection and finalized repair within 30 days later.

LDAR ALTERNATIVES: COMPRESSOR

- Regulated parties have the option to replace traditional LDAR programs with advanced measurement technologies such as on-site sensor networks or aerial flyovers using remote sensing technology.
- Technologies need to be approved by EPA in advance of an owner or operator submitting a monitoring plan.
- The frequency of use requirements vary depending upon the capabilities of the technology itself.

WELL CLOSURE

- Fugitive emissions monitoring is required to continue until the closure of any well pursuant to a well closure plan.
- Once a well is closed, a final OGI survey must be performed.
- If any emissions are detected, they must be eliminated.
- The results of the OGI survey, along with other details of the well closure, must be submitted to EPA.

PNEUMATIC PUMP REQUIREMENTS

green pneumatic pump valve on the pipeline

PNEUMATIC PUMP REQUIREMENTS

- All pneumatic pump affected facilities in the oil and gas industry are required to have zero emissions.

- Natural gas-driven pumps are prohibited except at facilities with fewer than three natural gas-driven diaphragm pumps in areas where other power sources are inaccessible.

CONTROLLER REQUIREMENTS

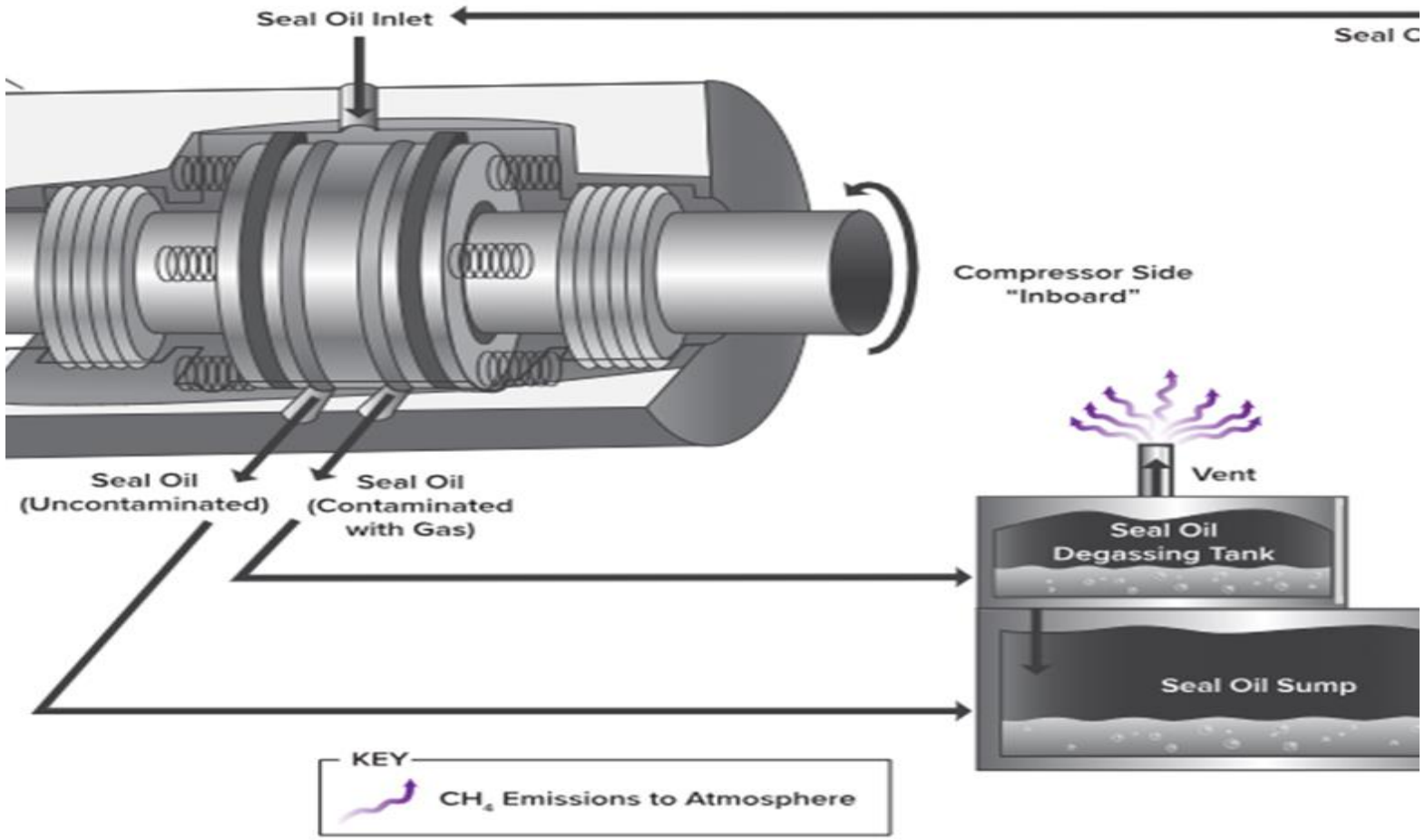
- Pneumatic controllers (*aka* process controllers) must have zero methane emissions.

WELL LIQUIDS UNLOADING

- Affected gas wells that unload liquids must minimize or eliminate venting of emissions during liquids unloading events to the maximum extent possible using best management practices.

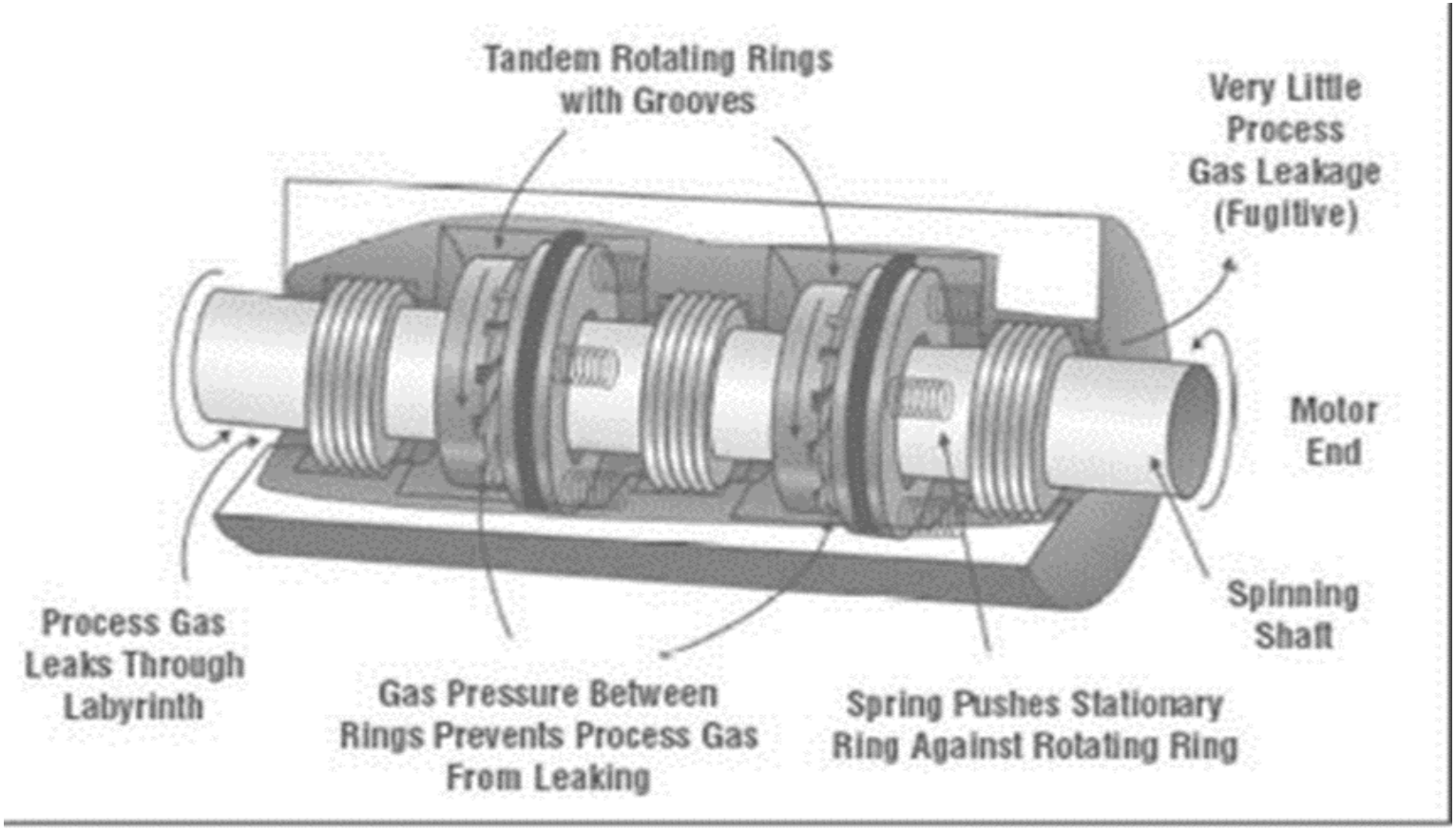
- Alternatively, such wells can comply by reducing methane emissions from gas well liquids unloading events by 95 percent using a closed vent system (CVS) to route emissions to a control device.

WET SEAL



ompressor Wet Seal.

DRY SEAL


Tandem Rotating Rings with Grooves
Very Little Process Gas Leakage (Fugitive)
Motor End
Spinning Shaft
Process Gas Leaks Through Labyrinth
Gas Pressure Between Rings Prevents Process Gas From Leaking
Spring Pushes Stationary Ring Against Rotating Ring

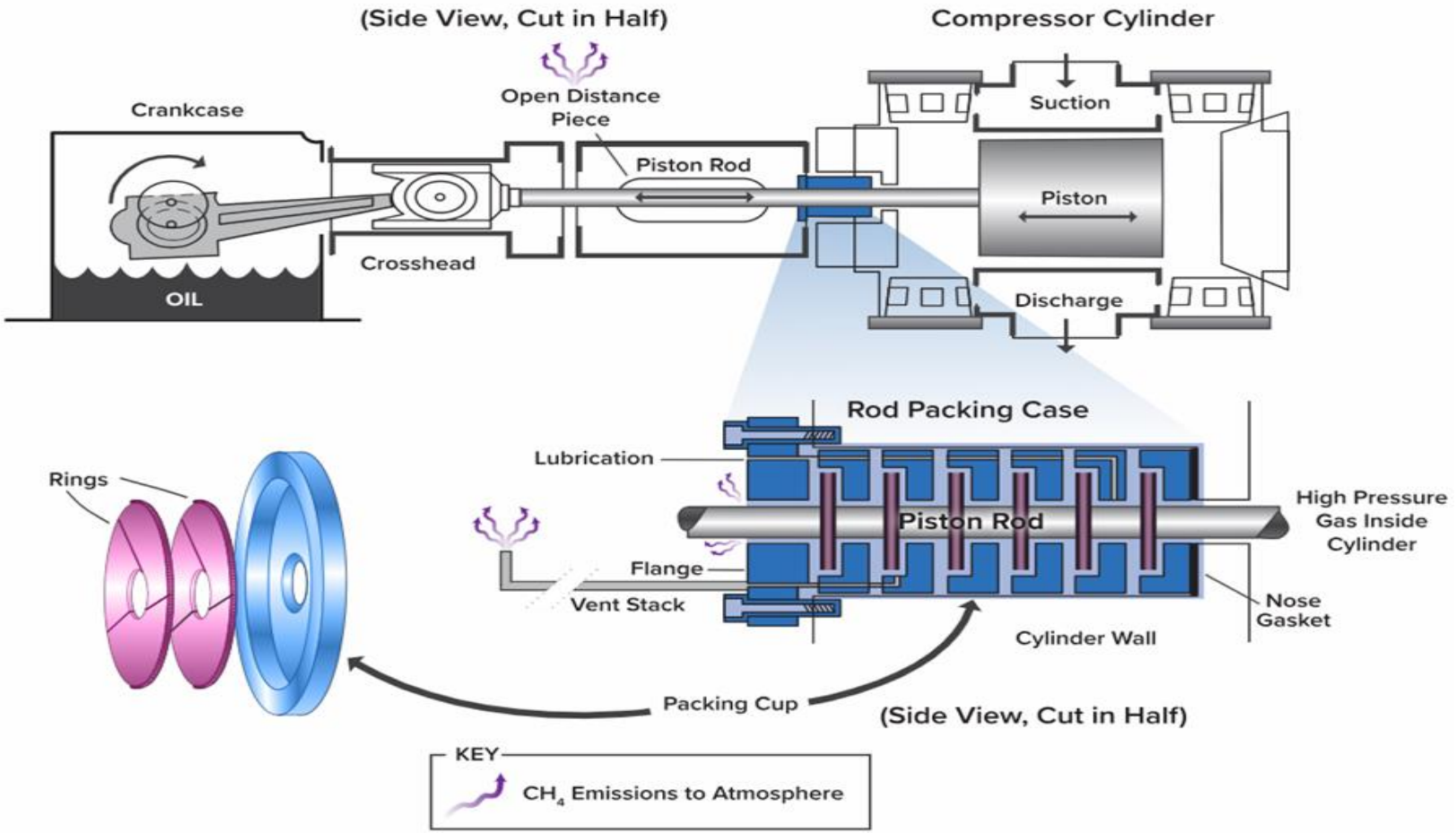
CENTRIFUGAL COMPRESSORS

- Centrifugal compressors with wet seals at facilities other than well sites must reduce emissions from their fluid degassing systems by 95% by routing emissions to a control device or process.

- Centrifugal compressor with dry seals, must instead meet work practice performance-based volumetric flow rate standards.

- Centrifugal compressor located at non-well sites, are required to monitor and repair to maintain volumetric flow rate at or below 3 standard cubic feet per minute per seal.

RECIPROCATING COMPRESSORS



Pennsylvania
Department of Environmental Protection

RECIPROCATING COMPRESSORS

- Reciprocating compressors must meet a performance-based emissions standard of 2 standard cubic feet per minute per cylinder.

CONTROL DEVICES

- Covers and Closed Vent Systems (CVS) must demonstrate compliance with the no identifiable emissions standard through OGI or Method 21 monitoring and AVO inspections conducted at the same frequency as the fugitive emissions monitoring for the type of site where the cover and CVS are located.

- Combustion control devices being used to meet a 95 percent emission reduction standard must demonstrate a continuous level of control of emissions through performance tests every 5 years.

EQUIPMENT LEAKS at NGPPs

- Equipment at natural gas processing plants (NGPP) – pumps, pressure relief devices, open-ended valves, and flanges and other connectors – must be inspected either:

  (i) bimonthly using OGI monitoring or

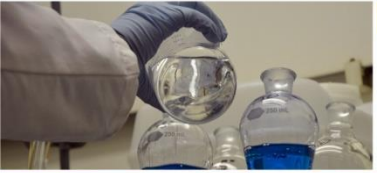
  (ii) according to EPA Method 21 monitoring at the corresponding frequencies of each type of equipment.

- Each piece of equipment has specific requirements, for example, open-ended valves must all be equipped with closure devices.

SWEETENING UNITS*

- Facilities with a sulfur production rate of at least 5 long tons per day must reduce sulfur dioxide emissions by 99.9 percent.
- Facilities with a design capacity of less than 2 long tons per day of hydrogen sulfide in acid gas, recordkeeping and reporting are required but emissions controls are not.

* Inapplicable - PA does not have large concentrations of hydrogen sulfide in natural gas or crude oil.



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CONTACT INFORMATION

BUREAU OF AIR QUALITY

RA-epair@pa.gov