ZERO IN™

Operator Perspective on Methane Monitoring and Mitigation Tech and Practices

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TOPICS

- APPLICABILITY
- SUPEREMITTER PROGRAM
- ALTERNATIVE TECHNOLOGY
- STATE VS FEDERAL RULES
  - LEGALLY AND PRACTICABLY ENFORCEABLE
  - FLARE TESTING
  - ALTERNATIVE TECHNOLOGY
  - OOOOc

BACKGROUND OF EPA NEW AND EXISTING SOURCE GUIDELINES

2012
EPA began regulating new sources of VOC emissions (NSPS OOOO)

2016
Expanded the 2012 rule to cover additional oil & gas sources and added methane as a regulated pollutant (NSPS OOOOa)

2017
EPA directed to review OOOOa and take action to suspend, revise, or rescind the rule.

2020
Two rules promulgated to revise and split OOOOa into a “Technical Rule” and “Policy Rule”

2021
President Biden signed a joint resolution under the Congressional Review Act (CRA) disapproving the 2020 “Policy Rule”.

2021
EPA released two proposed rules. One to revise OOOOa and the other to establish emission guidelines for existing sources.

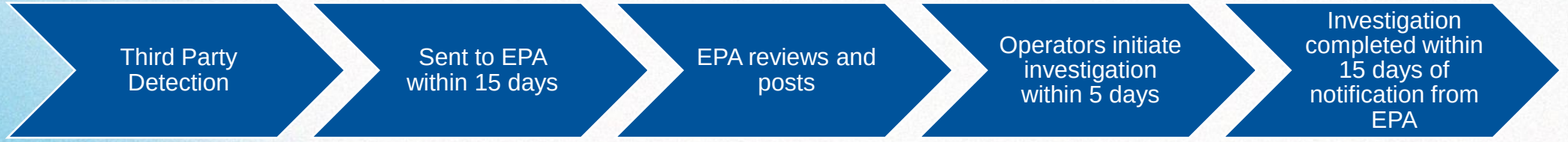
2022
EPA released supplemental proposal for OOOOb and OOOOc

Dec. 2023
EPA released final rule for OOOOb and OOOOc

March 2024
Final rule published in the federal register.

SUPER EMITTER PROGRAM

- A super-emitter event is defined as any emissions event that is located at or near an oil and natural gas facility (e.g., individual well site, centralized production facility, natural gas processing plant, or compressor station) and that is detected using **remote detection methods** and has quantified **emission rate of 100 kg/hr of methane** or greater.
  - Applies to ALL sites (OOOO, OOOOa, OOOOb/c)
- Detection technology/third party reporter must be approved by EPA (same process as alternative technology) and must be **satellite, remote sensing on aircraft, or mobile monitoring platforms**
- Detections must be sent to EPA within 15 days of detection, no timeline for EPA to provide notice to operator
- EPA will send notification and publish without operator name
- If detection is within 50 meters of a site you own/operate, you must initiate investigation with 5 days and complete within 15 days
- All detections deemed valid by EPA and responses are **PUBLICALLY AVAILABLE** @ www.epa.gov/super-emitter



ALTERNATIVE TECHNOLOGY – PERIODIC SCREENING

As an alternative to traditional LDAR monitoring for fugitive monitoring compliance, monitoring can also be completed with **periodic screening** or **continuous monitoring** alternative technology. **All methods must be approved by EPA**

- Periodic Screening
  - Frequency is based on minimum detection limit (MDL) and site classification
  - Annual OGI surveys must follow OOOOb requirements
  - Operator must receive results no later than 5 calendar days
  - Follow up inspections for detections based on spacial resolution of technology

Periodic Screening
CPFs or Compressor Stations

Minimum Frequency	Minimum Detection Threshold
Quarterly	≤ 1 kg/hr Interim 3 kg/hr
Bimonthly	≤ 2 kg/hr
Monthly	≤ 5 kg/hr
Bimonthly + Annual OGI	≤ 10 kg/hr
Monthly + Annual OGI	≤ 15 kg/hr

Periodic Screening
Well Sites

Minimum Frequency	Minimum Detection Threshold
Semiannual	≤ 1 kg/hr
Triannual	≤ 2 kg/hr
Quarterly	≤ 5 kg/hr
Triannual + Annual OGI	≤ 10 kg/hr
Quarterly + Annual OGI	≤ 15 kg/hr
Bimonthly	≤ 15 kg/hr

**If using 2 technologies at 1 site for periodic screening, frequency is based on highest detection threshold*

ALTERNATIVE TECHNOLOGY/CONTINUOUS MONITORS CONTINUED

- Technology approval:
  - Max turnaround time is 270 days from receival. 90 day completeness check
  - May cover entire regions
  - Not limited to “commercially available”. Can be developed in-house
- Alt. tech & continuous monitors may be used for OOOOa sites. Must use site frequency and fugitive emission definitions
- Continuous monitors can fit within the periodic screening framework

STATE VS FEDERAL RULES

- Legally and practicably enforceable conditions
- States that have existing flare testing programs
- States with approved alternative detection technology
- OOOOc remaining useful life determinations