Rule 462
Organic Liquid Loading

Working Group Meeting No. 2
March 5, 2025 – 11:00 am

Zoom URL: **https://scaqmd.zoom.us/j/92768644368**

Dial In: 1 669 900 6833

Webinar ID: 927 6864 4368 (applies to all)

Agenda

- Summary of Working Group Meeting #1
- Technology Assessment
- Cost-Effectiveness
- Other Rule Concepts
- Next Steps

Working Group Meeting #1

- Discussed Rule 462 background and current requirements
  - ➢ 3,000 ppm VOC leak threshold
  - ➢ 0.08 lbs of VOC/1,000 gallons of organic liquid transferred limit for Class A facilities
    - Class A facilities load 20,000+ gal. per day of gasoline
  - ➢ Regular leak inspections

- Discussed potential rule amendments including:
  - ➢ Use of enhanced leak detection via optical gas imaging (OGI)
  - ➢ Reducing facility vapor leak threshold
  - ➢ Increasing the vapor recovery control efficiency

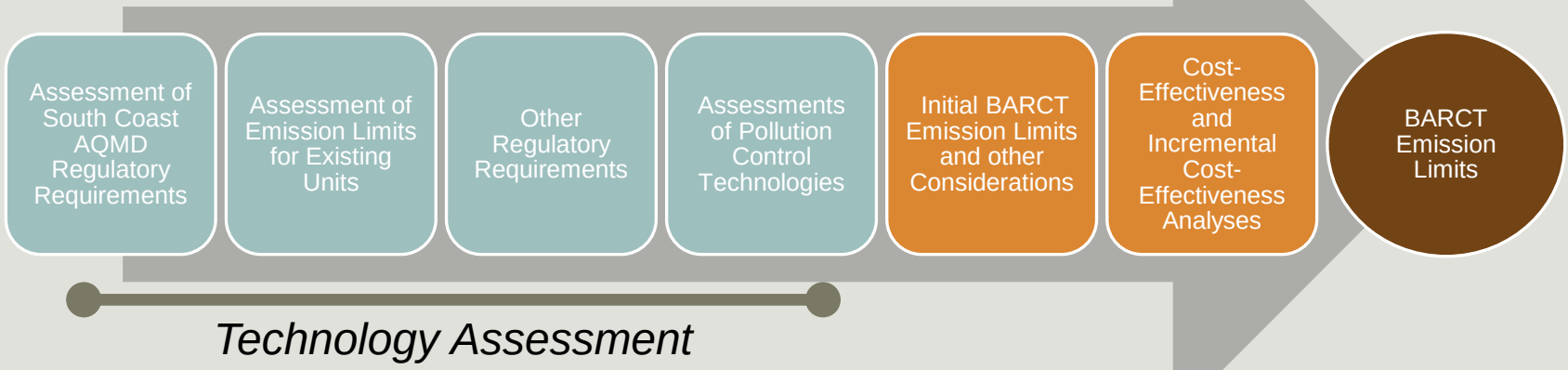
Technology Assessment

FUG-01: Improved Leak Detection and Repair

- The Air Quality Management Plan (AQMP) is a blueprint on how to meet air quality standards
- 2016 and 2022 AQMPs included control measure FUG-01 designed to implement the use of advanced leak detection technologies (e.g., optical gas imaging)
- PAR 462 seeks to partially implement control measure FUG-01 and conduct a BARCT assessment to reduce VOC emissions from organic liquid loading

Best Available Retrofit Control Technology Assessment (BARCT)

- Staff conducted a BARCT assessment to determine if any proposed control option is feasible and cost-effective
- Health and Safety Code section 40406 defines BARCT as "… *an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class and category of source*."
- BARCT must adhere to Health and Safety Code Section 40920.6
  - Cost-effectiveness and incremental cost-effectiveness must be determined for each progressively more stringent potential control option



Rule 462 Compared with Other Regulatory Requirements

	South Coast AQMD – Rule 462 – Organic Liquid Loading	San Joaquin Valley APCD - Rule 4624 – Transfer of Organic Liquid	Bay Area AQMD - Regulation 8, Rule 33	EPA - Title 40 CFR part 60 Subpart XXa
OGI Requirements	Currently none	If leak found with OGI facility has 2 days to quantify	N/A	OGI required quarterly
VOC Facility Vapor Leak	3,000 ppm	10,000 ppm for gasoline	3,000 ppm	10,000 ppm
VOC Emissions from Vapor Recovery System	0.08 lbs / 1,000 gal	0.08 lbs / 1,000 gal	0.04 lbs / 1,000 gal for non-methane organic compounds	550 ppm at exhaust of new system

Vapor Recovery System and Vapor Disposal System Efficiency Limit

- Current VOC limit for vapor recovery/disposal systems is 0.08 lbs/1,000 gal organic liquid transferred for Class A facilities
- Staff is considering reducing limit to 0.04 lbs VOC/1,000 gal
- Initial review of source tests indicate that facilities can meet a proposed new limit of 0.04 lbs VOC/1,000 gal
- Staff is requesting any documentation from affected facilities that cannot meet a limit of 0.04 lbs VOC/1,000 gal

Facility Vapor Leak Limit

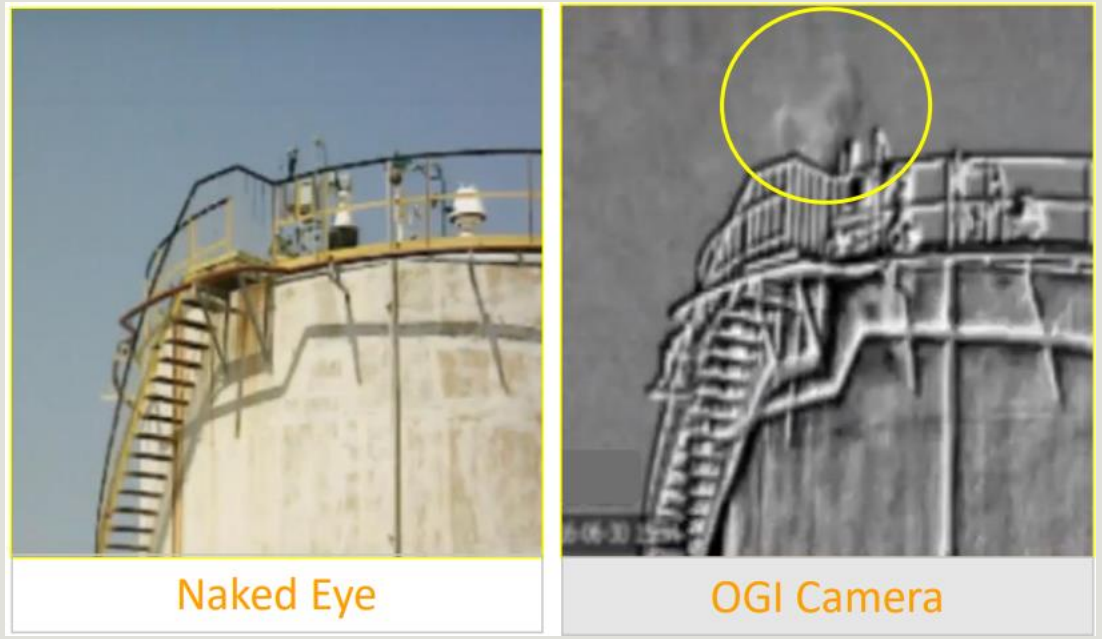
- Current Rule 462 vapor leak limit is 3,000 ppm VOC
- Staff considered reducing the vapor leak limit, but found that:
  - Rule 462 has the most stringent leak standard for bulk loading
  - After conducting site visits there was no new technology observed that would allow for a lower vapor leak limit
  - Online research also did not produce results in finding new technology that could reduce vapor leak limit
- Based on the technology assessment staff is not proposing changes to the facility vapor leak limit

Optical Gas Imaging Devices

- Detects VOC hydrocarbons based on their emission spectrum
- Helps to pinpoint leaks easier/quicker compared to only using a TVA alone
- Assists in recording images of leaks
- Identifies leaks in inaccessible areas
- OGI is less sensitive than TVA

Use of Optical Gas Imaging

- Produces images of vapors not seen with ordinary vision
- Compliance staff and some facilities currently use OGI during their inspections
- Staff is proposing the use of OGI cameras in addition to existing inspection requirements on a periodic basis for leak detection
  - ➢ Earlier leak detection leads to quicker correction and emission reductions
- Staff is proposing OGI inspection requirements consistent with other South Coast AQMD rules (i.e., 463, 1173, 1148.1, etc.)
  - ➢ Will allow U.S. EPA approved alternative monitoring methods upon South Coast AQMD approval



Cost-Effectiveness

Overview of Cost-Effectiveness Analysis

- Cost-effectiveness is based on Present Worth Value calculation
- Measured in cost per ton of pollutant reduced
- Factors and assumptions include:
  - Total capital cost
  - Annual operating and maintenance costs
  - Assumes 4% interest rate
  - 10-year equipment life span for OGI devices
  - Emission reductions

Cost-Effectiveness =

$$\frac{\text{Net Cost (Cost of OGI)}}{\text{Reductions (Tons of VOC emissions reduced)}}$$

Cost-Effectiveness Threshold and Cost Data

- Cost-effectiveness threshold is $36,000 per ton of VOC reduced, adjusted for inflation annually, as established in 2022 Air Quality Management Plan
- Cost data collected from site visits and vendors
  - OGI camera cost
  - Labor cost, training, maintenance

Assumptions Used for Cost-Effectiveness for Inspections Using OGI Devices

- Approximately 20 companies with 51 facilities within South Coast AQMD's jurisdiction
- 5 major leaks per year in South Coast AQMD
  - Based on average number of leaks found in the past 5 years, excluding year 2020
- Leak emits 200 lbs/day of VOCs
  - 98% less than leak rate established under Rule 1178
- A leak occurs at the midpoint in time between quarterly inspections ~ 45-day interval
- With these assumptions, currently 22.5 tons/yr of VOC is reduced from leak detection

Costs for OGI Devices

- Cost to purchase an OGI camera = $120,000 per unit
- Equipment expected to have a 10-year lifespan
- Assumed 1 camera per company (20 cameras)
- $1,500 annual maintenance/training cost
- Labor cost = $400/day to conduct OGI inspection

Cost-Effectiveness for Monthly OGI Inspections

- Monthly OGI inspections would further reduce VOC emissions from leaks by 14.6 tons/yr
- Number of days of labor = number of facilities x frequency of inspection (51 x 12 = 612 labor days to perform all inspections)
- Over a 10 year period:
  $4,628,900 / 146 tons of VOC
- Cost-effectiveness = $31,700/ton of VOC reduced

Cost-Effectiveness for OGI Inspections Every 2 Weeks

- Same costs for camera, lifespan, labor, and maintenance
- Number of days of labor = number of facilities x frequency of inspection (51 x 26 = 1,326 labor days to perform all inspections)
- Emission reductions are 18.25 tons/year
- Over a 10 year period: $6,702,100 / 182.5 tons of VOC
- Cost-effectiveness = $36,700/ton of VOC reduced

Incremental Cost-Effectiveness for OGI

- Incremental cost-effectiveness analysis is conducted when there is more than one control option which would achieve the emission reduction objective and is calculated with the following equation:

$$\frac{\text{(Cost of Option 2 – Cost of Option 1)}}{\text{(Emission Reductions of Option 2 – Emission Reductions of Option 1)}}$$

	Present Worth Value ($)	Emissions Reduction (tons)
Monthly OGI (Option 1)	4,628,900	146
OGI Every 2 Weeks (Option 2)	6,702,100	182.5

- The incremental cost-effectiveness between monthly OGI inspections and OGI inspections every 2 weeks is $56,000/ton VOC reduced

Conclusion for OGI Inspections

- Monthly OGI inspection is cost-effective
- OGI inspection every two weeks is cost-effective, but not incrementally cost-effective
- Staff will be proposing OGI inspection requirements on a monthly basis

	Monthly	Every Two Weeks
Annual Cost ($)	$274,800	$530,400
Annual emission reductions (tons per year)	14.6	18.25
Cost-Effectiveness ($/ton)	$31,700	$36,700
Incremental Cost-Effectiveness ($/ton)	N/A	$56,800

Other Rule Concepts

Contingency Measures

Background

The 2022 AQMP calls for contingency measures (CMs) to be included in rulemaking projects

CMs must take effect within 60 days of being triggered and resulting reductions to occur within 1 to 2 years per U.S. EPA guidance document

Implementation

Control measures deemed possible but not cost-effective or not incrementally cost-effective could be identified as contingency measures

Contingency Proposal in Proposed Amended Rule 462

More frequent OGI inspection frequency of **every two weeks**

Source Tests

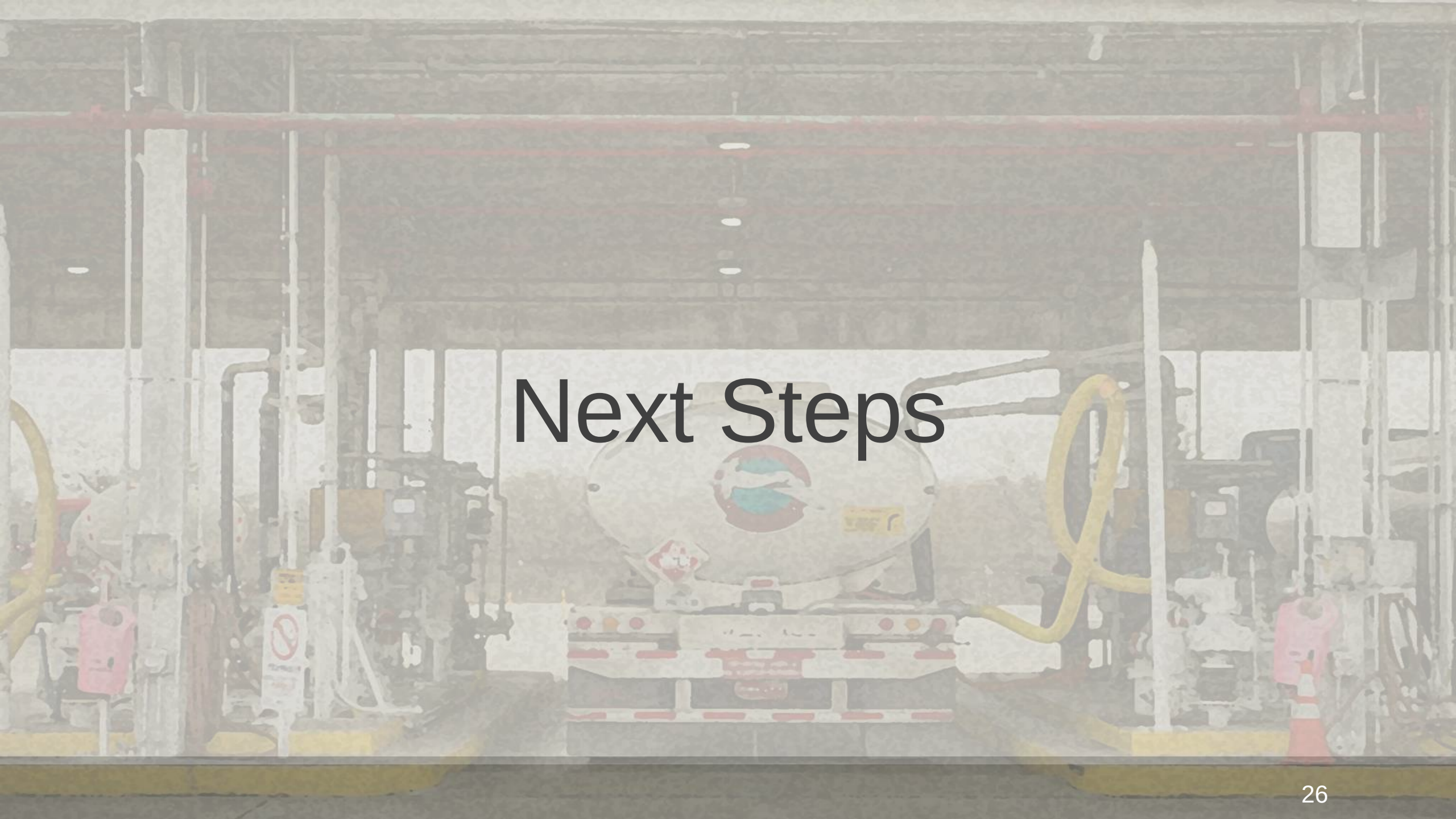
- Staff considering requirement for Class A facilities to conduct source tests once every 5 years
- Need to verify that vapor recovery systems and/or vapor disposal systems are in compliance with emission limits
  - Staff identified that most, if not all, Class A facility permits already have a source test requirement every 5 years
  - Intent would be to capture every Class A facility and ensure that the appropriate source test is conducted
- Staff is seeking information from any Class A facility that is not currently required to source test every 5 years
  - Will incorporate source testing costs into cost-effectiveness analysis

Coupler Disconnect

- Couplers may have liquid residue after disconnecting
  - ➢ Analyzers may show readings over 3,000 ppm VOC which would be considered a vapor leak
- Considering adding rule language allowing operator to wipe affected coupler(s) prior to inspection
  - ➢ Any wipe down allowed subject to operator having supplies (i.e., towel) on hand

Transfer Equipment Definition

- Considering updating definition to clarify that applicable product lines and components from tank to pump and/or transporting vessel are subject to Rule 462 leak thresholds
  - Staff is aware that those product lines and components are not captured by Rule 1173
  - Intent would be to ensure all product lines and components are being monitored for leaks on a regular basis



Next Steps

Next Steps

Staff will continue with rule development process, which will include:

- Continue information gathering
- Site visits of affected facilities
- Meetings with stakeholders
- Preliminary Draft Rule Language and Preliminary Draft Staff Report

Proposed Rule Schedule for PAR 462

Staff Contacts

South Coast AQMD staff is available to assist you with any questions or comments

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