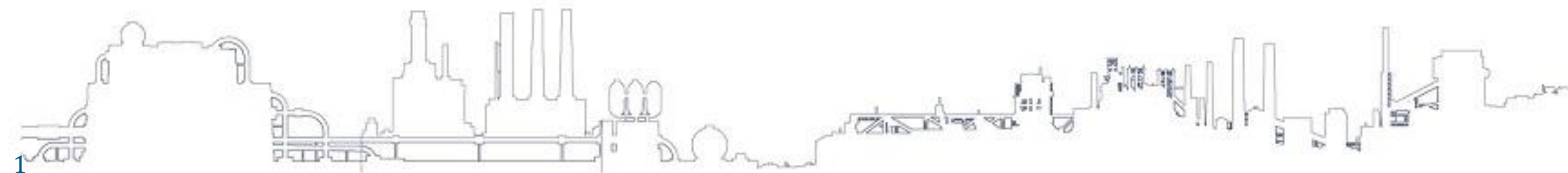


Miscellaneous Organic Chemical Manufacturing NESHAP (MON) Risk and Technology Review 40 CFR 63, Subpart FFFF

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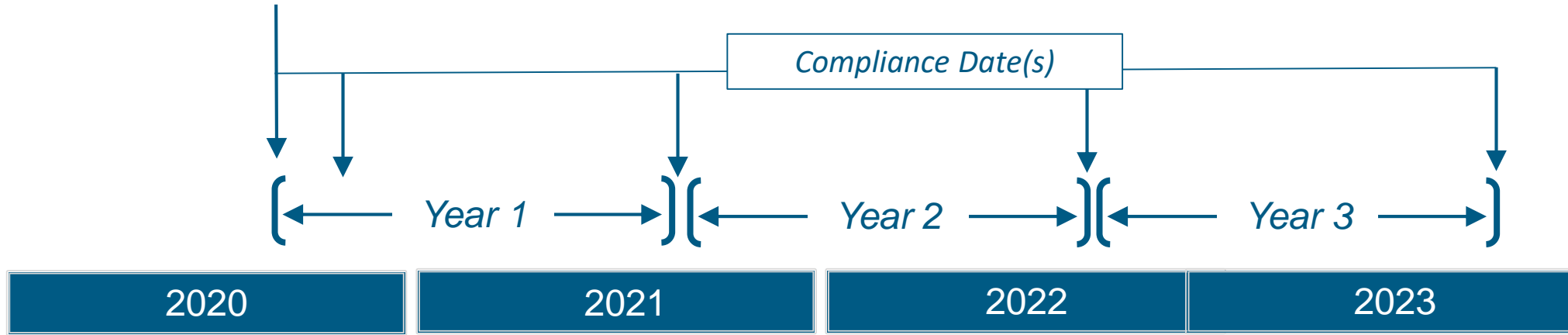


Agenda

- What will we cover today?
 - Outcome of EPA's review of the MON rule
 - Rule updates that were finalized
 - Changes from proposal
 - Some detail on the new flare requirements
 - What actions to take now

MON: The Path Forward

Federal Register Publication



Analyze Regulatory Changes

Evaluate Flare Requirements

Develop/Update FMPs and CPMS Plans

Understand CDX/CEDRI Interface

Finalize Flare Strategy and Begin Implementation (monitors, DAHS, etc.)

Evaluate:

- EtO Control Requirements
- PRD Work Practice Procedures
- Storage Tank Degassing Requirements
- Heat Exchanger LDAR Requirements
- Adsorber Requirements

NOCS:

-Multiple due dates resulting from multiple dates

Extension Requests:

-Evaluate need based on multiple compliance dates
-Prepare, as applicable

Air Permit(s) Updates:

-Evaluate need based on multiple compliance dates
-Prepare applications, as applicable.

Develop Compliance Approach. Consider Capital Expenditures (e.g., control equipment, DAHS), Turnarounds, and Air Permitting Requirements. Develop Calendar and Key Milestones.



Housekeeping

- ❑ How to ask questions?
 - Please enter your questions in the chat box.
 - Q&A at the end.
- ❑ Can I get a certificate of completion?
 - Yes, webinar attendees will receive a certificate upon request.
 - Continuing Education for Certifications/Licenses.

Why did EPA Update the MON?

- EPA is obligated to perform a risk and technology review (RTR) of each promulgated Part 63 MACT standard.
 - Risk Review – once.
 - Technology Review – every 8 years.
 - Risk – additional standards needed to provide an ample margin of safety to protect public health?
 - Technology – have there been cost-effective developments in practices, processes, or controls?

Who is Subject to the Rule?

- Miscellaneous organic chemical manufacturing process units (MCPU) units located at major sources.
 - Produce materials described in 40 CFR 63.2435(b)(1)
 - Process, use, or generate HAP
 - Not an affected source under another NESHAP (except for certain batch process vents)
- Requirements for storage vessels, process vents, transfer racks, equipment leaks, wastewater and liquid streams, and heat exchange systems.

MON Updates

Philip Crawford



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Results of the MON RTR

- ❑ EPA: Risks are unacceptable.
- ❑ Max individual lifetime cancer risk from the source category:
 - 400-in-1 million driven by ethylene oxide (EtO).
- ❑ Facility-wide risk:
 - 3,000-in-1 million attributable to EtO.
- ❑ Technology Review: Heat exchange system (HES) monitoring and leak definition for light liquid batch pumps.
- ❑ Other changes to address SSM and CAA section 112(d)(2) and (d)(3).

Changes to Address Risk

- New Standards for Equipment “In Ethylene Oxide Service”:
 - Process Vents: uncontrolled ≥ 1 ppmv and combined ≥ 5 lb/yr of EtO
 - Storage Tanks: any capacity/vapor pressure storing liquid with $\geq 0.1\%$ by weight EtO
 - Equipment Leaks: equipment that contains or contacts fluid $\geq 0.1\%$ by weight EtO
 - If info suggests EtO could be present, analysis is required to rule out

Changes to Address Risk (Cont.)

□ Process Vents & Storage Tanks in EtO Service:

- Control Requirements

- Flare meeting new monitoring requirements
- Control device (CD) with 99.9% emissions reduction
- < 1 ppmv
- < 5 lb/yr EtO for all combined vents (not available for tanks)

- Testing

- Initial VE demonstration for flares
- Initial/5 year testing for CDs
- CEMS alt. for 1 ppmv option

- Monitoring

- New flare monitoring requirements
- Monitoring parameters for scrubbers and thermal oxidizers
- CEMS alt. for 1 ppmv option

Changes to Address Risk (Cont.)

□ Equipment in EtO Service:

- Comply with 40 CFR 63 Subpart H or UU, or 40 CFR 65 Subpart F and:

Equipment	Leak Definition	Monitoring Frequency	Repair Required
Pumps	1,000 ppm	Monthly	Within 15 days
Connectors	500 ppm	Annual	

- New or replaced pumps and connectors must be monitored w/in 5 days of initial startup
- New PRD requirements (covered later) – except any release is a deviation
- Several provisions in H, UU, and F don't apply – see §63.2493(e)

Technology Review – Heat Exchangers

- ❑ Modified El Paso Method
 - Initial monthly monitoring (6 months), then quarterly
 - Leak definition: 6.2 ppmv of total strippable hydrocarbon in the stripping gas (as methane).
 - Monitoring location < 40,000 gpm for combo of multiple once through systems
 - Small systems ($\leq 10,000$ gpm): Alternative mass-based leak definition of 0.18 kg/hr.
- ❑ Repair leaks and re-monitor in 45 days.
 - DOR available, unless the leak is greater than 62 ppmv (or 1.8 kg/hr for small systems).
- ❑ Removed monitoring exemptions for once-through systems subject to NPDES permits.

Technology Review – Equipment Leaks

- Revised Leak Definition for Pumps:
 - Light liquid, batch process, existing source – 10,000 ppm to 1,000 ppm
- Monitor any new/replaced equipment within 30 days
 - Only applies to equipment subject to periodic M21 monitoring
 - Does not apply to unsafe/difficult to monitor equipment

Other Rule Revisions

□ Pressure Relief Devices

- Post Release Monitoring

- Below 500 ppm within 5 days, or replace the rupture disk, if equipped

- Rupture disk only:

- Must replace within 5 days
- Cannot restart until replaced

- Work practices

- PRD management program
- Release monitoring
- RCA/CAA analysis for releases

Other Rule Revisions (Cont.)

- Storage Vessels Degassing (Fixed and Floating Roof)
 - Control until the vapor space is less than 10% of the LEL.
 - Performance demonstrations are required:
 - Subpart SS testing/design evaluation, MR&R.
 - Subpart CC requirements also apply for flares.
- Bypass Lines
 - No bypass of a control device is allowed.
 - HAP emissions from bypass must be reported.

Other Rule Revisions (Cont.)

□ Maintenance Vents

- Prior to venting, liquids must be removed as much as practical and equipment depressurized to a flare or control device until one of the following criteria are met:
 - Vapor has an LEL < 10% and <20 ppmv of hydrogen halide/halogen HAP
 - If LEL cannot be measured, the pressure in the equipment is reduced to 5 psig or less, and upon opening, active purging cannot be used until the LEL is < 10%;
 - Equipment contains less than 50 pounds of VOC;
 - If none of the above can be met prior to installation/removal of a blind, then pressure must be reduced to 2 psig or less before installation/removal of blind. Active purging can be used during blind installation/removal provided pressure at purge gas introduction location is 2 psig or less.



Other Rule Revisions (Cont.)

□ Adsorbers

- Non-regenerative and Regenerated Off-Site
- 2 adsorbers in series
- Monitor for breakthrough

Remaining Bed Life	Monitoring Frequency
>2 Months	Monthly
< 2 Months, >2 Weeks	Weekly
< 2 Weeks	Daily

- Replace spent bed after breakthrough

Other Rule Revisions (Cont.)

□ Overlap Provisions:

- Part 63, Subparts I, GGG, or MMM – Affirmative defense requirements no longer apply
- Added Part 60, Subpart VVa to §63.2535(k)
- Flares – MON or RSR only

Other Rule Revisions (Cont.)

- ❑ Other changes:
 - Standards apply at all times (SSM exemption removed)
 - Electronic Reporting Requirements
 - Additional and revised definitions

Final Rule Revisions (Cont.)

□ Flares

- Revised MR&R requirements (Subpart CC)
- Visible emissions work practices for emergency flaring
- Standards for pressure-assisted multi-point flares

□ Only applies to subset:

- Controlling sources in EtO service; or,
- MCPUs that manufacture ethylene, propylene, polyethylene, and/or polypropylene as a product.

Final Rule Revisions (Cont.)

□ Flare Monitoring

- Flame Presence
- No visible emissions (except 5 minutes during any 2 consecutive hours)
- $V_{tip} < 60$ fps, or less than:

$$\log_{10}(V_{max}) = \frac{NHV_{vg} + 1,212}{850}, \text{ where } V_{max} \text{ is limited to 400 fps}$$

- $NHV_{cz} \geq 270$ Btu/scf
- Net heating value dilution parameter (NHV_{dil}) ≥ 22 Btu/ft² for flares with perimeter assist air

Final Rule Revisions (Cont.)

□ Pressure-Assisted Multi-Point Flares

- Tip velocity standards do not apply
- $NHV_{cz} \geq \underline{800}$ Btu/scf
- Monitor stages for pilot flame presence
- Cross-lighting burners
 - 6 ft. on center or less
 - Cross-lighting demonstration can be performed for burner spacing > 6 ft
- Monitor flare header pressure and valve positions to ensure proper operation
- Can operate under approved alternative means of emission limitations



Final Rule Revisions (Cont.)

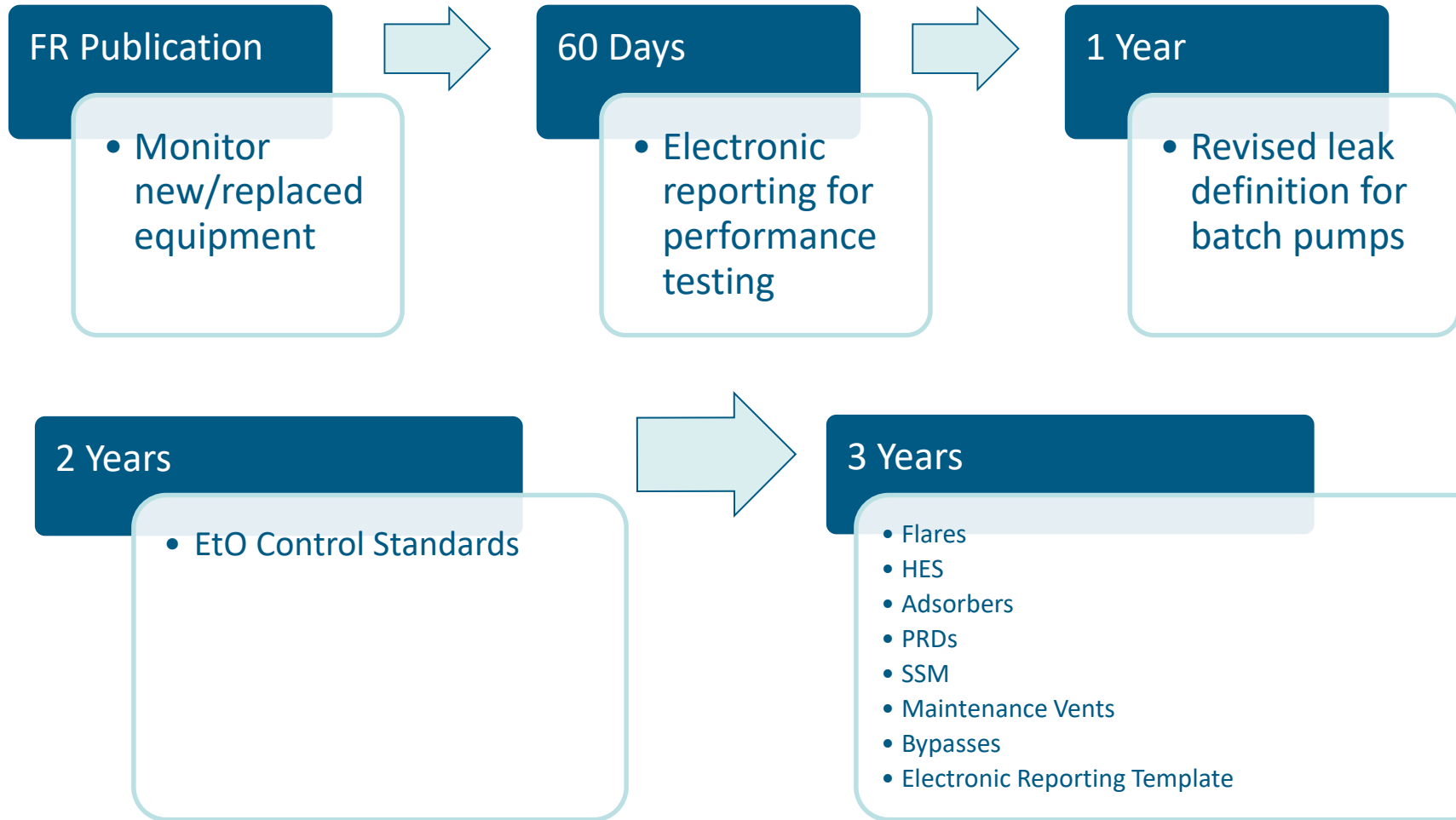
□ Emergency Flaring Work Practice – Visible Emissions

- Flare management plan
- Conduct RCA/CAA and implement corrective actions
- Violation:
 - Events due to operator error or poor maintenance;
 - And, except for force majeure events:
 - Two events in 3-calendar years from a single flare for the same root cause and same equipment;
 - Three events in 3-calendar years from a single flare for any reason.

Proposed Changes that were not Finalized

- Control Option 2 for Equipment in EtO Service
 - Leakless pump/valves requirements.
- Flares
 - Not finalizing the work practice standard for velocity exceedances for flares operating above smokeless capacity (velocity limit must be met at all times).

Compliance Timelines



COMPLYING WITH THE NEW FLARE REQUIREMENTS


Eric Swisher





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Flare Performance Indicators

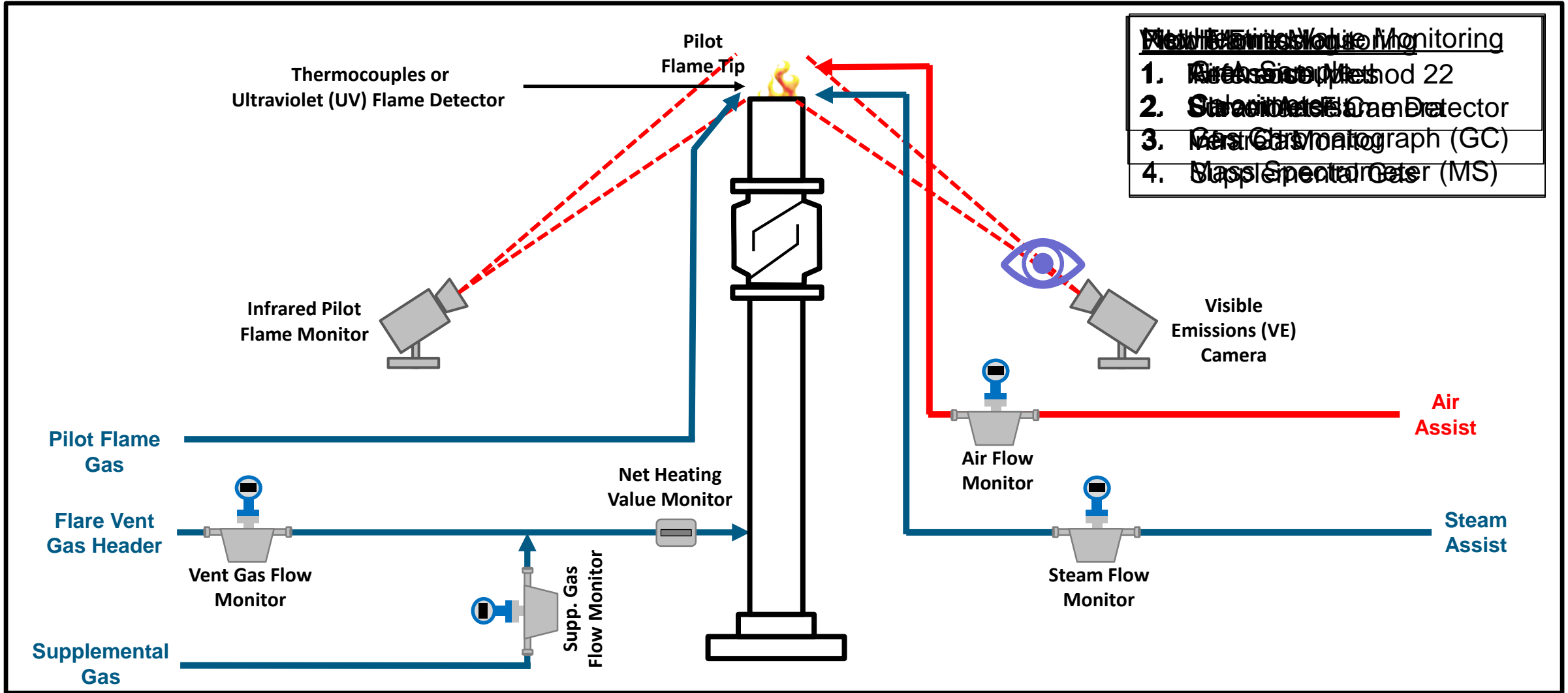
□ Indicators of “Good” Flare Combustion

- No Visible Emissions (i.e., No Smoking) 
- Combustion Efficiency (CE)
- Destruction Removal Efficiency (DRE)

Flare Monitoring Indicators

- ❑ Pilot Flame or Flame Presence
- ❑ Combustion Zone Net Heating Value (NHV_{cz})
- ❑ Tip Velocity (V_{tip})
- ❑ Visible Emission
 - ❑ U.S. EPA Reference Method 22 ()
 - ❑ Optical Camera ()

Flare Monitoring



New Flare Monitoring	
1.	Area Scan Method 22
2.	Submittal Camera Detector
3.	Gas Chromatograph (GC)
4.	Mass Spectrometer (MS)

Flare CPMS Monitoring Plan

- Description of the Monitoring Equipment
 - Type
 - Justification
- Routine QA/QC Procedures
 - Initial
 - Ongoing
- Description of the Data Collection and Reduction System
 - “Black Box”
 - Process Controls

Monitoring Plan Description

□ Flare Vent Gas Flow Rate Monitoring

<i>Parameter</i>	<i>Minimum Accuracy Requirement</i>
Flare Vent Gas Flow Rate	$\pm 20\%$ of flow rate at velocities from 0.03 to 0.3 meters per second $\pm 5\%$ of flow rate at velocities greater than 0.3 meters per second (1 foot per second)

□ Flare Vent Gas Composition Monitoring

- Calorimeter (optional Hydrogen Analyzer)
- Gas Chromatograph (GC)
- Mass Spectrometer (MS)

Routine QA/QC Procedures

- ❑ Flare Vent Gas Flow Rate Monitoring
- ❑ Calibration and Verification
 - Tolerances
- ❑ System Response Check
- ❑ Preventive and Corrective Maintenance Programs

Performance Specification 9 (PS-9)

□ GC and MS

Calibration/Validation	Frequency	Cylinder Gas	Concentrations	Place of Injection
Multi-Point Calibration/Validation	Initial & Quarterly	Certified Standard	Low, Mid, High	Analyzer
7-Day Drift Test	Initial	Certified Standard	Low, Mid, High	Analyzer
Performance Audit Test	Initial & Quarterly	U.S. EPA Audit U.S. EPA Protocol Certified Standard	Mid	Probe
Mid-Level Validation	Daily	Certified Standard	Mid	Analyzer

Data Collection and Reduction System

- ❑ 15-minute Block Averages
- ❑ “Regulated Material” or “Intermittent Flaring”
- ❑ Good vs. Bad Data
- ❑ Process Integration
- ❑ Compliance Demonstration
- ❑ Reporting

Data Acquisition System Process

- ❑ Infrastructure
- ❑ Integration
- ❑ Configuration
- ❑ Verification
- ❑ Implementation

THE PATH FORWARD

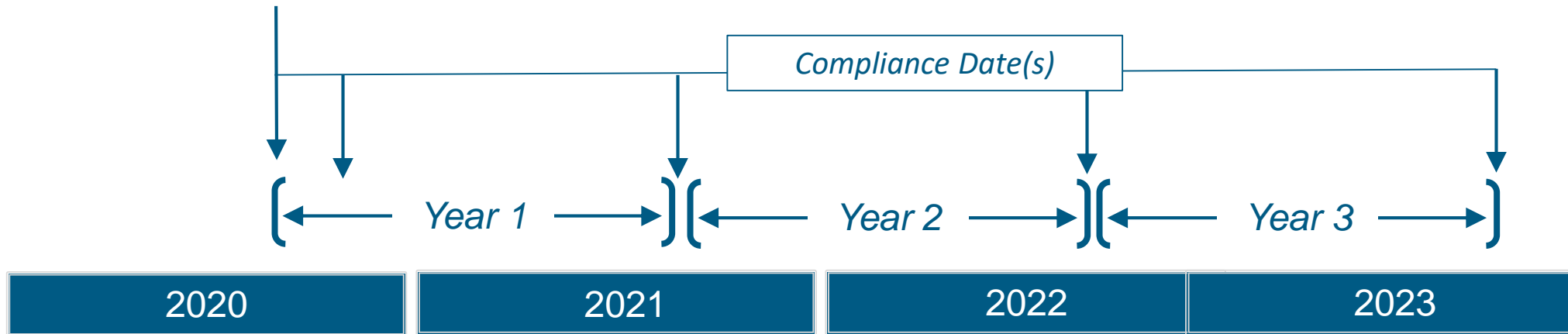
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Questions?

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