

PR 1410 Working Group Meeting #9

NOVEMBER 16, 2018
SCAQMD Headquarters
Diamond Bar, California

Agenda

- Summary of Last Refinery Committee Meeting
- Staff Meetings with Stakeholders
- Proposed Rule Concepts
- Next Steps

Summary of Last Refinery Committee Meeting

- Held on September 22, 2018 in Wilmington
- Key items discussed:
 - q Status update of PR 1410
 - q Regulatory and Memorandum Of Understanding (MOU) approach
 - q Potential earthquake risk
 - q Dispersion and water mitigation testing
 - q Assessment of additional hydrogen fluoride (HF)/modified HF (MHF) testing
 - q Emergency preparedness and treatment of HF
- Refinery Committee directed staff to:
 - q Proceed with mitigation and allow refineries to demonstrate safety through a performance standard or a potential phase-out of MHF
 - q Initiate rulemaking with a public hearing in May 2019 or pivot to MOU

Staff Meetings with Stakeholders

Torrance Refining
Company (TORC)

SCAQMD staff
November 1, 2018

SCAQMD staff
November 9, 2018

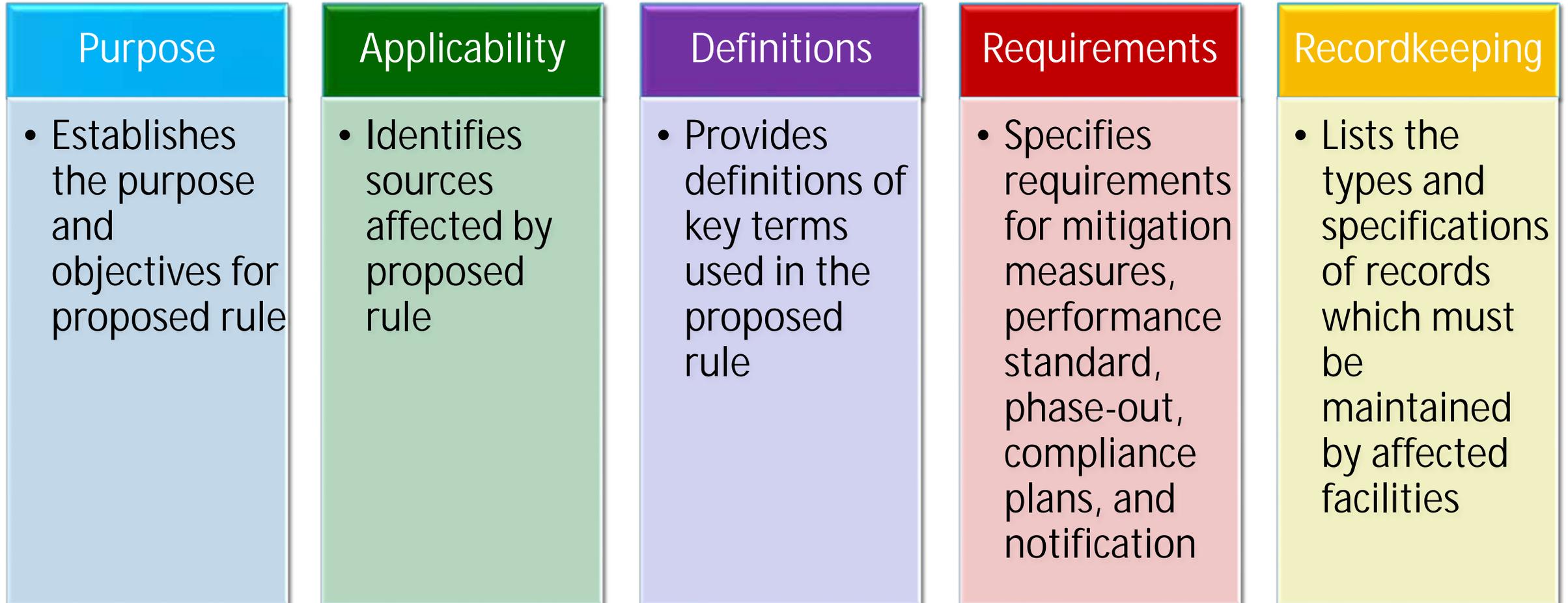
Valero Wilmington
Refinery (Valero)

SCAQMD staff
November 7, 2018

Proposed Rule (PR) 1410 Concepts

HYDROGEN FLUORIDE STORAGE AND USE AT PETROLEUM
REFINERIES

Overview of Structure of PR 1410



PR 1410 Purpose and Applicability

- Purpose
 - ◻ Reduce the potential consequences from an accidental release of HF or MHF used and stored at refineries
- Applicability
 - ◻ Applies to petroleum refineries that store and use HF or MHF in their alkylation unit
 - Torrance Refining Company
 - Valero Refinery at Wilmington

PR 1410 Key Definitions

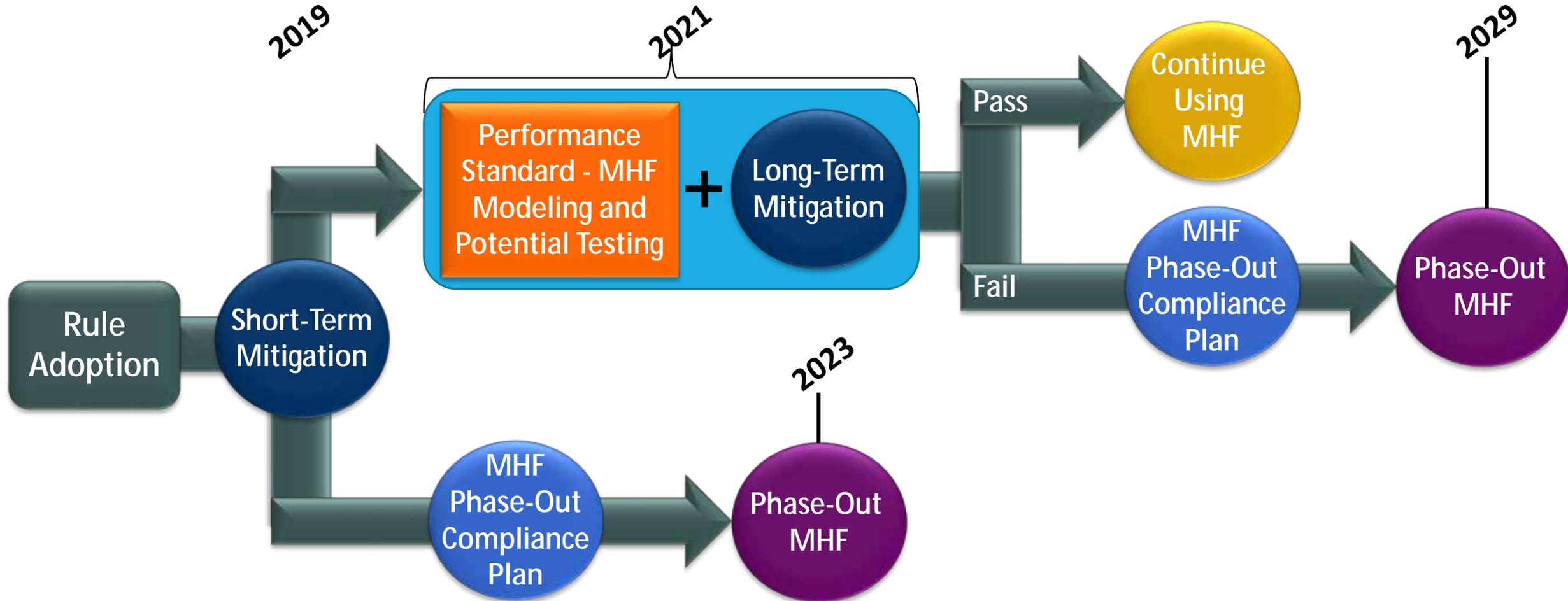
- Consequential Accidental Release
 - q Any accidental release that has the potential for off-site exposure to HF or MHF that could lead to irreversible or other serious, long-lasting adverse health effects occurring
- Hydrogen Fluoride
 - q Anhydrous, aqueous or modified hydrogen fluoride used in refinery alkylation operation
- Modified Hydrogen Fluoride
 - q A mixture of hydrogen fluoride and a minimum of 8 percent by weight sulfolane

PR 1410 Proposed Requirements

Requirements consist of the following elements

- Mitigation Measures
- Performance Standard
- Failure to achieve performance standard
 - Phase out of HF or MHF
 - Compliance Plans for Phase-Out
- Notification Requirements

General Approach



Mitigation

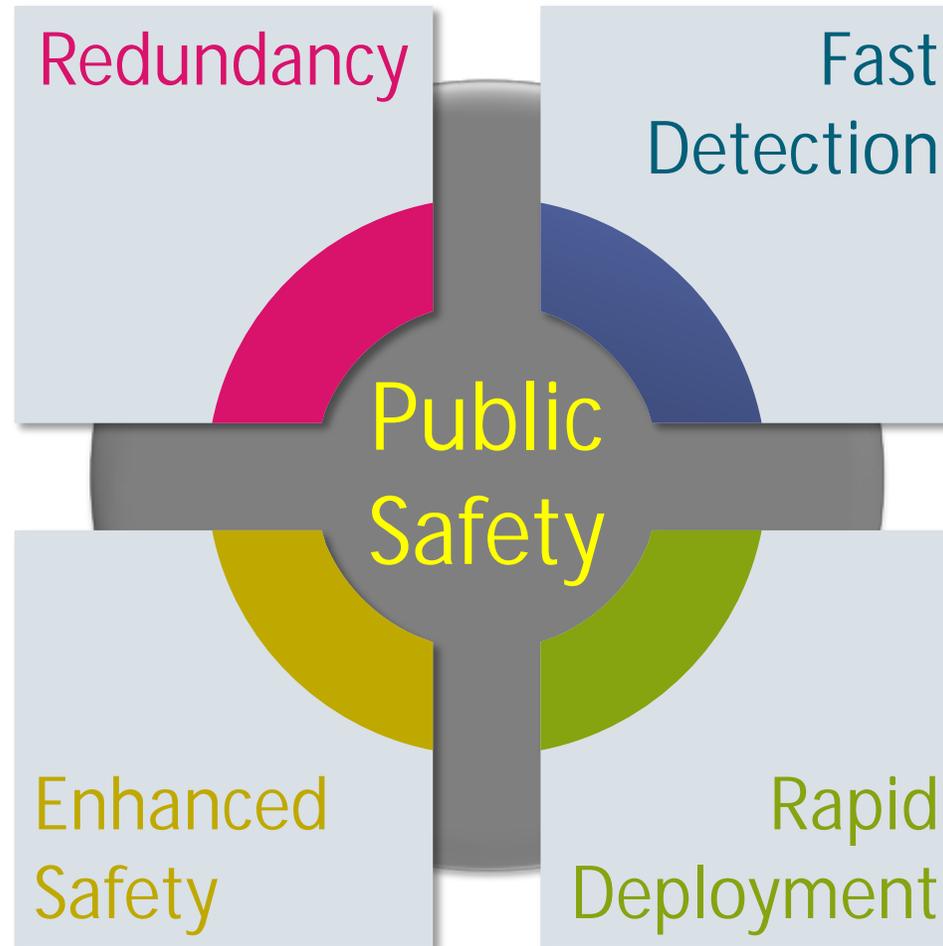
PR 1410 Proposed Mitigation

- Consists of short-term (initial) and long-term (enhanced) mitigation
- Initial mitigation can be implemented within 12 months by upgrading existing mitigation and adding basic mitigation
- Enhanced mitigation can be implemented in 24 months and requires design, planning, and construction
- Implementation of short-term and long-term mitigation measures expected to overlap

Key Elements of Proposed Mitigation

- § Backup water on-site
- § Backup power
- § Multiple layers of water spray curtains
- § Fixed and aim-and-shoot water cannons
- § Fire monitors

- § Enhanced barrier in alkylation unit
- § Integrated water mitigation
- § Large water volume
- § Mandatory acid evacuation at an established threshold



- § More point sensors
- § Open-path monitors around key MHF process areas
- § More surveillance cameras
- § Control room screen upgrade

- § More passive measures
- § Automatic activation of pump deluge, water cannon and water spray curtain upon detection

Fast Detection (Short-Term Mitigation)

- At a minimum, 3 point sensors per each MHF process
 - q Detection ranges from 0 ppm to 20 ppm
 - q Installed in all areas with potential release points
- Install open-path monitors at more than one elevation
 - q Alkylation unit
 - q Fresh MHF storage area
 - q MHF loading/unloading zone
 - q Fenceline (property boundary)
- More surveillance cameras and upgrade of control room screen
 - q No more than 3 camera feeds per screen
 - q “Eye in the sky” camera over alkylation unit

Other Short-Term Mitigation

- Blast-resistant barrier for key MHF process unit (e.g., settler)
- Additive concentration monitoring
 - q Minimum of 8.0 wt.% acid settler & 15.0 wt.% fresh acid storage at any given time
 - q Monitor concentration level two times a day
- Pressure level monitoring
 - q Acid settler
 - q Fresh acid storage
- HF sensitive paint
- Acid evacuation system
- Emergency isolation block valve
- Seismic upgrades, if applicable

Rapid Deployment (Long-Term Mitigation)



01

WATER FOR PUMPS

§ Automatic water deluge if HF detected above an established threshold by 2 or more point sensors

02

WATER FOR FRESH ACID STORAGE

§ Automatic water spray curtain if HF detected above an established threshold by open-path monitor

03

WATER FOR MHF LOADING/UNLOADING ZONE

§ Automatic water spray curtain if HF detected above an established threshold by open-path monitor

04

WATER AT ALKYLATION UNIT

§ Automatic water cannons and water spray curtains if HF detected above an established threshold by open-path monitor

Enhanced Safety (Long-Term Mitigation)

- Facility-specific steel enclosure around alkylation unit
- Point sensors, open-path monitor, water cannons (fixed) and water spray curtain inside enclosure
 - q Automatic activation of both water cannons and water spray curtain upon detection above an established threshold (xx ppm HF)
 - q Additional water spray curtain outside the enclosure
 - q Capability to manually activate water system
- Mandatory acid evacuation transfer at threshold of HF along the perimeter of alkylation unit

Redundancy (Long-Term Mitigation)

- Water cannons in the enclosure
 - q Fixed position close to settler to minimize response time
- Water cannons outside enclosure
 - q “Aim-and-shoot” type water monitors for additional water mitigation
- Water spray curtains
 - q Multiple layers in and outside enclosure
 - q High water-to-HF volume ratio (e.g., 60 to 1)
- Large amounts of water storage and water delivery on-site
- Backup power

Performance Standard

Importance of the Performance Standard

- Purpose of a performance standard is to establish a measurable target that mitigation measures can be tested against to ensure protection of public health in the event of a consequential release
- Performance standard will provide more information on the efficacy of mitigation measures and possible deficiencies such as:
 - Response time
 - Ability to target a release in a specific location
 - Sufficient mitigation to address a certain size release
 - Redundancy to address potential outages or other unexpected events

Key Elements of Performance Standard

Release Scenario

- Establishes the key parameters for the release such as:
 - Rate of release
 - Location of release
 - Unit parameters (temperature, pressure)

Performance Standard

- Establishes a standard that has to be met when HF or MHF is released

Demonstration

- Establishes the conditions that are allowed for the demonstration of the performance standard

Defining the Release Scenario

- Objective is to establish a realistic but consequential release
- Definition of the release scenario is to ensure the demonstration of the performance standard is meaningful and consistent

Release Scenario

- Parameters of release:
 - Orifice size
 - Release rate
 - Quantity of release
 - Release duration
- Operating conditions – temperature and pressure
- External conditions – temperature, wind conditions, and humidity

Establishing the Performance Standard

- Provides standard operator must achieve when using mitigation
- Must be health protective

AIHA** Emergency Response Planning Guidelines	
Lethal	170 ppm for 10 min.
Serious effect	50 ppm for 10 min.
Irritant	2 ppm for 10 min.

Performance Standard*

- Could take several forms such as:
 - Concentration limit at a specific location for a specific duration of time
 - Specific characteristic of HF or MHF such as does not flash atomize

* Original Rule 1410 required ≤ 20 ppm for five minutes and 120 ppm for one minute at or outside facility boundary

** American Industrial Hygiene Association

Demonstration of Performance Standard

- Establishes the criteria of how the performance standard is demonstrated
 - q Testing and/or computer modeling
- Conditions for the demonstration – type of and efficacy of specific mitigation that will be allowed

Demonstration

- Testing (laboratory and/or field)
- Modeling (e.g., SLAB, DEGADIS, CANARY)
- Conditions for demonstration such as:
 - Operating conditions (temperature and pressure)
 - Assumptions for efficacy of mitigation measures
 - Affect of additive

Potential Phase-Out Schedule

PR 1410 – Phase-Out Schedule

Short-term
Phase-out
Schedule

- Comply with short-term mitigation requirements
- If elect not to install long-term mitigation, phase out MHF on or before January 1, 2023

Long-term
Phase-out
Schedule

- Comply with short-term and long-term mitigation requirements
- If performance standard cannot be met, phase out MHF on or before January 1, 2029

Compliance Plans for Phase-Out

PR 1410 – Compliance Plans

- Notify the SCAQMD which compliance pathway will be pursued
 - q Short-term mitigation/phase-out; or
 - q Short-term and long-term mitigation/performance standard
- Compliance plan is needed for both options
 - q Description of approach to phase-out HF/MHF including the selected alkylation technology
 - q Schedule with key dates and milestones

Notification

PR 1410 – Notification

- All HF sensors and open-path monitors shall be electronically linked to SCAQMD, local city, and county fire departments
- An electronic alarm shall be transmitted to SCAQMD in real-time when HF is detected at:
 - q XX ppm or greater concentration by point sensor; OR
 - q XX ppm-m or greater concentration by open-path monitor
- Report the reason for the alarm to the SCAQMD within one hour (testing, false alarm, etc.)
- Alerts to the community using community alert system when HF is detected along the perimeter of the alkylation unit at:
 - q XX ppm-m by open-path monitor; AND
 - q XX ppm by two or more point sensors

PR 1410 – Notification (*con't*)

- Report to SCAQMD any release that results in exposed person(s) requiring medical treatment, evacuation of facility premises, or HF release beyond the facility boundary within one hour of the time of incident:
 - q Name of facility and specific location of point sensor and/or open path monitor
 - q Cause and extent of the release
 - q Specific location of the release
 - q Any and all subsequent actions taken to mitigate the release
 - q Name of other agencies notified of the release and time of notification
- A follow-up written report within 10 business days of release

Recordkeeping

PR 1410 – Recordkeeping

- All records shall be kept at the facility for a minimum of five years and made available with one week upon request:
 - q Written mitigation procedures
 - q Notification of a HF/MHF release report
 - q Video surveillance recordings
 - q Records of alarms, HF/MHF releases, concentration and amount of releases, and subsequent actions to mitigate
- Records shall be kept in the format approved by the Executive Officer to demonstrate compliance with the provisions of the rule

Next Steps

Schedule

Activity	Current Target Date
Report to Governing Board on Status of Addressing HF Usage	December 7, 2018 February 1, 2019
Release Rule Language and CEQA NOP/IS	TBD
Working Group Meetings	Ongoing
Stakeholder Meetings	Ongoing
Refinery Committee Meeting	TBD
Governing Board Meeting	May 3, 2019

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