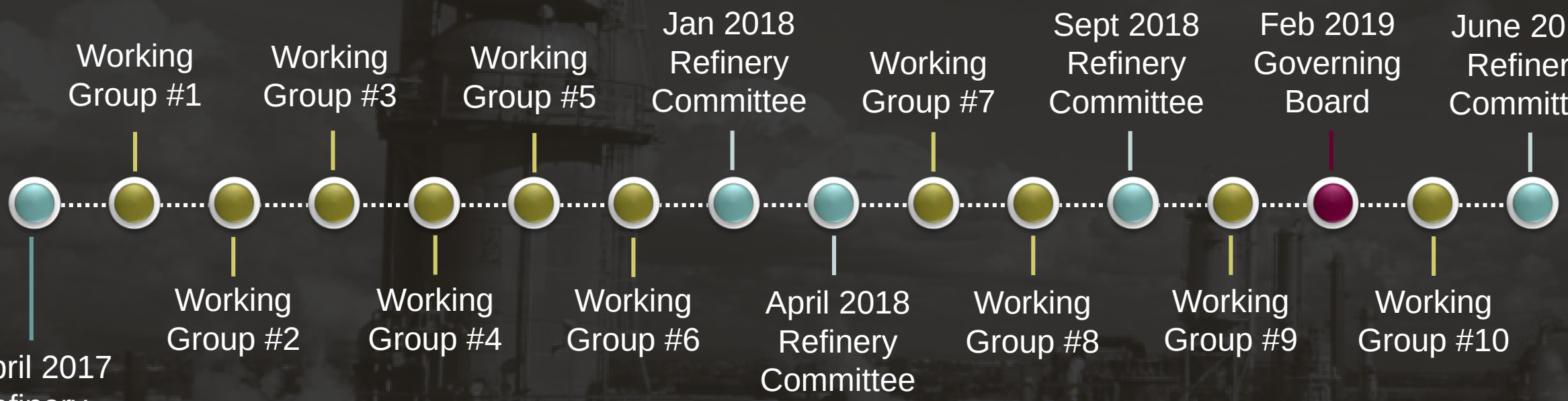
Status Update on PR 1410 – Hydrogen Fluoride Storage and Use at Petroleum Refineries

Refinery Committee Meeting

June 22, 2019
Diamond Bar, California

webcast at: http://www.aqmd.gov/home/news-events/webcast

Public Process

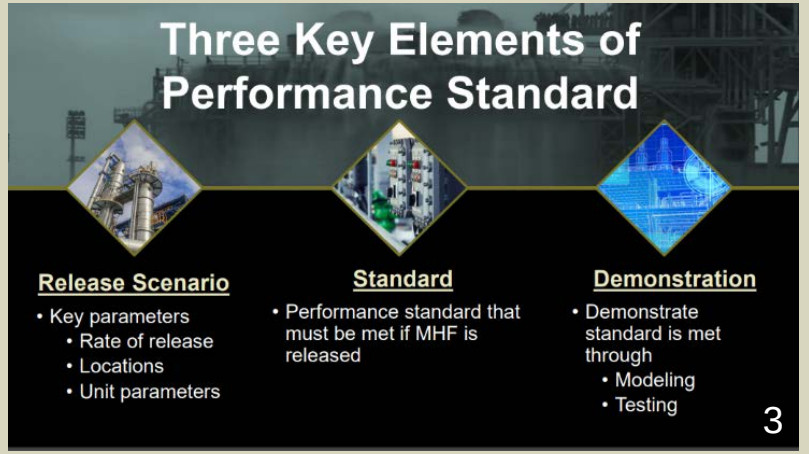


Since April 2017

- **6 Refinery Committee Meetings**
- **10 Working Group Meetings**

February Board Meeting

- Staff presentation addressed
  - Hazards of hydrogen fluoride (HF) and modified hydrogen fluoride (MHF) and key issues
- Board direction
  - Pursue both an MOU approach and proceed with rule development
  - Work with both the community and industry over the next 90 days to reach resolution
  - Present to the Refinery Committee for review with recommendations to the full Board



Meetings with Stakeholders Following February Board Meeting

Torrance Refining Company (TORC)

- February 13, 2019
- March 7, 2019
- March 22, 2019
- April 10, 2019
- May 1, 2019
- May 22, 2019
- June 4, 2019
- June 19, 2019

Valero Wilmington Refinery (Valero)

- February 20, 2019
- March 13, 2019
- April 17, 2019
- May 30, 2019
- June 11, 2019

Community Organizations[1]

- February 13, 2019
- March 22, 2019
- May 2, 2019
- June 5, 2019

Union Representatives[2]

- April 19, 2019

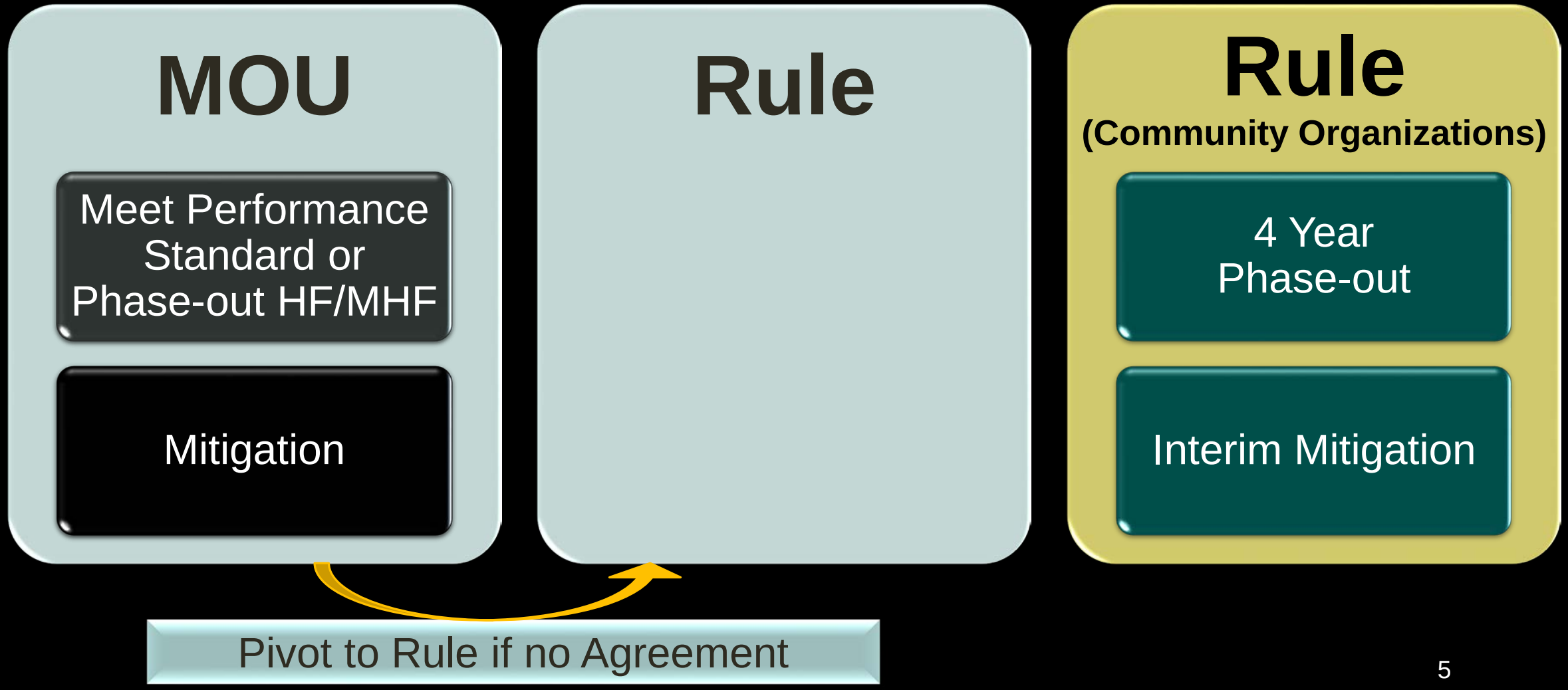
Los Angeles County Public Health

- May 31, 2019

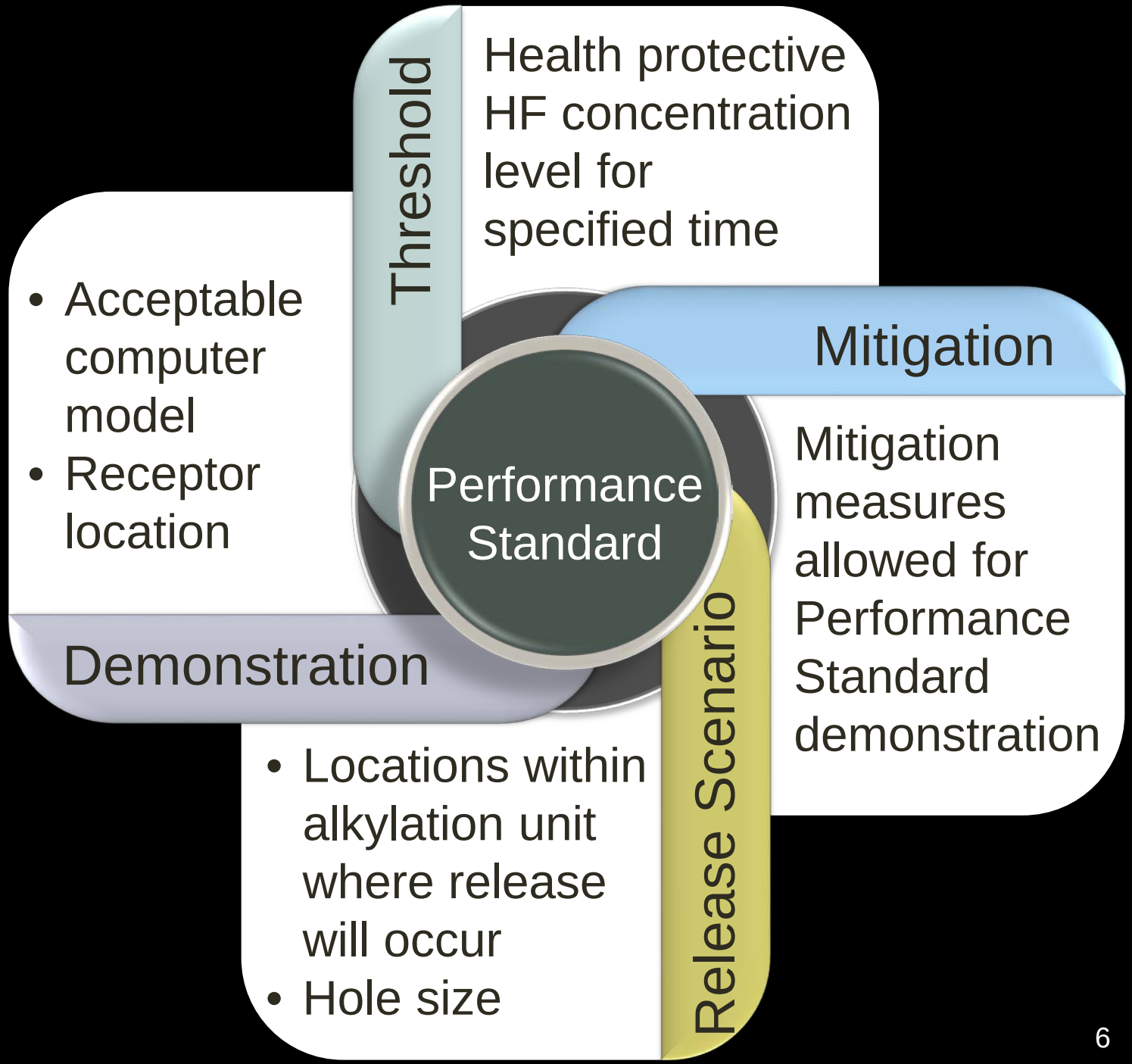
[1] Torrance Refinery Action Alliance (TRAA), Communities for a Better Environment (CBE), Sierra Club, Ban Toxic MHF, and Del Amo Action Committee

[2] LiUNA Local 1309, USW Local 675, IBEW Local 11, Sheet Metal Workers Local 105, and Los Angeles/Orange Counties Building & Construction Trades Council

Key Elements of a Rule or MOU



Key Elements of Performance Standard

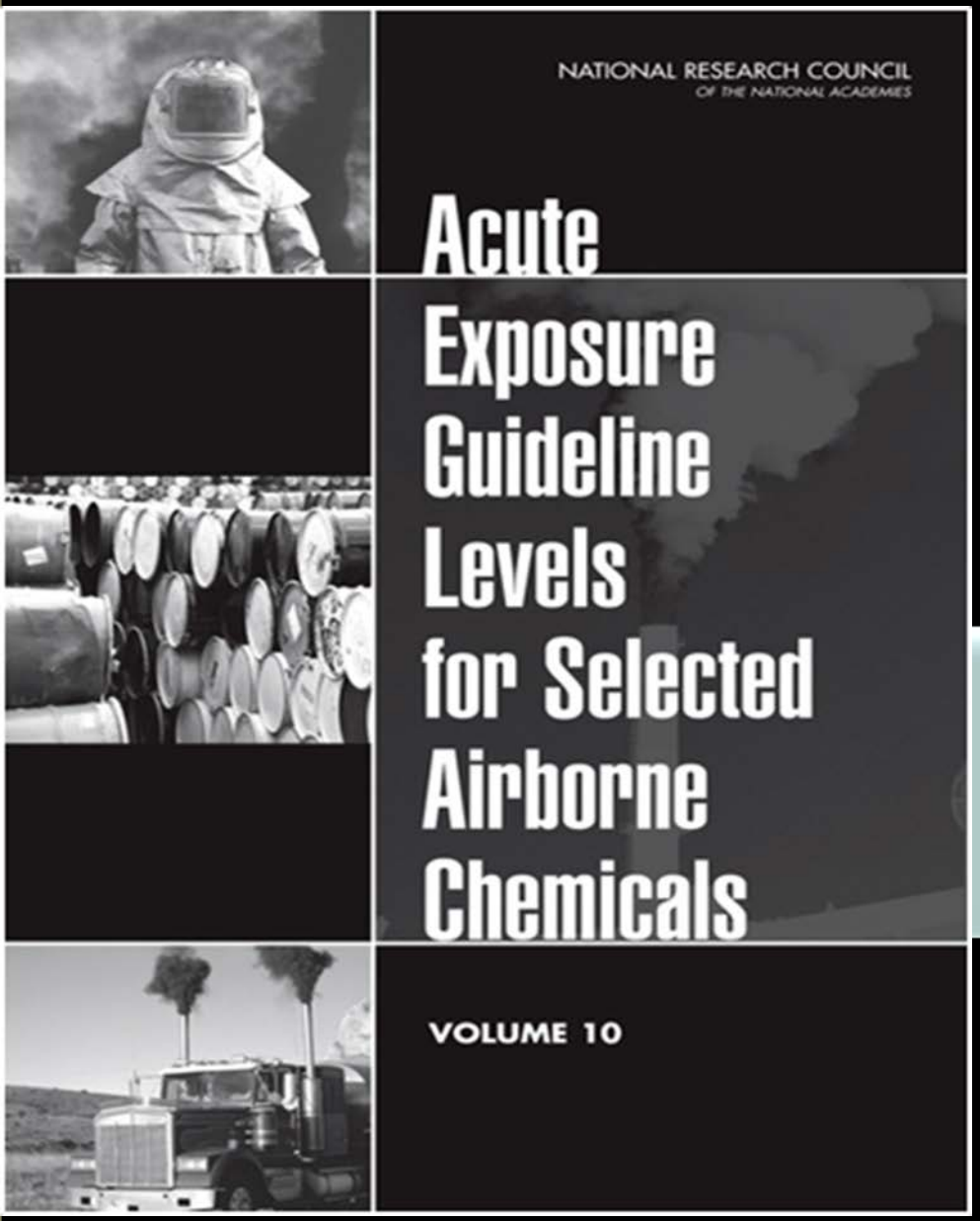


Areas of Agreement for Key Elements of the Performance Standard

	South Coast AQMD Staff	TORC and Valero	TRAA Science Advisory Panel
Threshold	AEGL-2	X	Agree[3]
Mitigation Measures	Passive and Active	Agree	X
Release Locations	High Risk Locations	Agree	X
Release Hole Size	1 to 2 Inches	X	X
Computer Model	Publicly Available	Agree	Agree
Receptor Location	Fenceline	X	Agree[4]

[3] Agrees to Acute Exposure Guideline Level -2 (AEGL-2) standard for all five exposure time periods

[4] Agrees to fenceline and all points beyond


NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES
Acute Exposure Guideline Levels for Selected Airborne Chemicals
VOLUME 10

Thresholds

Acute Exposure Guideline Levels (AEGL)

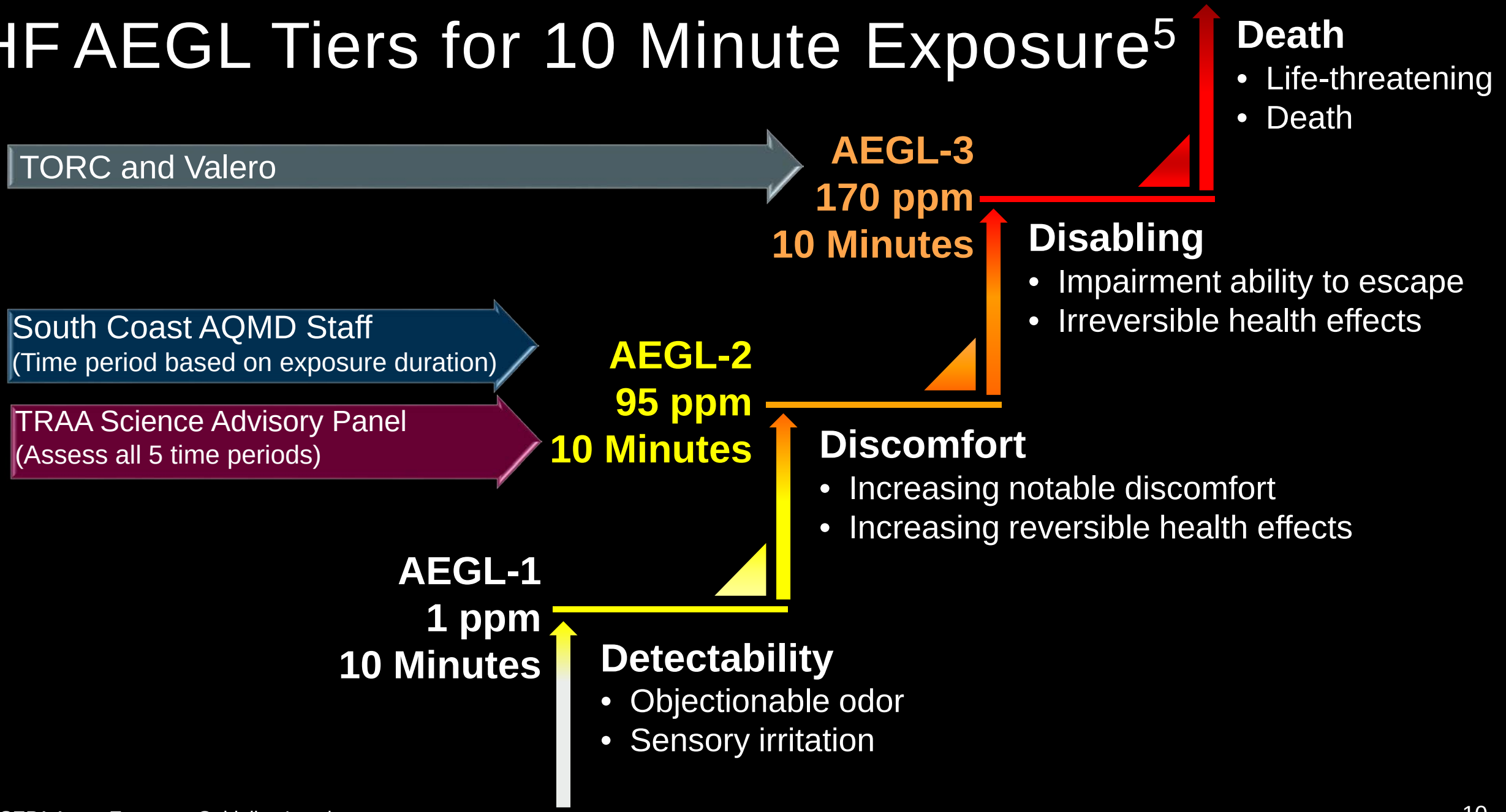
- AEGLs are established by U.S. EPA and scientifically reviewed
- Addresses all receptors including sensitive populations
- AEGL standards includes five specified time periods from 10 minutes to 8 hours

Staff Recommendation

- AEGL-2 threshold (no irreversible health effects)
- Exposure time dictates AEGL time period

10 Minutes	95 ppm
30 Minutes	34 ppm
1 Hour	24 ppm
4 hours	12 ppm
8 Hours	12 ppm

HF AEGL Tiers for 10 Minute Exposure[5]



[5] USEPA Acute Exposure Guideline Levels

Release Scenarios

Staff Recommendation for Release Scenarios

Locations based on:

- Highest volume of HF/MHF
- Highest HF concentration
- Highest pressure and/or temperature

Staff Recommendation

- Acid Settler/Cooler
- Acid Boots Return Line
- Fresh Acid Storage
- Acid Rerun Column
- Acid Unloading Hose

TORC and Valero generally agree on release locations

TRAA Science Advisory Panel recommend maximum volume of HF/MHF released over different timeframes

Staff Recommendations for Release or Hole Size

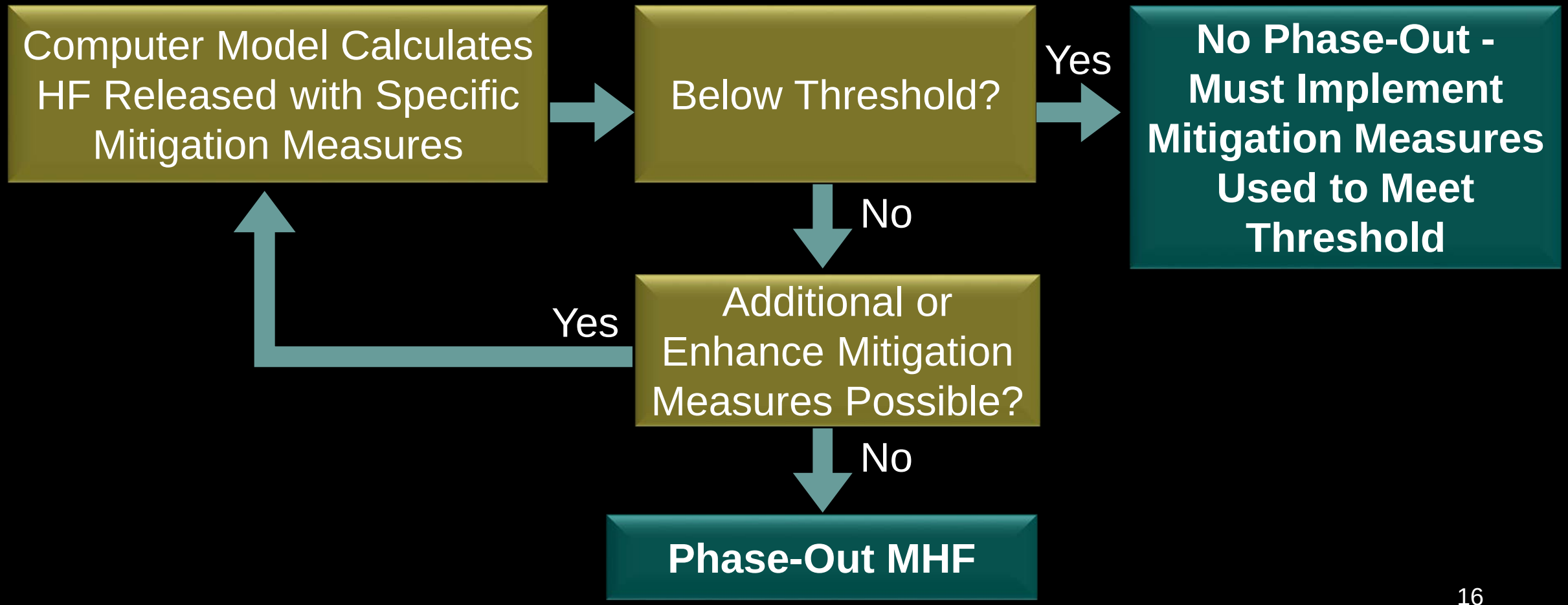
South Coast AQMD Staff	• 1 to 2 inch hole • Based on piping in and out of equipment for scenarios evaluated • Assuming a 1 to 2 inch pipe can sheer or develop a leak
TORC and Valero	• 1 inch hole • Based on concept that larger pipes will bend before breaking
TRAA Science Advisory Panel	• Volume released • Large volume released quickly and smaller volume released slowly

Mitigation Measures

Purpose of the Performance Standard…

Is to assess if mitigation measures can protect the public from a consequential release of HF or MHF

Overview of Performance Standard



Passive and Active Mitigation

- Passive mitigation
  - Requires no human, mechanical, or energy input to function
- Active mitigation
  - Requires human, mechanical, or energy input to function

Passive Mitigation

Flange Shroud

Walls or Other Barriers

Belly Pans

Active Mitigation

Control Panel for Water, Isolation Valves, and Acid Evacuation System

Water Canon

Water Spray for Pump Deluge

Objectives of Mitigation Measures

- Reduce the amount of HF released
- Ensure measures can mitigate HF/MHF released
- Minimize exposure to HF/MHF
- Design and include measures to meet health protective threshold

- Acid evacuation system to reduce the amount of HF/MHF released
- Assess efficacy to ensure measures can mitigate release of HF/MHF

- Additional monitors for earlier detection
- Automation for quicker response
- Barriers to slow momentum to reduce exposure

Recommendations for Mitigation Used in Demonstration

Mitigation Features	Passive Mitigation	Active Mitigation
Reduce Exposure	Yes	Yes
Improve Response Time	No	Yes
Reduce Volume of HF/MHF Released	No	Yes

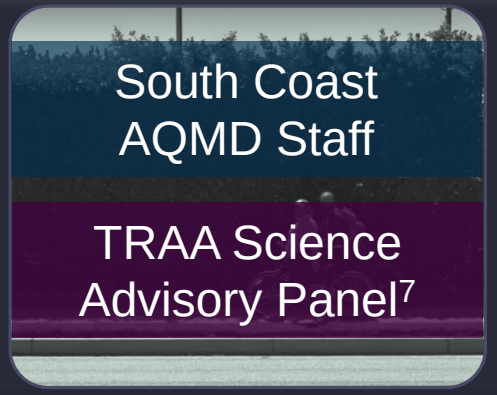
South Coast AQMD Staff
All Mitigation

TORC and Valero
All Mitigation

TRAA
Science Advisory Panel
Only Passive Mitigation

Receptor Location

Possible Receptor Locations and Recommendations



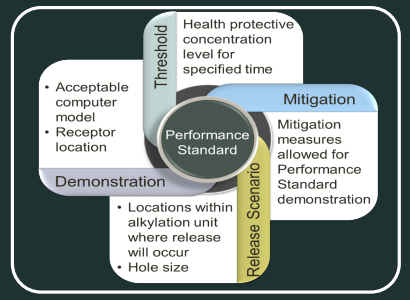
	Fenceline	Nearest Residential/ Sensitive or Worker Receptor	Nearest Residential/ Sensitive Receptor	Nearest Permanent Residential/ Sensitive Receptor
TORC[6]	470 Feet	1,500 Feet	1,500 Feet	1,500 Feet
Valero[6]	470 Feet	1,250 Feet	2,400 Feet	4,100 Feet

[6] Estimated distance from acid settler to receptor location based on Google maps.
[7] Agrees to fenceline and all points beyond

Can TORC and Valero Meet a Threshold of AEGL-2?

- Both refineries are proposing additional enhancements to existing mitigation measures
- Refineries have conducted initial iterations of modeling
  - Additional enhancements needed to achieve AEGL-2
- Staff is working on details such as
  - Amount of credit for each mitigation measure
  - Details regarding the modeling demonstration
  - Implementation timeframe

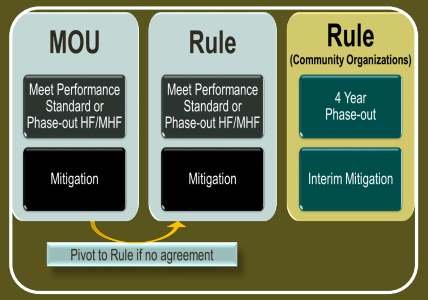
Next Steps



Performance standard is the core of an MOU or rule

	Staff Recommendations
Threshold	AEGL-2
Mitigation	Passive and Active
Hole Size	1 to 2 Inches
Receptor	Fenceline

Staff is seeking direction on key elements of performance standard



Staff is seeking direction on path forward

- Dual path (MOU and rule)
- Pivot to rule with a performance standard
- Rule with 4-year phase-out of HF/MHF