1/29/2019

Governing Board Members, SCAQMD
Via Denise Garzaro, Clerk of the Board (dgarzaro@aqmd.gov)

Re: Rule 1410—Need urgent and direct phase out of MHF – Proposed Rule Concept is Dangerous

Esteemed Members of the Governing Board,

On behalf of tens of thousands of our members and supporters, the undersigned groups urge the South Coast Air Quality Management District to direct staff to write a rule requiring refineries to phase out deadly MHF (Modified Hydrogen Fluoride) within 4 years or sooner. Unfortunately, the current rule concept follows the same dangerous and already-failed approach of "performance standards" testing and modeling, allowing continued use of MHF for a decade and potentially permanently, rather than proceeding directly to chemical phaseout. This is a key moment, where Board direction could literally mean life or death for thousands surrounding the Torrance Refinery and Wilmington (Los Angeles) Valero Refinery within the risk zones acknowledged by US EPA, and beyond.

MHF is one of the world's most dangerous chemicals – it goes easily through skin, and exposure can cause deep lingering burns, lung fluid, permanent lung damage, eye damage, and death. (Center for Disease Control) MHF is corrosive and reactive with human tissue (replacing molecules in the body with fluorinated compounds).[1] MHF used at the regions' refineries is actually nearly-pure HF (only 6-7% additive),[2] and it is now well-known that *modified* HF only provides a small reduction in plume dispersion during a release, compared to pure HF.[3] This chemical can form a dense vapor and aerosol cloud during a release.[4] According to US EPA Risk Management Plans (RMPs), an MHF release can travel for miles – for example, a Mobil (now Torrance) RMP says 3.2 miles, and Valero's goes farther. These distances are alarming enough, but we believe these are gross underestimates. Even within 3 miles, hazard zones include hundreds of thousands of people in the densely populated LA region.[5]

We are a broad alliance of environmental justice, environmental, public health and community groups that have worked closely with community residents, your staff and experts in the field. We believe your senior staff and experts already heavily favor a simple and direct health-protective phaseout of

[1] For example, *Fluorine—A current literature review. An NRC and ATSDR based review of safety standards for exposure to fluorine and fluorides*, Jeff Prystupa, Toxicology Mechanisms and Methods, 2011; 21(2): 103–170, at p. 104
[2] SCAQMD Rule 1410 Presentation, Meeting #3, June 15, 2017, (Slide 13 shows 6-7% additive wt.%)
[3] SCAQMD Rule 1410 Presentation #8, Sept 6, 2018, (Slide 40)
[4] Hydrogen Fluoride Study, Final Report, Report to Congress, p xiii.
[5] AQMD shows nearly 400,000 people within 3 miles of Valero and Torrance refinery MHF alkylation units, Sept 2018, Slide 10.

MHF—a process that staff began again in 2017 due to potential for catastrophic risk.[6] The U.S EPA has also identified a clear hierarchy of *inherently safer systems*, listing *eliminating* hazards at the top.[7]

But after heavy oil industry pressure, instead of MHF phaseout, the rule concept now allows partial mitigation measures which cannot guarantee prevention and/or protection against major MHF releases. **Here are a few examples of these ineffective strategies and inherent dangers:**

- **Water curtains**: A staff presentation acknowledges these may not provide the necessary coverage of MHF to effectively knock down a large release on a timely basis –Attachment 1

- **Underground MHF tanks**: Underground tanks include pressure relief devices or other connections to atmosphere, and so are designed to be able to move materials to the surface when necessary. Thus they can release to the air under certain circumstances, for example, to avoid overpressure.[8] (Also see Attachment 2)

- **Earthquake hazards**: Mitigation can fail during a major earthquake, and will make it extremely difficult and perhaps impossible for first responders to assist residents. (See Attachment 2.)

- **Refinery fires and explosions compromise mitigation**: An 80,000 lb. piece of equipment at the 2015 Torrance explosion flew to within a few feet of the MHF settler tank, causing the U.S. Chemical Safety Board to call this a near-miss catastrophic MHF release.[9]

The economic argument against MHF is based on an inflated cost estimate for the phaseout of MHF, of a billion dollars for each refinery, with the resulting retirement of both refineries. But there is no reason refineries would have to close permanently simply because they need to replace or modify alkylation units – numerous alkylation rebuilds have occurred at other refineries. (Also, see Attachment 3, where AQMD cost assessments ranged from $100-330 million). Furthermore, alkylate produced by these alkylation units could be purchased during rebuild so that neither refinery would be expected to need to shut down, and jobs will be created, not lost.

If the Board is not properly informed about these risks and is not ready to direct staff to write a regulation requiring a simple, complete phaseout of MHF in four years, then we ask the Board to postpone its decision beyond February 1st to provide direction to staff. This will allow the community and other experts to share with the Board their extensive concerns about MHF risks to our communities and families. Like many other oil refinery explosions and accidents, the circumstances of a catastrophic MHF chemical release can't be exactly predicted, but cause a fearfully high risk which is entirely preventable through a planned and speedy MHF phaseout by 2023.

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[6] For example, Staff Presentation #8, Rule 1410, Slide 40, ● *HF reduction benefits offered by MHF are relatively small* ● *A large release of MHF from acid settlers could be potentially catastrophic"*

[7] U.S. EPA, Chemical Safety Alert: Safer Technology and Alternatives, p. 2, June 2015

[8] For example: https://www.steeltank.com/Portals/0/docs/Storage%20Tank%20Venting%20compendium.pdf at p. 2 & other, and https://www.epa.gov/sites/production/files/2015-12/documents/musts_for_usts.pdf at p. 8, others.

[9] U.S. Chemical Safety Board, 2015, FINAL REPORT: ExxonMobil Torrance Final Report, Page 24.

We ask you to place community and worker safety over Big Oil interests and fulfill your obligations as guardians of this Air Shed.

Sincerely;

Julia May, Senior Scientist, Alicia Rivera, Wilmington Community Organizer and Ashley Hernandez, Wilmington Youth Organizer, **CBE** (Communities for a Better Environment)

Jesse N. Marquez, Executive Director, **CFASE** (Coalition For A Safe Environment)

Dr. Sally Hayati, Director, **Ban Toxic MHF**

David Petit, Senior Attorney, **NRDC** (Natural Resources Defense Council)

Timothy O'Connor, Senior Director, California Energy, **EDF (**Environmental Defense Fund)

Monica Embrey, Senior Campaign Representative, Beyond Dirty Fuels Campaign, **Sierra Club**

Sherry Lear, Co-Organizer, **350 South Bay Los Angeles,** and **Torrance Business Owner**

Jack Eidt, Co-Founder, **SoCal 350 Climate Action**

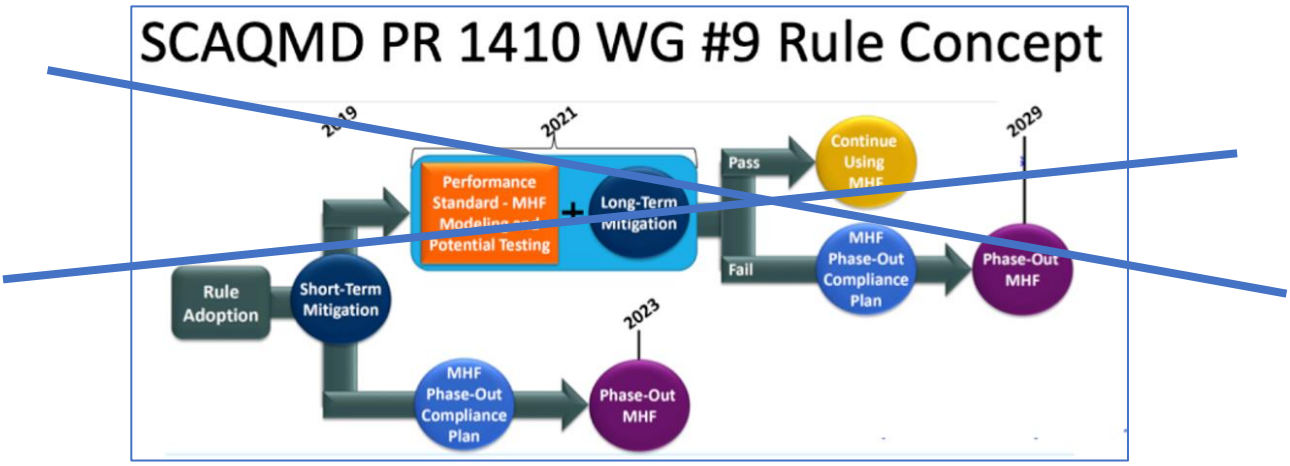
Maya Golden-Krasner, Deputy Director, Senior Attorney, Climate Law Institute, **CBD** (Center for Biological Diversity)

cc.
Executive Officer Wayne Nastri, SCAQMD
Philip Fine, Ph.D., Deputy Executive Officer,
Susan Nakamura, Assistant Deputy Executive Officer

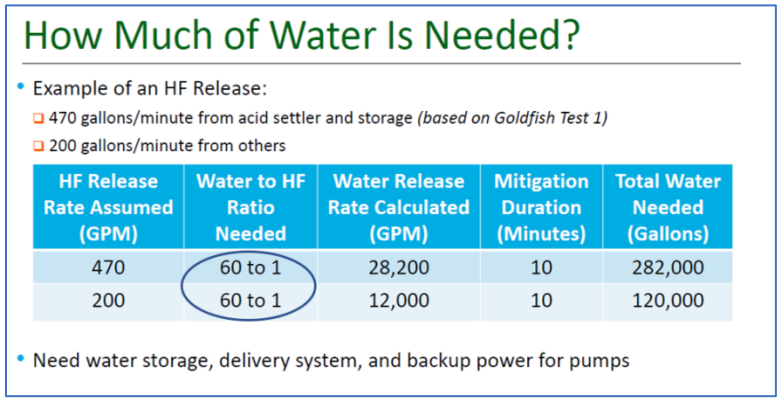
Attachments.

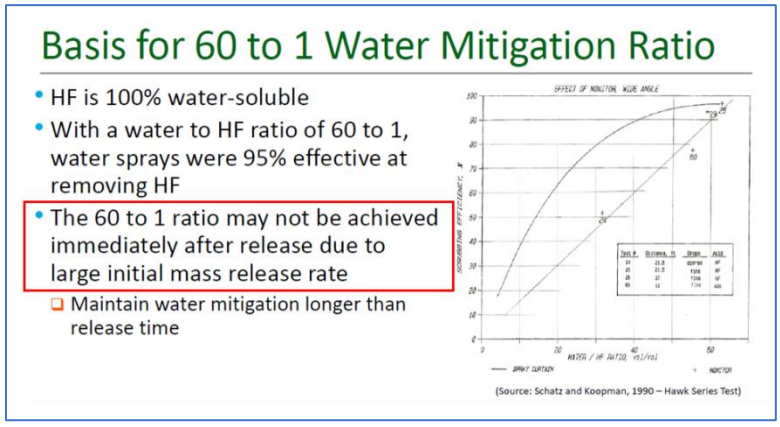
Attachment 1 – Proposed Mitigation Insufficient – False Security

We oppose the current Rule Concept of Performance Standard, Modeling, Testing, and Mitigation path – it should be modified to proceed simply to the 4-year phaseout path at the bottom:[10]



Staff Presentation shows 60-1 Water Ratio needed to achieve 95% reduction "may not be achieved immediately after release due to large initial mass release rate" -- *SCAQMD Staff Presentation, PR 1410 Working Group Meeting #8, Sept 6, 2018, Slides 29 & 30, available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1410/PR-1410-WGM-8-pres.pdf*





Furthermore, because of the large masses present (250,000 to 500,000 lbs.[11]), even if 95% control were theoretically achieved, a major release of tens of thousands of pounds (5% remaining) could still occur.

[10] SCAQMD presentation, PR 1410 Working Group Meeting #9 November 16, 2018, Slide 10

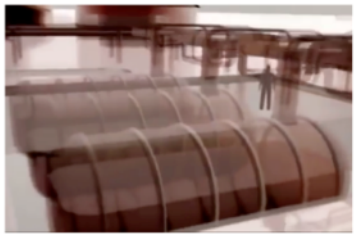
[11] *Id.,* AQMD Rule 1410 Presentation Meeting #3 at p. 13.

Attachment 2 – Slides below provided by Dr. Sally Hiyati, Torrance show mitigation measures can fail, as in the most notorious of chemical disasters (Bhopal) below, and other sources;[12] second slide shows earthquake hazards increase risks:

BHOPAL PLANT WAS BUILT TO BE FAILSAFE

-But an accidental release killed 25k, left 500k handicapped for life-

- AQMD's proposed "failsafe" Tier III mitigation systems
  - 2018-01-20, chart 8, http://bit.ly/2rAlLNS
  - Full enclosure of alkylation unit
  - Underground storage
  - Venting to scrubber with drainage
  - Water mitigation hoses



- Union Carbide's "failsafe" systems
  - Fully enclosed chemical tanks (MIC) "buried in a bunker" deep underground
  - Underground hardened bunker was vented to scrubber & flare
  - Pressure release valve ruptured—MIC escaped through emergency venting system—vent gas scrubber neutralization, flare, & water systems failed
  - "This disaster should have been impossible" due to safety mechanisms
    - But corners had been cut, maintenance delayed, so multiple failures occurred
    - Cal OSHA & EPA inspection reports found similar conditions at Torrance

MITIGATION SYSTEMS ARE VULNERABLE TO EARTHQUAKES

CHEMICAL RELEASES ASSOCIATED WITH EARTHQUAKES 2018

World Health Organization

RISK FACTORS FOR CHEMICAL RELEASE

Earthquake damage to industrial sites can cause chemical releases

Quakes can limit emergency response to the release

- Search and rescue operations can be hampered by chemical releases
- Damage to on-site emergency equip & Infrastructure (power, H_2O, comm.)
- Offsite emergency response unavailable, due to other effects of the quake

In areas subject to earthquakes, emergency response plans must include earthquake scenarios involving chemical releases.

2019-01-24 Sally Hayati, Ban Toxic MHF

[12] Industrial Hazard Management, An Analysis of the Bhopal Incident, B Bowonder, pp 158-159, 1987, https://www.tandfonline.com/doi/pdf/10.1080/02688867.1987.9726622

Attachment 3 –
Excerpt below of full letter -- CBE et al letter to AQMD Board, January 2018 (p. 2)

Some industry arguments for delay of the HF/MHF ban, and our responses, are as follows:

Myth: Refineries can't afford to switch out of HF/MHF, and would shut down permanently.

Reality: **The ban is affordable; refineries are valued at much higher than HF replacement costs:**

- **Refinery-funded studies drastically overestimated costs** – The Torrance Refinery's consultant Burns & McDonnell estimated $600 million, even though equipment cost is only $56 million. Total cost (labor, engineering, etc.) should be not be such a high multiple of bare equipment costs.[3] Savings due to reduced insurance, maintenance, and eliminated HF mitigation are also missing. **Industry has a history and vested interest in overestimating regulation costs; regulators and the public must independently analyze.**
- **The AQMD and others found far lower costs:** AQMD identified costs at $100-$200 million for new alkylation alone, and $210-330 million for new alkylation plus acid regeneration.[4] Lower costs of various industry associations varied between $45-$150 million.[5]
- **Digital Refining, an industry engineering forum, found the cost for replacing HF with sulfuric acid alkylation may be a fraction of the cost of new units**, because they can generally use the same equipment.[6]
- **Hydrocarbon Processing found in 2017 that replacement is only 40-60% the cost of new units.**[7]
- **The refineries have been valued at far higher levels than alkylation replacement cost** (Torrance: ~$1.4 billion dollar value, Valero Wilmington: ~$930 million[8]); HF replacement increases refinery value. Banning HF would not cause refineries to walk away from these major investments. Oil companies are multi-billion dollar industries; they can and must afford normal costs of basic health and safety;
- **Most importantly, human life is irreplaceable; the value of protection is not a nicety.**

Myth: Sulfuric Acid is just as bad as HF/MHF

Reality: **HF/MHF is well-established as far more dangerous than sulfuric acid**

- **Dupont found:**[9] *"From a safety and environmental standpoint, H2SO4 [sulfuric acid] has a clear advantage over HF . . . Both HF and H2SO4 acids are hazardous materials, however, HF is considerably more dangerous. . . . The volatility of the acid at ambient conditions is a chief concern. HF is a toxic, volatile gas at these conditions, while H2SO4 is a toxic liquid. Therefore, H2SO4 is much easier to contain in the event of an accidental release. The hazardous nature of both materials has been known and respected for years. In more densely populated areas of the world, safety and environmental concerns of HF usage have given H2SO4 alkylation a notable advantage."*
- **HF/MHF exposure risks death, and other severe impacts:** Swallowing a small amount of HF can be fatal. Breathing high levels or with skin contact can cause death; people who survive may suffer chronic lung disease. Skin contact may cause persistent pain, deep, slow-healing burns, bone loss. Eye exposure may cause blindness.[10]

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[3] Dr. Sally Hayati, Surviving without HF, for example pp. 3, 5, other pages
[4] SCAQMD Staff Presentation for January 20, 2018 workshop, Slide 15, available at: http://www.aqmd.gov/docs/default-source/Agendas/refinery-committee/status-report-on-rule-1410.pdf?sfvrsn=6
[5] Ibid, Surviving without HF, p. 5
[6] Digital Refining, Processing, Operations, and Maintenance, 2002. *The cost of the conversion from HF alkylation to H2SO4 alkylation is a fraction of that of a grassroots unit as it uses most of the existing equipment."*
[7] Hydrocarbon Processing, Oct. 2017, p. 53-58. HF alkylation conversion is finally within reach. Part 2, p. 58 found: *"At 40%–60% the cost of a new unit, the cost to convert from HF to sulfuric acid alkylation using these new conversion solutions is significantly lower than any other option available on the market. . . . Finally, the solutions discussed here are designed for maximum reliability and operability, utilizing equipment that is very familiar to refinery process operators and maintenance personnel.*
[8] The LA Business Journal, *The List, Highest Assessed Properties, The 2014 Book of Lists*,
[9] Dupont, H2SO4 vs HF, http://www.dupont.com/content/dam/dupont/products-and-services/consulting-services-and-process-technologies/consulting-services-and-process-technologies-landing/documents/H2SO4_vs._HF.pdf
[10] CDC (Center for Disease Control), https://emergency.cdc.gov/agent/hydrofluoricacid/basics/facts.asp

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