

Critique of SCAQMD  
PR 1410 Working Group Meeting #8  
Presentation of Sept. 6, 2018

by Dr. Genghmun Eng, as a Private Citizen  
5215 Lenore Street  
Torrance, CA 90503

Electronically Submitted to the SCAQMD, 3 Sept. 2018

# Summary of Citizen Concerns

- On 8/22/2018, ExxonMobil formally declined to release to the AQMD “*Information on MHF Technology*” (p. 4).
  - A lot of critical hazard information on MHF is already available in the Patent Literature, and a formal AQMD and publicly available review of this information needs to be done as part of this PR 1410 process.
- It is an abdication of the AQMD responsibility to Protect Public Health and Safety to hide critical MHF risk information from the Public by using a nondisclosure MHF MOU.
- There are numerous potential flaws in the Mitigation proposals, creating significant Public Health and Safety Risks for continued long-term HF/MHF use by Refineries.
- The likelihood that virtually ALL mitigation systems may simultaneously fail in a Magnitude 8-9 Earthquake needs to be addressed in detail as part of this PR 1410 process.

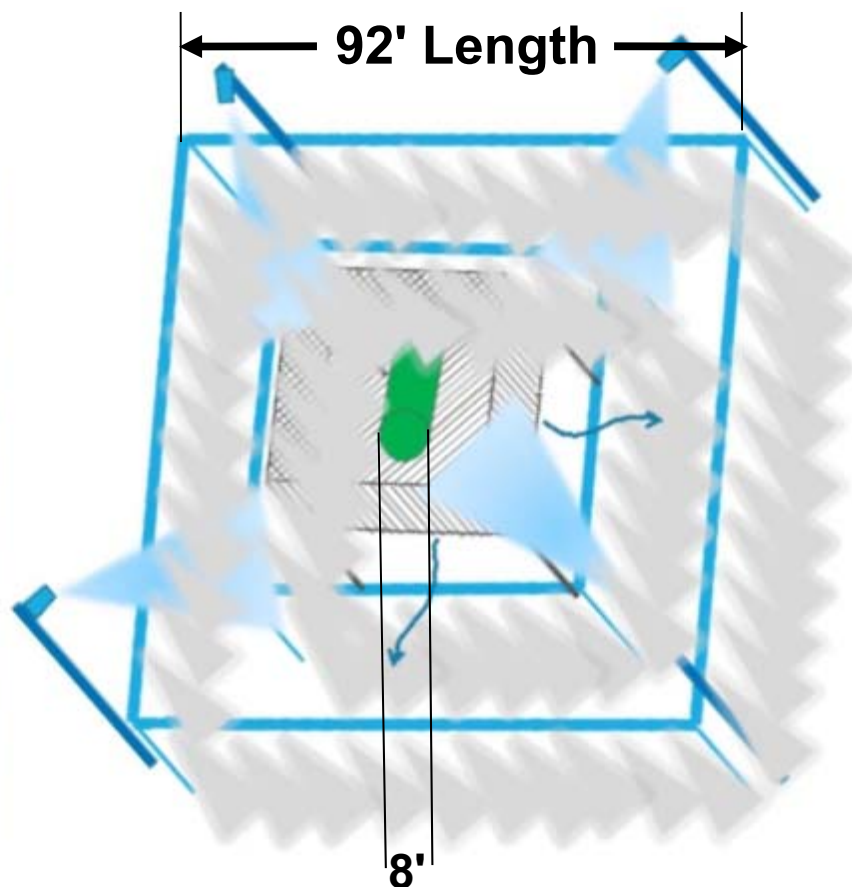
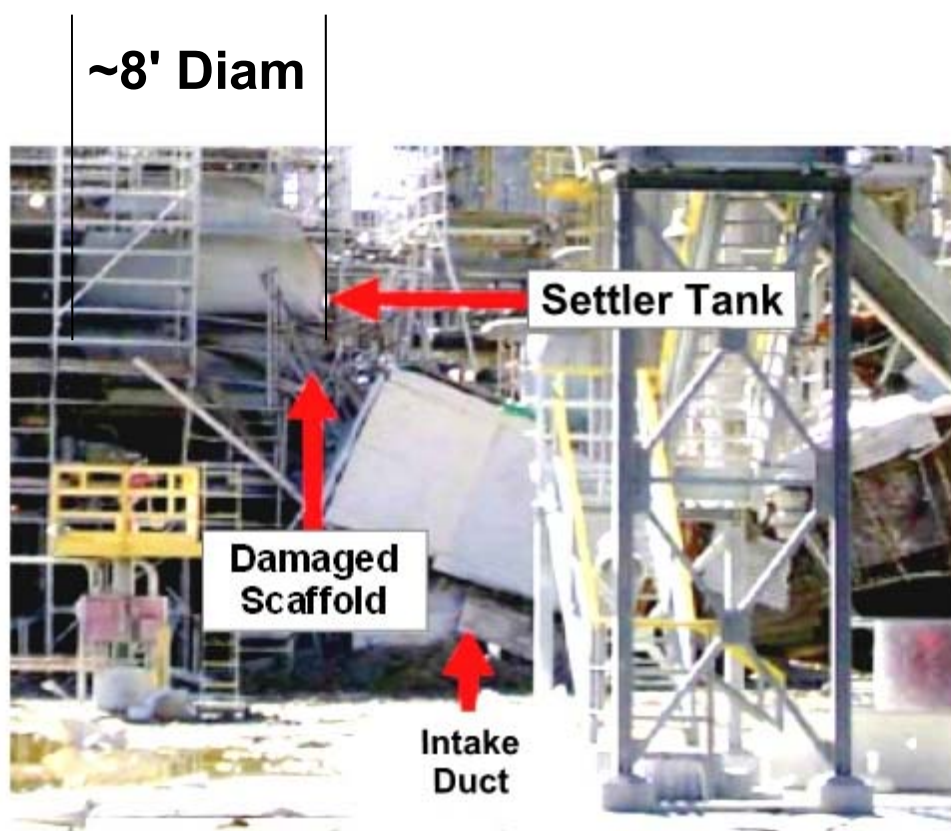
# Potential Risk Analysis Flaws

- *“HF use in other industries is lower volume (e.g. 5 gals/month)” [p.5]*
  - Refinery storing 2 x 50,000 gallons on site = 20,000X Risk.
  - AQMD Mitigation Proposals are insufficient for this Risk Level.
- *“Estimated Timetable for PR 1410 and MOU without CEQA” [p.8]*
  - Whether to have a CEQA or No-CEQA is not an *Optional Choice*.
  - CEQA Review Needs to be Mandatory.
- *“Circulate Socioeconomic Impact Assessment [S.I.A.]” [p.7]*
  - Present AQMD Plans do not yet include an S.I.A. Evaluation for a massive HF/MHF release.
  - A specific S.I.A. Evaluation for a massive HF/MHF release needs to be developed by the AQMD as part of this *PR 1410* effort.

# Potential Mitigation Technical Flaws I

- *“Enclosed Catch Basin... Catch Acid Drain from acid settler pans.” [p. 15]*
  - The Settler Tanks can have HF/MHF temperatures up to ~105.F, giving HF vapor pressures much higher than 1 atm.
  - A massive HF/MHF release will quickly form a large HF cloud, rendering the *Catch Basin* useless for HF cloud containment.
  - Using the *Catch Basin* as a splash plate can redirect exiting HF/MHF liquid upwards.
  - This upward direction can force HF/MHF **AWAY** from the proposed enhanced water mitigation structures (see *next page*).
- *“Additive concentration: 8.0 wt% in acid settler [tank]” [p. 19]*
  - Changing additive concentration from 6.0 wt% to 8.0 wt% has only a minimal effect on HF vapor formation in a large release.
- *“Seismic upgrade [to] Latest International Building Code IBC)” [p. 19]*
  - In addition, seismic upgrades should withstand a Magnitude 8-9 earthquake without significant impact to Public Health & Safety

# Potential Mitigation Technical Flaws II



1/13/2016 CSB Presentation, p. 41 of 62

9/6/2018 AQMD WorkGrp#8, p. 25 of 47

- Unless the Settler Tanks are relocated to a place far away from the present FCCU region, there is NO ROOM to place these large Water Cannons and Water Curtains near the present Settler Tank.
- The Settler Tank *Catch Basin* can also force leaking HF/MHF liquid upward, where no enhanced water mitigation is planned.

# Potential Mitigation Technical Flaws III

- *“Water Spray Curtain: Enough Water to HF ratio in excess of 60:1” [p.27]*
  - Given a Tank Breach with HF exiting one side of the Settler Tank, shouldn't the 60:1 ratio apply to EACH side of the proposed “Box Type” Water Curtain (240:1 total ratio for whole system)?
- *“60:1 ratio may not be achieved immediately.. due to large initial mass release” [p.29]*
- US EPA Offsite Consequence Analysis (OCA) uses Settler Tank emptying to the atmosphere in 10 minutes as a worst-case.
  - 50,000 lbs of HF = ~ 6182 gal  $\Leftrightarrow$  618 GPM (gals/min) which is above the 470 GPM assumed by the AQMD [p.30].
    - Calculations should be redone at 618 GPM.
- Assuming first 2 minutes of an HF/MHF disaster are not mitigated by the Water Cannons/Curtains, that is still 10,000 lbs of HF/MHF.
  - PR 1410 needs to address impact of these first 2 minutes.

# Potential Mitigation Technical Flaws IV

- “How much water is needed?”

- A fire hydrant at 50 psig can source ~1200 GPM

- August monthly water use by the City Of Torrance

Water consumption in the City Of Torrance **increased 6.17 percent** in August 2017 compared to August 2016. Overall, consumption in August has **decreased 13.10 percent** over the past five years.

August 2013	482 million gallons
August 2014	431 million gallons
August 2015	391 million gallons
August 2016	415 million gallons
August 2017	431 million gallons

*Displayed in millions of gallons*

- All of Torrance uses an average of ~10,000 GPM for the whole City.
- Torrance cannot source water fast enough.

HF Release Rate Assumed (GPM)	Water to HF Ratio Needed	Water Release Rate Calculated (GPM)	Mitigation Duration (Minutes)	Total Water Needed (Gallons)
470	60 to 1	28,200	10	282,000
200	60 to 1	12,000	10	120,000
<b>618</b>	<b>60 to 1</b>	<b>37,100</b>	<b>10</b>	<b>371,000</b>

**100' x 100' x 5'  
LAKE !**



**371,000 gallons = 50,000 cu.ft.**

- Need water storage, delivery system, and backup power for pumps

# Potential Mitigation Technical Flaws V

- *“Assist neighborhoods to evacuate as quickly as possible..” [p.35]*
  - Who will plan evacuation of 140,000 people in the Beach Cities, Lawndale and South Bay, plus 140,000 people in Torrance?
  - Evacuation processing can move people INTO THE HF CLOUD.
- *“.. move to Shelter-in-Place IF NEEDED.” [p.35]*
  - There is no evidence “Shelter-in-Place” is effective against a deadly HF gas attack.
- *“Emergency Response Requirements” [p.34]*
  - None are proposed by the AQMD for the case of a Magnitude 8-9 Earthquake creating a large HF/MHF cloud release.
    - This omission by itself could result in serious injury or loss of life for tens to hundreds of thousands of South Bay and Torrance residents
  - AQMD should propose what they think Citizens and First Responders *should do* in a massive Earthquake-related HF/MHF release.
    - Firefighters stood down for nearly 2 hours in the *Husky Superior Wisconsin Fire*, while awaiting word that the HF Alkylation Unit was not in danger.



# Potential Mitigation Technical Flaws VI

- *'.. have sufficient supplies of calcium gluconate [at hospitals].'*
- Calcium gluconate can mitigate swallowed HF and HF skin burns
- It does NOT fully mitigate against HF and HF-Acid inhalation
- Who pays for hospitals to prepare for 100's-1000's of HF ICU cases?

Safetygram 29

AIR  
PRODUCTS 

## Treatment protocol for hydrofluoric acid burns \*

Absorption of HF may cause hypocalcemia due to HF's fixation of blood calcium. Hyperkalemia may occur if severe hypocalcemia appears. A person who has HF burns greater than four (4) square inches should be admitted immediately to an intensive care unit and carefully monitored for 24 to 48 hours. Anyone who has been exposed to gaseous HF and experiences respiratory irritation should also be admitted to and monitored in an intensive care unit. Blood sampling should be taken to monitor fluoride, potassium, and calcium levels. In some cases, hemodialysis is necessary for fluoride removal and for correction of hyperkalemia.

\* [https://sms.asu.edu/sites/default/files/safetygram-29\\_hf\\_burns.pdf](https://sms.asu.edu/sites/default/files/safetygram-29_hf_burns.pdf)

# Potential Mitigation Technical Flaws VII

- *The California Energy Commission gave the SCAQMD an economic analysis, which said that suddenly getting rid of HF/MHF Alkylation could temporarily raise gasoline prices ~26 cents/gal.*
- *Where is the economic impact analysis for a massive HF/MHF breach causing bankruptcy of many South Bay Cities as well as ToRC?*
- *The crudest impact estimate presented to the Torrance City Council was \$50,000,000,000.00. The AQMD should refine this analysis.*
  - *Who besides **NO ONE** will be held accountable for such damages?*
- *The South Bay is also home to a lot of the National Security Space Systems technology for the whole United States of America, including:*
  - *Northrup-Grumman, Boeing, Raytheon, Lockheed-Martin, L3-Comm, and Aerospace Corp, among others.*
  - *Decimation of this High-Technology Center in the South Bay would have multiple deleterious effects that are almost beyond imagining.*
- *An Accelerated HF/MHF Ban is needed to protect the Public Health and Safety of the whole South Bay, while advanced alkylation is studied.*