

3/13/18 AGENDA, ITEM 6A - CONSIDERATION OF THE SUBMITTAL OF A RESOLUTION OR LETTER SUPPORTING A REQUIREMENT TO IMPROVE SAFETY AT THE TORRANCE REFINERY BY THE SCAQMD THROUGH THE RULE 1410 PROCESS AND OPPOSING TO THE USE OF MODIFIED HYDROFLUORIC ACID AT THE REFINERY. SUPPLEMENTAL LETTER AND ATTACHMENT FROM GENGHMUN ENG SUBMITTED TO THE CITY COUNCIL ON 3/13/18 AT 3:53 P.M.

**From:** Genghmun Eng <[genghmun.eng@aero.org](mailto:genghmun.eng@aero.org)>  
**Date:** March 13, 2018 at 3:53:33 PM PDT  
**To:** "[citycouncil@hermosabch.org](mailto:citycouncil@hermosabch.org)" <[citycouncil@hermosabch.org](mailto:citycouncil@hermosabch.org)>  
**Cc:** "[geng001@socal.rr.com](mailto:geng001@socal.rr.com)" <[geng001@socal.rr.com](mailto:geng001@socal.rr.com)>  
**Subject:** 180313\_GEng\_Citizen-Support-of-MHF-Ban

Dear Hermosa Beach City Council,

I am a Torrance Citizen, who is concerned that massive HF/MHF represents a significant Public Health and Safety hazard to all cities in the South Bay, including Torrance, Hermosa Beach, Redondo Beach, and Manhattan Beach

Unlike Torrance, whose City Government caters to their Business revue generators, and is exceedingly proud of its reputation as one of the most Business Friendly communities of its size in the whole State of California, the Beach Cities get no revenue and their citizens bear much of the risks of an HF/MHF disaster.

As a result, I implore the Hermosa Beach City Council, representing the most densely populated of the Beach Cities to support an HF/MHF phase out and ban.

I have put together some additional information  
In the attached \*pdf file:  
"180313\_GEng\_Who-is-Telling-the-Truth\_update.pdf"  
to provide additional technical information for  
having your community support the proposed HF/MHF ban.

Thank You Most Sincerely,  
(Dr.) Genghmun Eng  
5215 Lenore Street  
Torrance, CA 90503

# Who Is Telling the Truth?

Citizen Concerns supporting HF/MHF Phase-out and Ban  
3/13/2018 Hermosa Beach City Council Refinery Workshop

Submitted by:

Dr. Genghmun Eng, 5215 Lenore Street, Torrance CA 90503

March 13, 2018

The Problem: Published Literature found by Independent Citizens is increasingly divergent from the Models and Assumptions used by the Torrance City Council and the City of Torrance Staff to assess the potential Public Health and Safety Hazards from massive HF and MHF Use

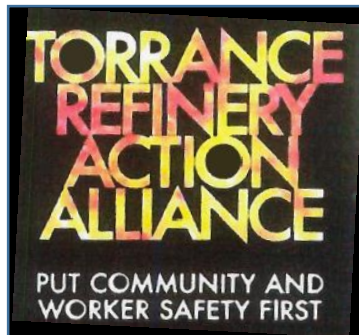


February 28, 2017

# What the City Of Torrance said on 2/28/17:

## Alkylation History Cont.

- **1990** - Consent Decree Requirement – Must be as-safe/safer than the sulfuric acid alkylation (considered other viable alternative)



## What the TRAA said:

### Alkylation History Cont.

#### *TRAA Scientific Advisory Panel Comments*

**1990** – The Consent Decree said Mobil must stop using HF unless a SAFE MHF could be developed that would not form an aerosol or dense vapor cloud upon release.

## G. Eng asks: Who is Telling the Truth?

# What a Massive HF Cloud Urban Release Looks Like

As found by Dr. Sally Hayati, TRAA



## 2012 HF Release S. Korean Chemical Plant

- Wind carried HF cloud *away from the city*. Our refinery's surrounded by city; it'd be worse here.
- 16,000 lb. released, 5 killed, 18 severely injured, 12,243 treated, thousands evacuated for weeks.
- Cattle and crops died. The area around the plant was declared a 'special disaster zone.'
- 80 other firms in the area were affected, with large business losses. Property values plunged.



# What The Daily Breeze Said on 5/17/2017:

dailybreeze.com

TORRANCE

## Feds sue for records on refinery explosion

Justice Department wants answers from ExxonMobil

By Nick Green

ngreen@scng.com  
@nickgreen007 on Twitter

The Department of Justice has filed a lawsuit seeking answers to many of the same questions residents have long asked about serious safety issues at the Torrance refinery in the wake of a February 2015 explosion.

The 34-page legal brief, filed in U.S. District Court last week against former refinery owner ExxonMobil, provides new details on a March 2015 fire and September 2015 hydrofluoric acid leak that occurred in the wake of the blast.

Moreover, the petition suggests the investigative direction authorities are taking in their probe to uncover possible safety, operational, maintenance and financial issues that may have contributed to the near catastrophic disaster.

The U.S. Chemical Safety Board, which issued its final report on the blast last week despite

REFINERY » PAGE 6

## Refinery

FROM PAGE 1

the many unanswered questions, has said the 1.7-magnitude explosion almost caused a catastrophic release of highly toxic hydrofluoric acid that could have killed or injured thousands in the nearby densely populated residential neighborhoods.

The board said the blast was preventable and blamed ExxonMobil for gaps and weaknesses in its management that left workers running the refinery "blind" on the day of the blast.

The force of the explosion catapulted a 40-ton piece of a pollution-control device called an electrostatic precipitator, where the blast occurred, 100 feet into the adjacent alkylation unit, according to the Department of Justice lawsuit. It landed within 5 feet of a tank containing thousands of gallons of the dangerous acid that can form a toxic, ground-hugging cloud when exposed to air.

### Workers cause fire

Several weeks later, as crews worked to remove debris caused when the electrostatic precipitator was literally blown apart, sparks from the work ignited a flammable fluid, leading to a fire that burned for several hours.

The fire's cause had not previously been disclosed to the public.

The DOJ is seeking answers about the fire on behalf of the CSB as part of seven administrative subpoenas issued to ExxonMobil from June 2015 to October 2015.



STAFF FILE PHOTO

The U.S. Chemical Safety Board released its final report on the 2015 Torrance ExxonMobil refinery explosion on Wednesday. This photograph shows the damage from the explosion.

"Exxon has not fully complied with six of the seven subpoenas," the lawsuit said. "Exxon's failure to provide the requested information has impeded and delayed the board's investigation."

The Justice Department has requested all reports and other documents related to the fire because officials suspect it may have a "relationship" to the explosion.

### Hydrofluoric acid leak

Investigators are reviewing the Sept. 6, 2015, leak of modified hydrofluoric acid for similar reasons.

The leak occurred from a pipe clamp.

"Exxon had installed the clamp to patch an aging pipe instead of replacing it," the lawsuit reads. "Over five pounds of modified hy-

drofluoric acid was released as a white vapor cloud over two hours."

It's the first time the amount of hydrofluoric acid accidentally released during the incident has been disclosed. Even small amounts can be deadly in low concentrations.

Modified hydrofluoric acid supposedly is safer than the pure version because it contains an additive designed to inhibit the formation of the dangerous vapor cloud, but "few scientific studies show whether modified hydrofluoric acid is actually safer," according to the lawsuit.

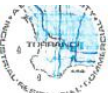
The federal government is seeking photos and videos of the leak because it shows the "risks posed by a release" of modified hydrofluoric acid and how it behaves when released.

On Sept. 6, 2015  
over 5 lbs of MHF  
was released as a  
**"white vapor cloud  
over 2 hours"**  
at the Torrance  
Refinery

# What G. Eng Asks:

- Doesn't the Sept. 6, 2015 "White Vapor Cloud" prove that the present additive amount used to convert HF to MHF does **not** prevent HF-Cloud Aerosol Formation?
- What are the Police Departments planned response to an HF Cloud?
  - Will they just cordon off the Zone of Death and Injury?
  - What if the HF-Cloud moves in their direction?
  - Will they have HF-protective Gear
  - How will they know when HF-Cloud no longer is dangerous?
- What are the Fire Department planned response to an HF Cloud?
- These questions need to be addressed even if the Torrance City Government calculated ARF values are found by the Torrance City Attorney to obey the legal requirements of the Consent Decree.





February 28, 2017

# What the City Of Torrance said on 2/28/17:

## Confidential Business Information (CBI)

- COT <sup>CITY OF TORRANCE</sup> is prevented from thoroughly disclosing the complete Alkylation technology chemistry used at the Torrance Refinery.

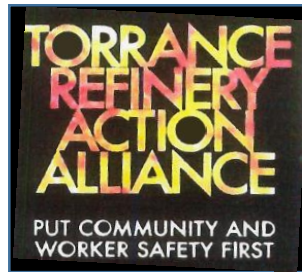
## MHF Alkylation Unit Chemistry

- “Additive” – Significantly decreases the potential hazard associated with an accidental release of Modified Hydrofluoric Acid (MHF)

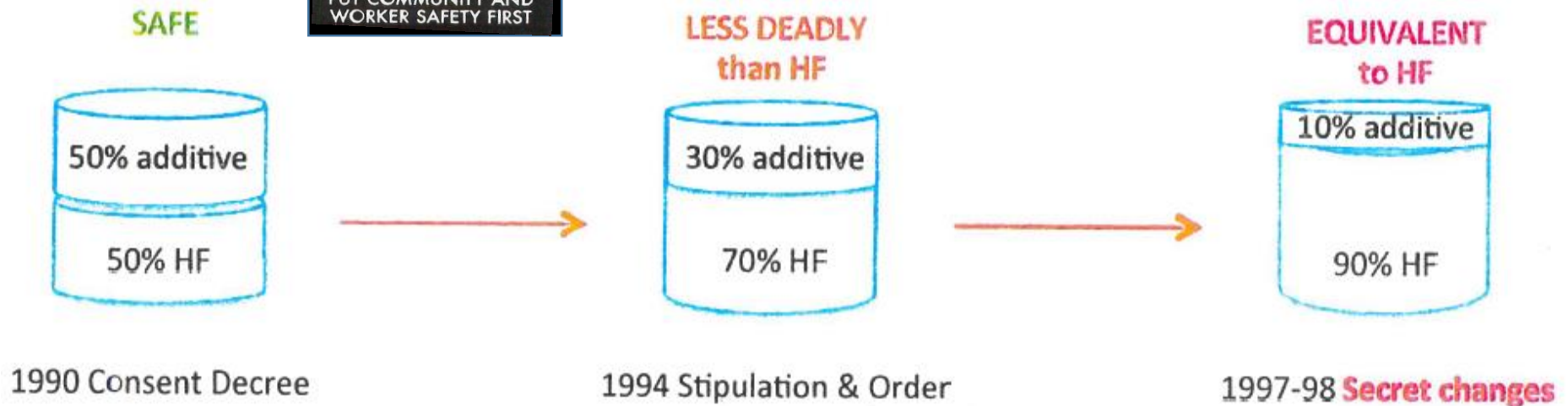
## A Little Goes a Long Way

- So, with respect to additive concentration, “a little goes a long way.” The first small percentages of additive have the most impact on ARF. This non-linearity is why the adjustment for operability in 1998 only reduced the ARF from 65% to 50%.

# What is the Minimum Percentage of HF-Additive Modifier Allowed for Creating MHF from HF?



## What the TRAA said:



This is what PBF Torrance Refining Company President Jeffrey Dill said at the 1 April 2017 AQMD-EPA Public Hearing on the Torrance Refinery:

**IT COULD BE AS LOW AS 8%**

This is what PBF Torrance Refining Company Representative Adam Webb said at the 19 April 2017 PR-1410 Workshop Meeting #1:

**IT COULD BE AS LOW AS 7%**



# What US Patent #5,498,818 of March 12, 1996 says:

## METHOD FOR SUPPRESSING THE EVAPORATION OF HYDROGEN FLUORIDE FROM A MIXING OF HYDROGEN FLUORIDE AND SULFONE

Inventors: **Bruce B. Randolph**, Bartlesville, Okla.;  
**Ronald G. Abbott**, Kingwood, Tex.

Assignee: **Phillips Petroleum Company**,  
Bartlesville, Okla.

At 7.36 wt% Sulfolane Additive  
as an HF Vapor Suppression Modifier  
The HF Vapor Pressure  
Reduction is:

$$\frac{(1086 - 1021)}{1086} \div \frac{1086}{1086} \Leftrightarrow 5.985\%$$

Torr      Torr      Torr

TABLE IV

Vapor pressure of HF/sulfolane mixtures at 30° C.		
	Wt. % Sulfolane	Vapor Pressure (Torr)
	→ 0.00	1086 ←
	3.82	1044
	4.75	1032
	→ 7.36	1021 ←
	7.65	1004
	13.01	972
	16.57	946
	19.90	897
	19.95	902
	24.11	862
	26.95	819
	29.01	794
	30.02	812
	36.70	680
	55.40	413
	71.96	187
	83.91	74

*The MHF Developer's Own Data shows that*  
**“A Little Does NOT Go a Long Way”**

# **What G. Eng Asked at a Prior Torrance City Council Meeting:**

- The Citizens of Torrance need to see and understand how the Torrance Fire Department (TFD) and its consultants are presently vetting all ARF calculations.
  - ARF calculation process can disclosed without *“thoroughly disclosing the complete Alkylation Chemistry used at the Torrance Refinery”*.
- The TFD is a crucial part of the State of California network for ensuring that the Public Health and Safety is maintained.
- G. Eng asked that the TFD perform a side-by-side calculation:
  - What ARF values arise as a result of the current TORC MHF use.
  - What ARF would arise from substituting 100% HF for the presently used MHF, keeping all other calculation conditions the same.
  - These results would show the Citizens of Torrance, as well as the City of Torrance, exactly how much safer MHF is, compared to pure HF.
- This side-by-side comparison is needed to provide a baseline for what risks the Citizens of Torrance are actually being exposed to.

# *What the California Energy Commission Said*

*(via Mr. Gordon Schremp 9/20/2017)*

- “If an HF ban were compelled it is unlikely.. [ToRC] would elect to make such changes to their facilities.”
  - “These estimated costs for such a replacement project could be near or exceeding the value of the refinery when one considers that ExxonMobil sold the entire Torrance refinery to PBF Energy for \$537.5 million.”

## *What G. Eng Notes:*

- PBF Energy has a stated intent to make ToRC its “flagship Refinery”.
- The on-site ToRC equipment is valued at \$1.2 - \$1.4 billion  
*(Eric Tsao, Torrance City Chief Financial Officer).*
- The major 16” Pipeline to the Central Valley is valued at ~\$1 billion  
*(“A Crown Jewel”, PBF Spokesperson August 2017 PBF Open-House)*
- The set of pipelines from Long Beach (up to 10” diameter) is likely to have a value of at least \$200 - \$400 million *(G. Eng estimate)*
- Net PBF Energy Value in excess of \$2.4 billion
  - Having a planned \$600 million outlay over 4 years is only \$150 million per year, which is small compared to total asset valuation.
  - Replacing HF alkylation unit will provide MANY JOBS for all the ToRC union workers *(Steelworkers, Carpenters, Electricians, Boilermakers, and others)*



# G. Eng's Conclusions

- The minimum percent HF modifier that is presently in use is INCAPABLE of preventing an HF aerosol or dense vapor cloud from forming on an HF/MHF release, otherwise the “white vapor cloud” that the Department of Justice reported on would have never formed.
- The Citizens of Torrance keep on getting a changing and ever less safe story of what the Torrance Refinery is doing, and has been doing, both from the Refinery AND from our Torrance City Officials.
- HF/MHF use, as it is presently done at the Torrance Refinery, remains a persistent and pernicious threat to our Public Health and Safety.
- Usage of massive amounts of HF/MHF at a single location near our densely populated neighborhoods needs to be banned as soon as possible to preserve our Citizens' Quality of Life, and for the Public Health and Safety of all.
- Torrance citizen finds it HIGHLY LIKELY that ToRC would elect to modify facility to conform to an HF/MHF phase-out and eventual ban.
- The economic impact of a Major HF/MHF disaster could be in excess of \$50 billion, with billions of dollars of long-term health impacts, none of which was factored into the California Energy Commission economic analyses.
- A strong new Rule 1410 is needed to accomplish this needed change. Many Concerned Citizens in Torrance are hoping that the Torrance City Officials, and other South Bay municipalities will work to help make that happen.