

# PUT COMMUNITY AND WORKER SAFETY BEFORE PROFITS



## BAN MHF, NOW! DON'T LET THIS HAPPEN IN THE SOUTH BAY.

- 2012 HF Release S. Korean Chemical Plant: area around plant was declared a 'special disaster zone.'
- 16,000 lb. released, 5 killed, 18 severely injured, 12,243 treated, thousands evacuated for weeks.
- Prevailing wind carried the HF cloud *away from the city*. Our refinery is surrounded by homes & business

SALLY HAYATI, PH.D. PRESIDENT, THE TORRANCE REFINERY ACTION ALLIANCE (TRAA)

THIS BRIEFING IS POSTED HERE: [HTTP://BIT.LY/2T4WQ4N](http://bit.ly/2T4WQ4N)



# TORC & VALERO WILMINGTON USE HF IN ALKY UNITS

1. If accidentally released, HF forms a *ground-hugging fog*
  - The HF is pressurized and SUPERHEATED, like H<sub>2</sub>O in a pressure cooker
  - *Mixed with volatile fuel in the hazardous refinery environment*
  - Large release plumes can kill and injure for miles. **Refinery has 250,000 lb.**
2. Deep corrosive burns from H ions, slow to heal
3. Even worse: *HF is a systemic poison*
  - Fluorine ions pass through skin, enters blood stream, circulate in the body
  - Cause deep tissue and bone damage, seizures, arrhythmias

HF Release Test 1986



ALL 8 OTHER CA ALKY UNITS USE SULFURIC ACID, JUST BECAUSE IT'S SAFER

*A liquid up to 640°F, it stays put if released. Also it's not a systemic poison*

CHEVRON IS VOLUNTARILY CONVERTING ITS HF UNIT TO A NEW OPTION, IONIC LIQUIDS

## United Steel Workers

“No industrial process risks more lives from a single accident than... alkylation using HF... If [industry] cannot find the will voluntarily [replace HF], it must be forced by government action. **This is truly a risk too great.**” <http://bit.ly/2nmdWwF>



# WHAT IS "MODIFIED" HYDROFLUORIC ACID (MHF)?

-INDUSTRY'S ~~BRILLIANT~~ IDEA-  
*Failed*

## IN THEORY: MHF = HF + ADDITIVE

Enough "additive" to stop HF's  
ground hugging cloud formation

## IN FACT: too little additive is used

It messes up the alky unit.

New MHF unit failed on startup in '97

So additive was slashed to 10%.

MHF  $\geq$  90% HF (by weight)

MHF  $\geq$  98% HF (by molecule count)

TOO LITTLE ADDITIVE to MATTER.

***The Public was Never Told***

*MHF wasn't supposed  
to do this!*

*But it does...  
MHF  $\square$  HF*



# WHAT 1986 HF RELEASE TESTS IN NV REVEALED

**Release amount: 8,300 pounds hydrofluoric acid (HF)**

*250,000 lb. Modified HF (MHF) total at Torrance Refinery*

*50,000 lb. Modified HF (MHF) in the acid settler tank nearly struck in 2015*

**HF concentration @ 0.62 mi: 3,098 ppm à 18 X greater than lethal**

**1.86 mi: 411 ppm à 2 X greater than lethal**

**Acute Exposure Guideline (AEG) 3 = 170 ppm, *death possible with 10 min exposure***

The HF test WAS NOT done under WORST CASE conditions! A real accident could be worse...

## Test Conditions

Higher wind speed, 12.5 mph

Less stable atmosphere, D class

Low desert humidity, 5%

## Worst Case Conditions

Low wind speed  $\leq 3$  mph, common here in a.m.

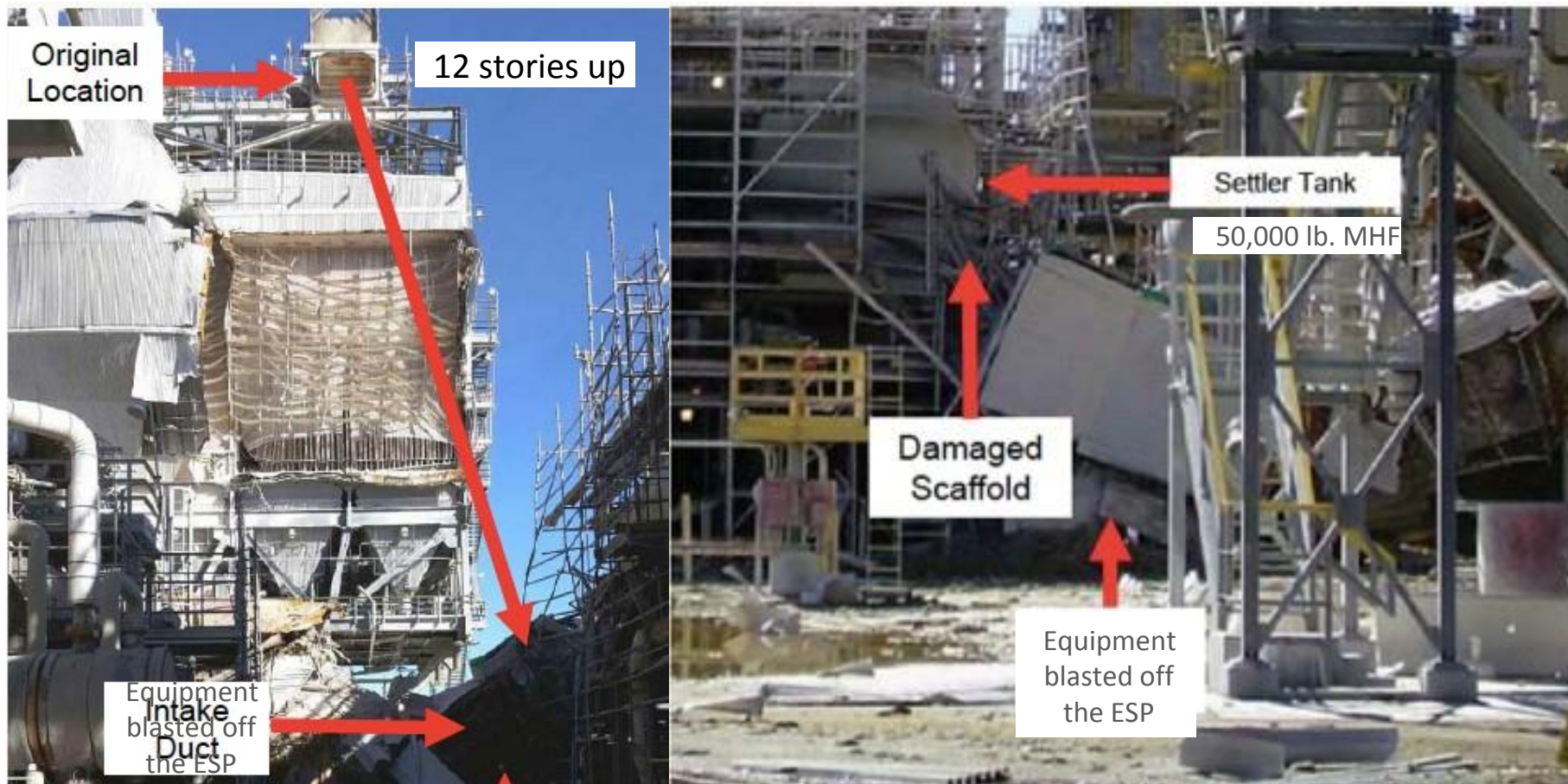
Most stable, F class (smog layers...)

Higher humidity (Torrance average 73%)



# A CATASTROPHIC ACCIDENT NEARLY HAPPENED DURING TORRANCE EXPLOSION

-Chemical Safety Board says Feb. 18, 2015 ExxonMobil explosion was near miss on MHF tank-



Duct the size of a fully loaded semi-truck & trailer hit the ground at 60 MPH, just 5 ft. from a tank filled with 50,000 lb. MHF. CBS Evening News broke the story in Sept. 2015, US Chemical Safety Board Chair Sutherland said: **“We were really, really lucky... [It could have been... catastrophic. ... If I were in the community I absolutely would be concerned.”**

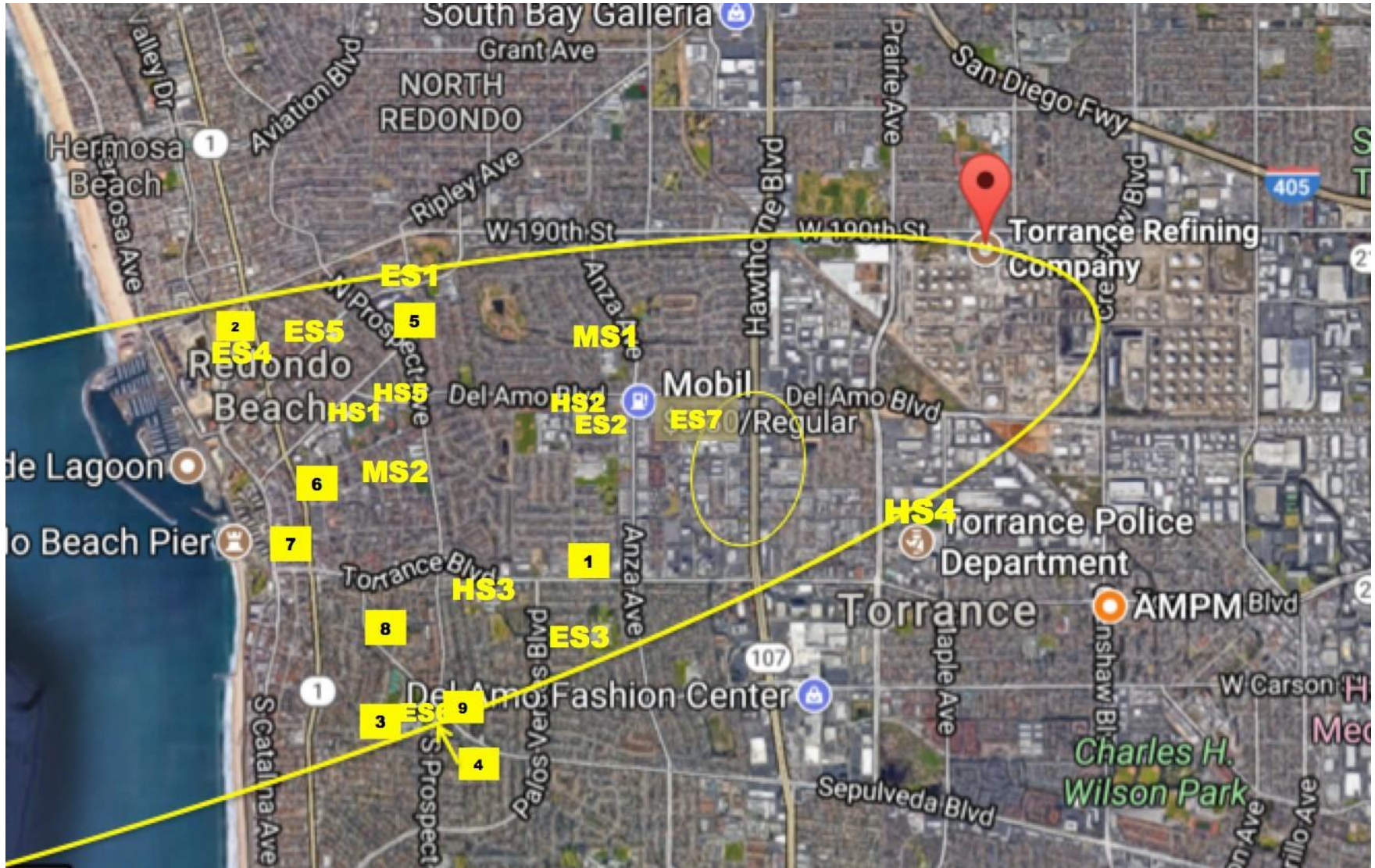


CSB: A LARGE MHF RELEASE COULD HAVE IMPACTED 100,000S OF RESIDENTS. AT RISK WITHIN A 3-MILE RADIUS OF THE REFINERY ARE 330,000 RESIDENTS, 71 SCHOOLS, AND EIGHT HOSPITALS



**U.S. Chemical Safety and Hazard Investigation Board: Computer Animation  
2/18/2015 ExxonMobil Explosion of the ESP unit just north of the MHF unit**

# 23 SCHOOLS (9 PRESCHOOLS) IN DEBRIS PLUME OF 2/18/2015 ACCIDENT



NV test showed that if 8,300 lb. HF remained airborne that “still morning,” even at RB High, 3.2 mi. West, concentration could be > 62 ppm, lethal within < 30 min. Cloud could linger  $\geq$  1 hr.



# What HF Test Results Mean for N. Torrance

Assume a South Wind (blows N), 12.5 MPH  
8,300 lb. HF release (17% of 50k lb.) hits ...

N. High, Magruder, Ascension, 405 in 3 min.

18 X conc. lethal within 10 min (>3k ppm)

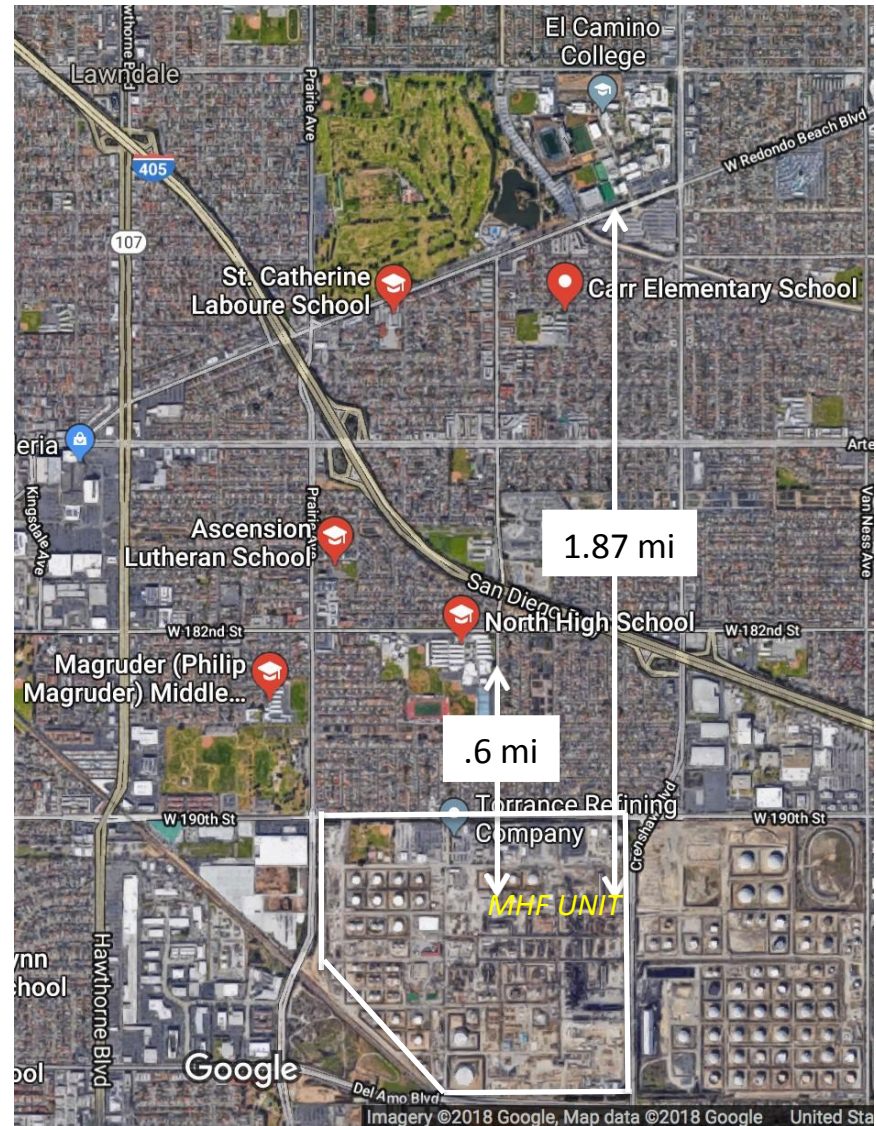
El Camino, St. Catherine within 9 min

2 X conc. lethal within in 10 min (411 ppm)

**3-9 min. to impact; 10 min. to live.**  
**NO TIME TO "SHELTER IN PLACE"**



The wind blows in all directions in the So Bay on a regular basis. This example is **worst case**, with wind at 3mph, so the HF cloud could be denser than in NV test.





# NIMBY? DOES SO CAL THINK IT'S *TOO GOOD* FOR HF? **NOPE.**



## LA has much higher risk factors than any other US HF refinery area

1. Torrance & Wilmington 2<sup>nd</sup> and 3<sup>rd</sup> most densely populated HF ref. areas in US  
Combined: 17% more people at risk than Philly (1<sup>st</sup>); 2 - 30 X more than other areas
2. Earthquake hot zone with multiple faults capable of magnitude 7 quakes
3. DHS designated High Threat Urban Area for terrorism. MHF is a designated COI.

# ECONOMICS TRUMPS PUBLIC SAFETY (?!)

SEE TRAA'S ECONOMIC COUNTER ARGUMENTS: [HTTP://BIT.LY/2BGABY3](http://bit.ly/2BGABY3)



## Two reports commissioned and paid for by ToRC\*

*“...inappropriate, inflammatory, and designed to scare the public, Equivalent to yelling “fire” in a crowded theater.” ToRC Breeze Op Ed*

### 1. Burns & McDonnell—Exaggerate Cost of MHF replacement

– \$900M each. Our estimate: \$300-\$400M. Delivers what ToRC asked for—highest replacement cost, out of line with other industry estimates for alky units.

### 2. Stillwater—Exaggerate Impact on gas prices and the CA economy

– *Disastrous*. Our estimate: significantly shorter and less impactful than 2015 explosion. Stillwater’s is a perfunctory exercise assuming the truth of B&McD and refinery’s claims. Both refineries will shut down, the CA economy will shatter.

- No consideration of human or economic costs of a significant MHF release
- No accounting for loss of future revenue by shutting down the refineries
- Carrot and stick approach with unions: sweetheart deal for builders trades + threat to eliminate every job faster than you can say MHF
- Carrot and stick approach with unions: building trades union given contract for refinery work + members jobs threatened with lie that the refinery will close
- \*Torrance Refining Company (ToRC) Daily Breeze op ed-- <http://bit.ly/2CFoLh1>



# MEANWHILE, CHEVRON IS *JUST DOING IT*

*IN* Salt Lake City, Utah. MUCH LESS DENSELY POPULATED



- *Voluntary* conversion to new technology
  - Ionic Liquid, completed by 2020, ~4 yr. transition
  - *Valero can convert, 40-60% cheaper, shorter downtime than NEW build*
  - *Torrance can build new unit while operating old (downtime 6 mo.)*
- Contracts signed
  - \$67M: engineering, procurement, & construction management services
  - \$20M: modular unit fabrication in Canada to minimize unit downtime
- Extrapolated cost to Torrance's larger unit
  - $\sim \$87\text{M} \times (24200/4500)^{0.67} = \underline{\$269 \text{ M}}$ . No where near \$900M.

2017-02-06, "Chevron's Utah refinery lets contract for alky technology retrofit," <http://bit.ly/2y1thJa>

**Bottom Line – Conversion away from MHF to a much safer alternative is economically viable!**



## WHAT CAN BE DONE? IT NEEDS TO BE DONE QUICKLY, before July 2018

- South Coast AQMD Rule 1410 to “regulate” MHF. Knuckling under refinery pressure.
  - Current Concept: addition of “FAILSAFE” mitigation measures over an 8-YEAR TRANSITION period.
- Assemblyman Al Muratsuchi’s AB 1645 to ban MHF, defeated, might be revived

TRAA and the community it represents support the following conditions and deadlines

- MHF must be gone or replaced with a safe alternative w/in 4 yr. of rule adoption/bill passage.
- No extra time for “new technology.” Ionic liquids, sulfuric acid, & solid acid are available now
- Actions that all South Bay cities, LA, Long Beach, Carson, Gardena, etc. should be taking
  - Acknowledge that MHF and HF are equivalent hazards; no more discredited MHF safety claims.
  - Educate residents and businesses on HF dangers.
  - Torrance Fire Dept create joint emergency plans w/ others for MHF release impacting community
  - LA Fire department should do the same with Long Beach and other cities at risk from Valero
  - Fire Departments PRACTICE DRILLS in malls, hospitals, playing fields, schools, residential areas, etc.
  - Advocate with the state and AQMD for a MHF/HF ban at refineries
  - Cities of Torrance & LA consider revoking Conditional Use Permits to stop use of fraudulent MHF
  - All cities unite to discuss legal strategy, tactics, & ENLIST state support, fight together to ban MHF
  - Work to improve the grossly inadequate siren and warning systems





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- TAKE ACTION and EDUCATE YOURSELF on our website, [TRAASouthBay.com](http://TRAASouthBay.com)
  - **Automatically send letters of support to AQMD board members** (Rule 1410) and CA legislators (AB 1645)
  - **Sign petition to ban MHF** (petition link: <http://chn.ge/1Wf1Hav>) and bimonthly newsletter.
- **Join in door to door canvassing** (post door hanger distribution) [TRAASouthBay@gmail.com](mailto:TRAASouthBay@gmail.com)
- **Get a free Ban MHF lawn sign** delivered to your home: [LawnSigns@TRAASouthBay.com](mailto:LawnSigns@TRAASouthBay.com)
- Work with TRAA! **Attend one of our meetings** whenever possible or coordinate by email.
  - 1st & 3rd Monday each month (not holidays), 6-8pm, Sizzler @ 2880 Sepulveda Blvd, Torrance.
- **“Like”** Torrance Refinery Action Alliance on Facebook: like/share posts & post on Next Door
- **Retweet on Twitter** @TraaNow
- **Urge all Greater South Bay cities, LA, Long Beach, and every group you know to support a ban.**
- **Tell friends, neighbors, relatives, contacts** anywhere in CA about MHF and efforts to ban it.

*Many stones can form an arch, singly none...do what you can!*