



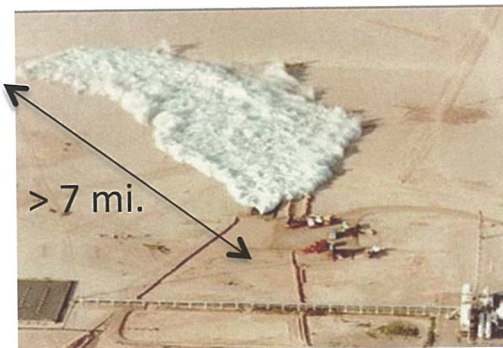
HYDROFLUORIC ACID

(HF), an alkylation catalyst for high octane gas

One of the strongest acids known
DHS terrorist chemical of interest.
Causes severe burns, lasting
internal organ damage & death.

A RISK TOO GREAT
Released HF can travel for
miles in a dense, ground-
hugging, rolling cloud of
toxic gas.

1986 test releases of HF showed a 1,000-gallon (8,300 lb) spill produces a toxic cloud lethal to all exposed within range of 5 mi (PHOTO)



MODIFIED HF (MHF) Is used at Torrance Refinery MHF IS STILL DEADLY

MHF is just as toxic, but a lower percent of released MHF becomes airborne. Yet with 250,000 lbs. (30,000 gal) of MHF, there's more than enough to form a toxic cloud, as ExxonMobil's EPA analysis reveals (p. 5). Earthquakes & terrorism add to the risk. In 2009, Bakersfield residents along with city and state government refused to let Big West Refinery use MHF on the outskirts of town because *MHF is too dangerous*. Will the densely populated *South Bay accept the same danger that Bakersfield refused to tolerate?*

THIS IS A NEEDLESS RISK SAFE ALTERNATIVES EXIST

A HISTORY of ACCIDENTS *The danger is real*

Torrance Refinery

HF leaks--'87, '89, '90, '92, '96, '99, 2001
Explosions and fires (partial list): 1979,
1987, 1988, 1992, 1994, 1995, 1996, 2010,
2013, 2015

Large HF releases have occurred

1980 Matamoros, Mexico	83,000 lbs
1987 Marathon, TX	53,000 lbs
2009 CITGO, TX	42,000 lbs

Only 2 CA refineries use HF or MHF.

RECOMMENDED ALTERNATIVE Solid Acid Catalyst

**Safe for the community and
better for the environment**

CONVERSION COST <\$100M
Safer & cheaper
than the most commonly used
alternative, Sulfuric Acid.

Not hazardous to people
Less corrosive to equipment
Easier & cheaper waste disposal
Produces product of similar quality

Commercially available, 3 suppliers

<u>PRODUCT</u>	<u>SUPPLIER</u>
AlkyClean	Albemarle
Alkylene	Honeywell UOP
ExSact	Exelus Inc.

Conversion to sulfuric acid
alkylation using acid piped-in
from Carson is an option, too

ExxonMobil's Offsite Consequence Analysis for EPA

Scenario: 5,200 lbs. of modified hydrofluoric acid leak from a single vessel. Emergency measures fail.

Result: a ground-hugging HF cloud forms that travels with the wind. For ~2 miles the cloud is so toxic that short term exposure is *life threatening* (ERPG-3). Up to 3.2 mi the cloud is toxic enough to cause *irreversible and serious health effects* (ERPG-2) with short term exposure. Small children, elders, and the ill may die beyond the 2-mile radius.

255,524 residents are at risk

CITIES MOST AFFECTED: Torrance, Redondo Beach, Lawndale, Gardena, Manhattan Beach, Carson, Hermosa Beach.

<http://www.publicintegrity.org/2011/02/24/2118/use-toxic-acid-puts-millions-risk>

If emergency measures succeed, this scenario still results in a 1-mi. toxic radius. And larger accidental releases could occur: more than one failure can result from refinery explosions, earthquake, or terrorist attack. A 25,000 lb. release (10% of inventory) leads to a 2-mi toxic radius (w/ water suppression) or **5.5 mi** (without)



We are concerned South Bay community members, including residents, workers, and business owners, who want to live, work, play, and shop safely and *without fear* in Torrance and adjacent towns.

TAKE ACTION TO
PROTECT THE SOUTH BAY!

Join us in putting pressure on refinery and government to REMOVE HYDROFLUORIC ACID FROM THE TORRANCE REFINERY.

If ExxonMobil won't switch to a safer method, alkylation shouldn't be done at the Torrance refinery.

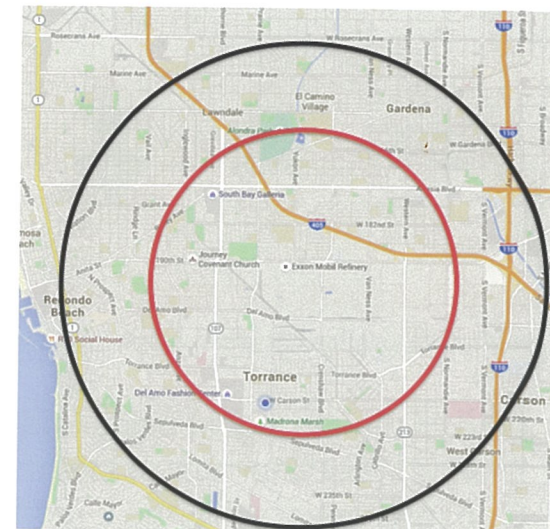
Contact: info@safetorrancerefinery.org

Come to a TRAA meeting
1st & 3rd Mondays each month
except holidays. 5:45-7:30 PM
2761 W. 190th St.

Redondo Beach, CA 90278

Journey South Bay Church

Drive on W. side leads to parking in back.
Meeting room on NW corner, in back.



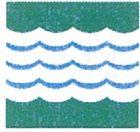
255,524 lives vs. ExxonMobil profits

**250,000 LBS. Modified
HYDROFLUORIC ACID
AT THE TORRANCE REFINERY**

**2-mile radius of death
3.2-mi radius of irreversible and
serious health effects from
release of only 5,200 lbs. of
MHF from a single container
(see p. 5 for details)**

**WHERE DO YOU LIVE, WORK, SHOP?
WHICH WAY WILL THE WIND BLOW?**





OUR BEAUTIFUL SOUTH BAY

LIVABLE CITIES OR SACRIFICE ZONE?

- **Modified Hydrofluoric Acid (MHF)** is used in huge quantities at ExxonMobil & Valero
 - MHF is exactly as toxic as deadly HF. A few drops can kill because it is a systemic poison.
 - Upon release, MHF doesn't just stay put. 35% of accidentally released MHF can form a toxic, ground-hugging moving HF cloud. The more MHF released, the larger the HF cloud.
- **MHF is an unnecessary risk.** Alternatives exist
 - Sulfuric acid (used by >50% of refineries), solid acid, or composite ionic liquid alkylation.
 - What is the benefit of MHF? Slightly enhanced profit margins for ExxonMobil & Valero.
- **MHF is too great a risk** in the inherently dangerous refinery environment
 - In our older, congested, poorly managed plants buried within the dense urban South Bay
 - In an area subject to strong and frequent earthquakes, with fault lines close by
 - A moderate MHF release could kill workers, affect neighboring areas, strain local area medical facilities, and result in panic throughout the area
 - **A significant MHF release could result in mass casualties. A South Bay Bhopal.**
 - Emergency responders are unprepared: the Torrance Fire Department Chief told TRAA there's no need for special emergency preparation or resident education because any released MHF "falls to the ground." (See diagrams below for rebuttal from refineries.)
- **Mitigation, water suppression systems don't make MHF "safe enough"** or eliminate risk
 - Can knock down a max of 80-90% of the airborne acid, best case performance
 - Could be damaged by explosions, fire, or earthquakes and be rendered *inoperable*
 - Are vulnerable to poor maintenance and human error (they must be activated)
 - Are far less effective during significant incidents that cause high rate acid leakage

REFINERY ACCIDENT SCENARIOS SUBMITTED BY THE REFINERIES FOR US EPA RMP OFF-SITE CONSEQUENCE EVEN WITH SUCCESSFUL WATER SUPPRESSION, THE TORRANCE SCENARIO WOULD CREATE A 1.0-1.4 MI. RADIUS ZONE



ExxonMobil "Worst Case" Scenario
 Release of 5,200 lbs. Modified Hydrofluoric Acid from a single vessel (~ 2% of total)
 2 mile kill zone: toxic levels life-threatening for most with short exposure
 3.2 mile zone of irreversible & serious health effects for most with short exposure.
 256,000 at risk in Torrance, Redondo Beach, Hermosa Beach, Lawndale, Gardena, & Carson



Valero Oil Refinery, Wilmington "Worst Case" Scenario
 Release 55,000 lbs. Modified Hydrofluoric Acid From a single vessel
 >2 mi mile kill zone: toxic levels life-threatening for most with short exposure.
 4.2-mile zone of irreversible & serious health effects for most with short exposure (underestimated?)
 360,000 residents at risk in San Pedro, Wilmington, Long Beach, LA, Carson



Torrance Refinery Action Alliance (TRAA) Fact Sheet

Contact: Sally Hayati, info@safetorrancerefinery.org

Checkout and "Like" our Facebook Page

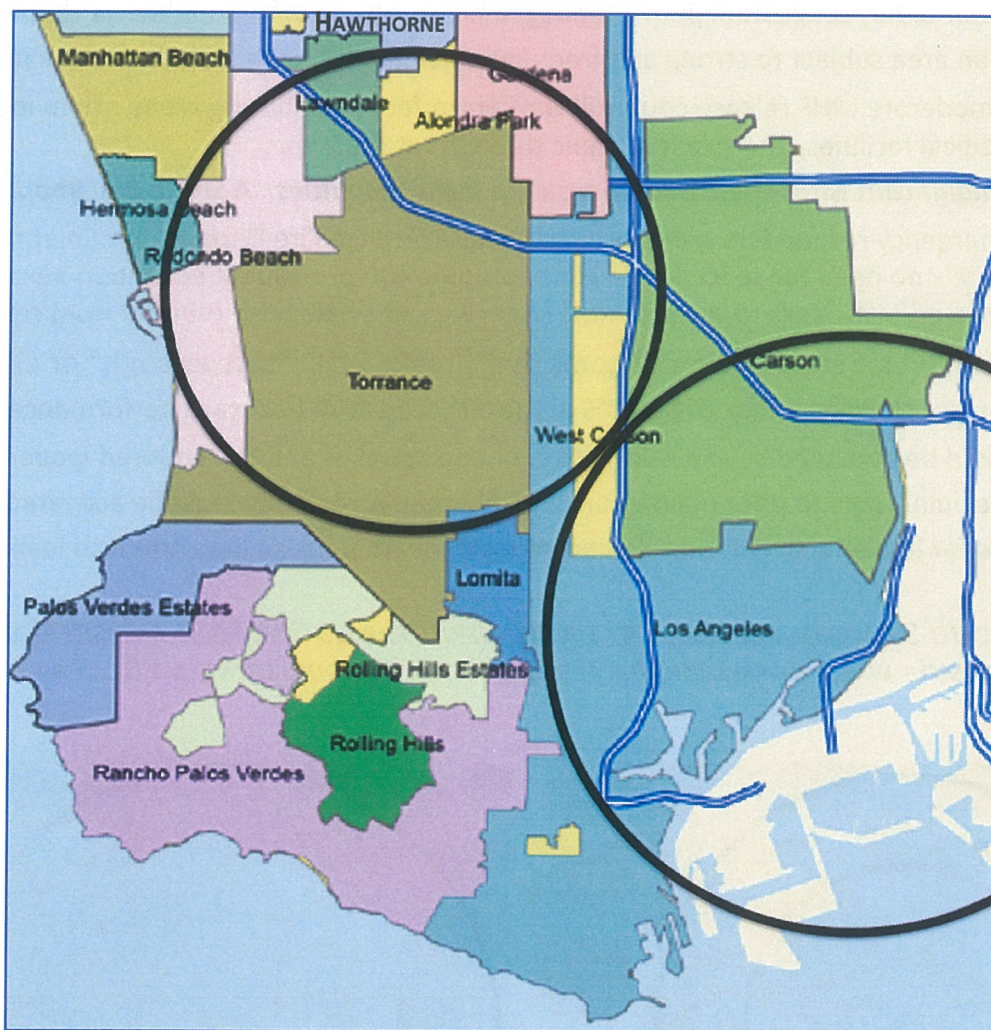
Sign our online petition: http://www.petitions24.com/remove_hydrofluoric_acid

Only two CA refineries use any form of the toxic and deadly chemical, hydrofluoric acid (HF)

*ExxonMobil, Torrance: 250,000 lb. **modified HF (MHF)** & Valero, Wilmington: 578,000 lb. MHF*

South Bay Cities at greatest risk from a MHF release (note: nearby cities could also be impacted)

*Carson, Gardena, Hawthorne, Hermosa Beach, Lawndale, Lomita, LA, Manhattan Beach, Torrance, and the County of LA District 2. (+ Long Beach) 616,000 residents in the two zones, below, are in danger of exposure at concentrations sufficient to cause death or serious & irreversible injury, based on scenarios submitted by the refineries for EPA off-site consequence analysis. *Actual exposure depends on factors like wind direction.**



Big West Refinery's 2008 request to use MHF outside Bakersfield was denied as too dangerous. How, then, is MHF safe enough for the heart of the South Bay? "Modified hydrofluoric acid (MHF) [is] an extremely toxic and volatile compound that can pose a risk to the public health and the environment... eliminat[ing] the use of hydrofluoric acid in any form [would be] a very substantial benefit."

Office of the California Attorney General (Jerry Brown, 2008)