THE ONLY FEASIBLE OPTION: REPLACE MHF

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LIKE US ON FACEBOOK

1987

2009

2012

2009
1984 Bhopal: World’s Worst Chemical Disaster

A “failsafe” American Union Carbide plant in Bhopal, India, released 60,000 lb. of a toxic volatile chemical, MIC.

30,000 deaths, 500,000 permanently injured/disabled
Mobil told arriving TFD firefighters to hose down the HF unit, or it might explode and “kill everyone within 3 miles”
Catastrophic Release Possible Despite “Safety” Claims

Official EPA MHF hazard zones assume MHF is 90% less deadly

Toxic Distances (radii)
- 3.2 mi Torrance
- 4.3 mi Valero

Serious irreversible health effects (death close in) inside zones 1-hr exposure.

≥616,000 combined at risk in the 2 zones

40,000 – 50,000 exposed to plume inside toxic radii

MHF NOT “SAFE”!!
HF HAZARD ZONES = ACTUAL MHF RISK

Based on EPA WCS parameters and using official ToRC & Valero Scenarios

DEATH first 8-9 MILES
Serious irreversible harm
16 mi (Torrance) 17 mi (Valero)

5,000,000 at risk inside 652 mi² zone

~300,000 exposed to plume inside toxic zone

Tens of thousands exposed to less toxic concentrations beyond

Release from acid settler nearly struck in 2015

US HF refineries’ average Toxic Distance = 15 mi

Kerr-McGee HF release plume went 18 mi.

S. Hayati, Ban Toxic MHF

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9am, school in session. If 8,300 lb. of settler tank’s 50000 lb. stayed airborne, 50,000 could’ve died in 10-20 min on that “very still morning... [with] no wind.”
Husky Evacuation Zone

70 sq. mi. zone
~700,000 residents
LAX, 405, 105, & 110 FWYs
Southerly winds are common in the a.m.
MHF REPLACEMENT WILL CREATE ~ 800 JOBS

• ACCORDING to ToRC’s Burns McDonnell in 2017. MHF replacement...
  – Creates 400++ jobs at each refinery during construction
  – Adds $80 million++ by each refinery to work force income
• ~40 workers *temporarily displaced* during 4-mo (Torrance) and 12-mo *unit* downtimes

PBF just bought the Shell Martinez refinery for $900M. It likes CA; won’t shut down.
MHF replacement cost per refinery ~ $300-400M, NOT one billion as ToRC claims.
NORMAL ACCIDENTS: OUT OF CONTROL FIRES

Husky Energy WI HF refinery. 2017

Philadelphia E. Solutions MHF refinery, 2019

Richmond Chevron 2012 sulfuric acid

Torrance Mobil HF refinery, 1979 and 1987
• **Tupras** 7.5 earthquake; water pipeline ruptures; *Fire raged for 5 days*
• **Cosmo** stronger seismic standards than CA. 9.0 quake 200 miles away.
  – *Fires burned out of control for 10 days*
• 1990 Torrance brief (lawsuit): “*process units are highly congested; don’t meet Mobil's minimum fire and safety standards for between units.*” Insurers warned "a domino-type catastrophe should even one unit [catch]... fire.”
“No one can foresee all the possible scenarios of disaster”

J. Reason, Fig. 1.4
Managing the Risks of Organizational Accidents

Swiss cheese model
of safety incidents

- Ideally, all defensive layers are intact and do their jobs as expected
- But unknown latent conditions build up with time, forming “holes” in defense layers
  - During design, manufacturing, calibration, maintenance, testing, in response to operator actions, etc.,
- SW models can’t account for latent errors or predict “active failures” that cause disaster

Inability to predict, understand, and model → inability to design failsafe systems