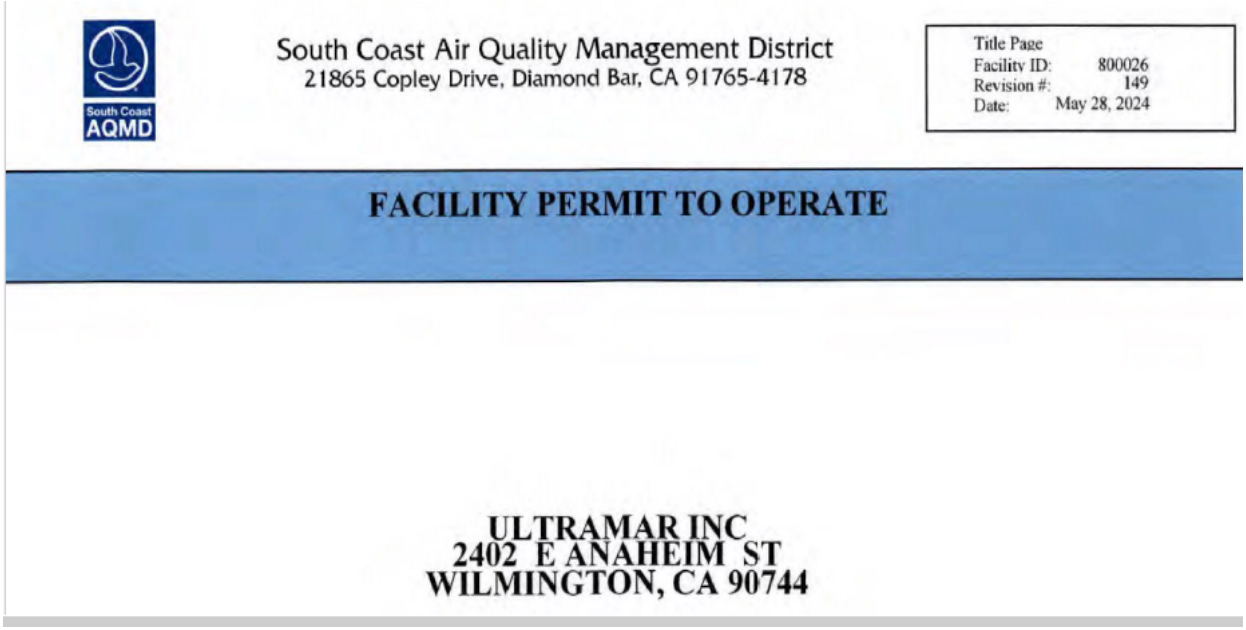
33-PAGE AMENDED
CITIZEN PETITION TO THE US EPA ADMINISTRATOR TO OBJECT TO THE REGION 9 PERMIT RENEWAL AS CONSTITUTED ON MAY 28, 2024 FOR THE VALERO ULTRAMAR WILMINGTON HF REFINERY 2402 EAST ANAHEIM STREET, WILMINGTON, CA 90744 AND REQUESTING THAT THE US EPA REQUIRE NEEDED PERMIT ADDITIONS AND MODIFICATIONS AS OUTLINED HEREIN

Submitted by:
Genghmun Eng ("Citizen")
5215 Lenore St., Torrance, CA 90503
geng001@socal.rr.com
July 13, 2024


South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178

Title Page
Facility ID: 800026
Revision #: 149
Date: May 28, 2024

FACILITY PERMIT TO OPERATE

ULTRAMAR INC
2402 E ANAHEIM ST
WILMINGTON, CA 90744

Submitted to: *US EPA Headquarters (HQ), Attn: Operating Permits Group Leader, Mail Drop: C-504-01, 109 T.W. Alexander Drive, P.O. Box 12055 RTP Research Triangle Park, NC 27711*

cc: *Ultramar, Inc., 2402 E. Anaheim St., Wilmington, CA 90744*

cc: *Mr. Gerardo Rios, Air Permits Manager, US EPA Pacific-Southwest Region 9 75 Hawthorne St., San Francisco, CA 9105 {Rios.Gerardo@epa.gov}*

cc: *Dr. Bhaskar Chandan, Senior Air Quality Engineering Manager The South Coast Air Quality Management District 21865 Copley Drive, Diamond Bar, CA 91765 {BChandan@aqmd.gov}*

ABSTRACT

The Valero Ultramar HF Refinery (Facility ID=800026) is located at 2402 E. Anaheim St., Wilmington, CA, 90744 *{"Refinery", "Facility", or "Refinery Facility"}*, operated by or under the auspices of Valero Energy Corporation *{"Operator"}*. As this is a *Title-V EPA-Permit Renewal ("EPA-Permit")*, the *Refinery Operator* has an extensive EPA-Permit Record, including its communications to various oversight agencies.

Citizen was able to review some of those records, as disclosed through a Public Records Act (PRA) request; and found numerous cases, as outlined in this Petition, where the *Operator* delivered non-compliant documents as if they were compliant to the applicable regulations, including defects such as:

(i) being incomplete, or
(ii) being deliberately misleading,

to the point where regulatory agencies are on record as believing in the robust nature of *Refinery Operator* compliance, where in fact Citizen's detailed document review, as outlined herein, shows the opposite may be true.

As a result, Citizen prays the US EPA Administrator *{"Administrator"}* formally object to this 5/28/2024 *'Title-V EPA-Permit Renewal' {"EPA-Permit"}* as it is presently constituted *(Version #149)*, and that the US EPA Administrator require timely and needed *EPA-Permit* additions and modifications as outlined and proposed herein, in order to be more properly protective of the Public Health and Safety of the people in the Underserved Community of Wilmington, CA 90744, and its surrounding areas.

These proposed additions and modifications are especially needed to better address the ongoing risk to the Public Health and Safety with respect to the Valero Ultramar on-site use and storage of hundreds of thousands of pounds of deadly anhydrous Hydrogen Fluoride (HF) and modified Hydrofluoric Acid (MHF), primarily within their *Refinery* Alkylation Unit and associated *Refinery* structures.

This Amended Petition includes additional Relief sought by Citizen regarding improved assessment, as a function of time, of the amounts of Hydrogen Fluoride (HF) or modified Hydrofluoric Acid (MHF) that are: (I) Incoming or imported into the *Refinery Facility*; (II) Stored on-site at the *Refinery Facility*; (III) In-use in the 'Alkylation and Isomerization Unit' (A-I-U) and its associated structures at *Refinery Facility*; (IV) Converted at the *Refinery Facility* into other Fluoride-containing materials as *solid waste*; or (V) Escaped from the *Refinery Facility* as fugitive emissions or unaccounted for materials; and better safety assessments of the (A-I-U) and its associated structures, so as to better comply with the Toxic Substances Control Act (TSCA) and Resource Conservation and Recovery Act (RCRA) requirements for concentrated fluorides.

Documents Referenced

Doc-OO: Facility ID 800026 *Final-Title-V*: In this Citizen Petition, the "*Final-Title-V*" identifier is used to indicate a hypothetical future document, where all the Citizen elements and concerns herein are taken into account, beyond what was vetted by the US EPA Region 9 in the 'Facility EPA-Permit to Operate (Version #149 of 5-28-2024)', which is called the *'EPA-Permit'* here.

Doc-01: Citizen Emergency Petition to the US EPA Region 9 staff, dated 10 May 2024, appealing SCAQMD 5/28/2024 decision to grant a Valero-Ultramar *'Title-V EPA-Permit Renewal' {"EPA-Permit"}*, and further requesting *EPA-Permit* additions and modifications to be properly protective of the Public Health and Safety.

Doc-02: Letter of June 18, 2024 to Citizen from US EPA Region 9 Staff noting that no *EPA-Permit* changes were made, due to Region 9 Staff accepting the *EPA-Permit* as-is, and that Citizen should submit a Petition directly to US EPA Headquarters (HQ).

Doc-03: "40 CFR_Part-70_rev-6-25-2024_84pp.pdf".

Doc-04: "40 CFR_Part-63-Subpart-UUU_rev-5-02-2024_151pp.pdf".

Doc-05: "40 CFR_Part-68_55pp.pdf".

Doc-06: 2021-01-20_US President Executive Order (EO) 13985.

Doc-07: Listing of 145 California Underserved Communities by Zip Code out of 1765 total, as determined by the California Department of Insurance, Structural Analysis Division.

Doc-08: US EPA "Equity Action Plan Summary" in response to U.S. President Executive Order EO-13985.

Doc-09: 1987-11-04_"Conduct of Anhydrous Hydrofluoric Acid Spill Experiments"; D. N. Blewitt and J. F. Yohn, Amoco Corp., Chicago, IL; R. P. Koopman and T. C. Brown, Lawrence Livermore National Laboratory (LLNL), Livermore, CA.

Doc-10: "2018-09-22_GEng_Rainout-plus_to-SCAQMD.pdf".

Doc-11: "2017-07-21_GEng_Initial-Model_HF-Airborne-Release-and-Rainout-to-SCAQMD.pdf".

Doc-12: "2019-01-07a_GEng_HF-Clouds_104F-TankBreach.pdf".

Doc-13: *LAFD-2022* (693-pages, 2022). This "*LAFD-2022*" identifier is used to indicate the 693 page document release from the Los Angeles Fire Department (LAFD) CUPA (Certified Unified Public Agency), containing all the *Refinery* – CUPA written communications in their records. Citizen notes that this document release by the CUPA overseeing the Refinery Facility was the result of a PRA (Public Records Act) request by the Torrance Refinery Action Alliance (TRAA).

Doc-14: *LAFD-2022a* (10-pages, 2022). Citizen extracted 10 pages from the 693-page "*LAFD-2022*" highlighting various insufficiencies. Every insufficiency is a defect or flaw in the *EPA-Permit* Record, or the *EPA-Permit* Process. As such this Citizen Petition prays that the US EPA Administrator request and require all identified defects and flaws to be corrected, prior to issuance of a *Final-Title-V.*

Doc-15: Facility ID 800026 Title-V 'Facility EPA-Permit to Operate (Draft)' *{"Draft-Title-V"}* 1381 pages.

Doc-16: Facility ID 800026 Title-V 'Facility EPA-Permit to Operate (Version #149 of 5-28-2024)' from the US EPA Region 9 *{"EPA-Permit"}* 1369 pages.

Doc-17: 2024-05-05_"GEng_HF-Alkylation_is-part of Catalytic-Reforming.pdf".

Doc-18: SCAQMD Detailed Responses to Citizen and TRAA President Mr. Steve Goldsmith with respect to their objections and concerns regarding the *Draft-Title-V.* SCAQMD noted their decision was that no *EPA-Permit* changes were being made in spite of Citizen and TRAA objections and concerns (19 pp.).

PREFACE: On or about 10 May 2024, Citizen filed an Emergency Petition to the US EPA Region 9 staff, appealing the original SCAQMD 5/28/2024 decision to grant a Valero-Ultramar *'Title-V EPA-Permit Renewal' {"EPA-Permit"}*; and further requesting *EPA-Permit* additions and modifications to be properly protective of the Public Health and Safety *{Doc-01}*. Citizen then received the following 18 June 2024 letter *{Doc-02}* from US EPA Region 9 Staff noting that no *EPA-Permit* changes were made, due to Region 9 Staff accepting the *EPA-Permit* as-is, and that Citizen should submit a Petition directly to:

US EPA Headquarters (HQ), Attn: Operating Permits Group Leader,
Mail Drop: C-504-01, 109 T.W. Alexander Drive, P.O. Box 12055
RTP Research Triangle Park, NC 27711

REGION 9
SAN FRANCISCO, CA 94105

June 18, 2024

Genghmun Eng
5215 Lenore Street
Torrance, California 90503

Via electronic mail

Dear Genghmun Eng,

Thank you for submitting your "Emergency Petition to the US EPA for Timely and Needed Additions and Modifications to the Proposed Title V Permit Renewal for the Valero Ultramar HF Refinery" to EPA Region 9 for the Ultramar, Inc – Valero Wilmington Refinery 800026 title V permit renewal. We received your submission at the San Francisco office on May 15, 2024, during our 45-day review period (April 5 to May 20, 2024).

Because EPA Region 9 did not object to the permit, the public has 60 days to submit a petition to the EPA Administrator requesting that EPA object to the permit. We encourage you to submit a petition directly to EPA Headquarters (HQ) as we are currently in the petition period (which runs from May 21 to July 18, 2024). Any petition requesting the Administrator's objection must be submitted directly to HQ using one of the three methods identified on EPA's website, https://www.epa.gov/title-v-operating-permits/title-v-petitions.

Before submitting a petition, we encourage you to review 40 CFR 70.12 for the public petition requirements. Additionally, citizen petitions have special rules, which are contained in Clean Air Act Section 505(b)(2) and EPA's regulations at 40 CFR sections 70.8(d), 70.12, and 70.14. Among other requirements, any issue raised in the petition as grounds for an objection must be based on a claim that the permit, permit record, or permit process is not in compliance with applicable requirements of the Clean Air Act or the regulations in 40 CFR part 70. Please note that we cannot object to a permit based on concerns about health and safety that are not related to a Clean Air Act requirement. EPA's rules can be found at https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-70.

If you have a question about how to file a petition, please email titleVpetitions@epa.gov. If you have questions about the specific permit submittal in EPS, please contact Nidia K. Trejo at (415) 972-3968 or email R9AirPermits@epa.gov.

Sincerely,

PO-CHIEH TING
Digitally signed by PO-CHIEH TING
Date: 2024.06.18 10:14:52 -07'00'

Po-Chieh Ting
Acting Manager on behalf of

Gerardo C. Rios, PE
Manager, Air Permits Section
Air and Radiation Division

cc (via email):
Bhaskar Chandan, SCAQMD Senior Air Quality Engineering Manager, bchandan@aqmd.gov
Steven Goldsmith, President, Torrance Refinery Action Alliance, sgoldsmith84@gmail.com

Citizen Petition: Background and Citizen Claims for Relief

Each Citizen Claim Background, Claim Details, and Relief Sought, are detailed individually next.

Claim_01: Applicability of 40 CFR_Part-63_Subpart-UUU and 40 CFR_Part-68

Claim_01 Background: Regarding Citizen Petition seeking the US EPA Administrator object to the *EPA-Permit* as presently constituted, Region 9 Staff noted that: "*..any issue raised in the petition as grounds for an objection must be on a claim that the Permit, Permit Record, or Permit Process is not in compliance with the applicable requirements of the Clean Air Act {"CAA"} or the regulations in 40 CFR part 70*." *{Doc-02}.*

Claim_01 Details: Citizen claims Region 9 Staff erred in narrowing the applicable requirements to only the CAA or 40 CFR_Part-70 *{Doc-03}*; and that the *EPA-Permit* needs to also require adherence to also include other portions of 40 CFR, such as 40 CFR_Part-63_Subpart-UUU *{Doc-04},* and 40_CFR_Part-68 *{Doc-05}*.

Claim_01 Relief Sought: Citizen prays the US EPA Administrator require *EPA-Permit* changes and modifications to be in compliance, especially with 40 CFR_Part-63_Subpart-UUU, among other sections, in manner as detailed in here in further **Claims**.

Claim_02: Applicability of US President Executive Order 13985

Claim_02 Background: On 20 January 2021, the Office of the US President issued Executive Order (EO) 13985 *{Doc-06}* entitled:

> *"Advancing Racial Equity and Support for Underserved Communities Through the Federal Government."*

which mandates special considerations for Underserved Communities by Federal Agencies, which includes the US EPA. In particular, EO-13985 Section 6 states:

> *"The Federal Government should, consistent with applicable law, allocate resources to address the historic failure to invest sufficiently, justly, and equally in Underserved Communities, as well as individuals from those communities."*

Furthermore, this particular Valero-Ultramar HF Refinery operates within Zip Code 90744, which is one of the 145 (out of 1765 total, only 8.2%) California Zip Codes identified in 2015 by the California Department of Insurance as an Underserved Community *{Doc-07}*.

As such, the Public in this Underserved Community requires and deserves special consideration from the US EPA, with regards to the Valero-Ultramar HF Refinery operation, above and beyond what the US EPA Region 9 Staff noted to Citizen Citizen *{Doc-02}* in its 18 June 2024 Letter:

> "*..any issue raised in the petition as grounds for an objection must be on a claim that the Permit, Permit Record, or Permit Process is not in compliance with the applicable requirements of the Clean Air Act {"CAA"} or the regulations in 40 CFR part 70 ... Please note that we cannot object to a Permit based on concerns about health and safety that are not related to a Clean Air Act requirement."*

Claim_02a Details: Citizen claims Region 9 Staff erred in narrowing the applicable requirements to only the CAA or 40 CFR_Part-70. Citizen claims that the *EPA-Permit* needs to also adhere to additional 40 CFR requirements besides just 40 CFR_Part-70, including 40 CFR_Part-63_Subpart-UUU applicability of to the *Refinery* '*Alkylation and Isomerization Unit*' (A-I-U) and associated *Refinery* structures as detailed further in the follow-on **Claim_09**.

Claim_02b Details: Citizen claims Region 9 Staff erred in their belief that the US EPA *"cannot object to a Permit based on concerns about health and safety that are not related to a Clean Air Act requirement"* because the new EO-13985 requirement goes beyond the Clean Air Act (CAA), which Citizen claims that the CAA only specifies a set of **minimum** possible requirements.

Citizen further claims that both the SCAQMD and US EPA Region 9 erred in not demanding or requiring specific *EPA-Permit* changes and modifications to address this new EO-13985 requirement, as compared to the prior renewal period, when this requirement was not present.

Furthermore, as a result of EO-13985, the US EPA formulated its "Equity Action Plan Summary" *{Doc-08}*, where its first sentence says "*The Environmental Protection Agency's (EPA) is to protect human health and the environment.*" Citizen finds this broad mandate for Underserved Communities supersedes the Region 9 Staff ignoring human *'health and safety'*.

Claim_02 Relief Sought: Citizen prays the US EPA Administrator allow, enable, and require *EPA-Permit* changes and modifications, as special considerations for the Underserved Community of Wilmington, CA 90744, in compliance EO-13985, including new explicit provisions that help to enhance and further protect human *'health and safety'* in the Underserved Community of Wilmington, CA, which surrounds the Valero-Ultramar Wilmington HF Refinery, as further detailed in herein, including specifically the follow-on **Claim_03** next.

Claim_03: EO-13985 Requires Better Adjudication of HF/MHF Risks

Claim_03 Background, Part 1: Citizen finds that one of the largest Public Health and Safety concerns for the Wilmington Underserved Community is the possibility of an accidental Catastrophic release of massive amounts of deadly anhydrous Hydrogen Fluoride (HF) and/or modified Hydrofluoric Acid (MHF), from their *Refinery 'Alkylation and Isomerization Unit'* (A-I-U) and associated *Refinery* structures, or their on-site HF/MHF storage, which can be in the hundreds of thousands of pounds.

Only 2 of 17 California Refineries or about 12% operate with an HF/MHF Alkylation process, in contrast to about 50 of 125 (40%) for the whole USA. However, sorting HF Refineries by population-at-risk in a Catastrophic HF/MHF release scenario, the SCAQMD found the two California HF Refineries are #1 and #2 in the nation, so that the cost to human lives and injuries could be the largest.

The HF alkylation process started in 1966 at Torrance and 1969 at Wilmington, long after the region had nearly fully developed nearby neighborhoods. However all HF Refineries initially used an accidental release Model where all large-scale HF releases would all fall to the ground as 'rainout', and thereby be rendered harmless. Small-scale laboratory testing of HF releases under various laboratory conditions could always be impugned as not being representative of the *Refinery* Alkylation process. So, this 'rainout' model could never be tested without a large-scale HF release.

Finally, in 1986, Amoco Oil Co., in with Dr. Ronald Koopman of Lawrence Livermore National Laboratory (LLNL) performed a large-scale test of this 'rainout' model, using a controlled release of ~1000 gallons (~8300 pounds) of HF in the Nevada Desert, laying out collection pans all along the expected HF release path, to capture and measure the 'rainout' amount *{Doc-09}*. Instead of 'rainout', the HF release formed an unexpected ground-hugging toxic cloud that rolled on for miles, which would have been toxic by inhalation to humans within 10 minutes, 2-3 miles away. The 'rainout' model that was the basis of HF Safety for large-scale HF releases was proven to be 100% wrong *{Doc-10, p.3}*.

1986 Pure HF Release Test in Nevada Desert

8300 lbs HF Release at 104ºF ≈ 3764.82 Kg ≈ 3986.28 Liters (orig. liquid)
http://www.aristatek.com/newsletter/0602February/PeekAtPeac.aspx

Figure 2 – Goldfish Series Anhydrous Hydrogen Fluoride release at HSC

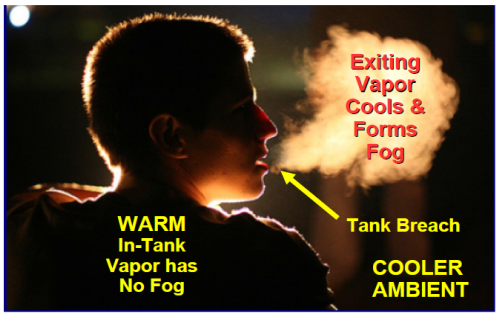
"The assumption.. was that any HF released.. would stay in liquid form and could be captured on site. *'None of the HF was collected as a liquid'*, said [Ron] Koopman [*Livermore Lab Physicist who oversaw test*]".*

* https://www.publicintegrity.org/2011/02/24/2118/use-toxic-acid-puts-millions-risk

Citizen has studied the likely reasons why a ground-hugging HF Cloud formed in the Nevada Desert test, using known and available properties of AHF (Anhydrous Hydrofluoric Acid), HF (hydrogen fluoride), HFA (standard Hydrofluoric Acid being a mixture of HF and water), and MHF (modified Hydrofluoric Acid, principally composed of pressurized and Anhydrous HF mixed with additives, primarily 10 wt% Sulfolane) *{Doc-10, Doc-11, Doc-12}*.

Citizen finds that even the high temperature dry Nevada Desert, there is still enough residual water-vapor molecules in the air to react with every HF molecule exiting during an HF/MHF Tank Breach, so as to form an HFA *Condensation Fog;* similar to why people 'see their breath' when exhaling into ambient cold-air, which forms a water-vapor *Condensation Fog {Doc-11, p.4}*.

Example of an Exiting Vapor Forming *Condensation Fog*



http://blogs.nbc12.com/weather/2015/02/why-do-we-see-our-breath-when-its-cold.html

"Why do we see our breath when it's cold out? Our lungs and mouths are filled with moisture .. some of this moisture exits in the form of water vapor. When the air temperature is cold enough, this vapor is forced to change from a gas into tiny liquid droplets [via] condensation."
Meteorologist Matt Holiner (2/6/2015)

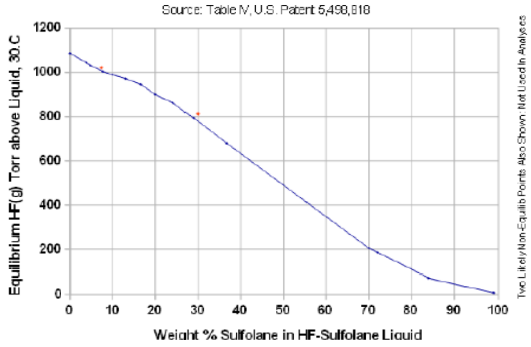
When the In-Tank HF(ℓ) is warmer than ambient, HF(g) exiting from a Tank-Breach can quickly form an HF(ℓ) *Condensation Fog*

In addition, the likely first reaction of an exiting HF molecule or HF molecular cluster would be to quickly form the HF-Water Azeotrope (HFZ) of HOH-HF-HOH = $H_3(OH)_2F$ *{Doc-10, p.9}*.

Citizen was able to use: [I] The Philips US Patent #5,498,818 disclosed information HF-Sulfolane mixtures; [II] Antoine equations, which is a class of semi-empirical *correlations describing the relation between vapor pressure and temperature* for pure substances; [III] The properties of HFA, which are known over a wide range of temperatures and pressures; and [IV] Conformal Mapping Mathematics; to develop a quantitative model for HF/MHF Tank Breaches involving the *Refinery* 50,000 lb HF/MHF *Settler Tanks*, where Isobutane and HF/MHF are allowed to settle out. The in-tank Isobutane forms an overlayer over the HF/MHF mixture, allowing recovery and recycling of the HF/MHF mixture.

Key Calibrations Needed for an HF Tank-Breach Model

- Antoine Equations for MHF can be estimated by scaling the known known MHF Patent data vs composition at 30.C, with the known Hydrofluoric Acid data over all compositions and temperatures.



{Doc-12, p. 2}

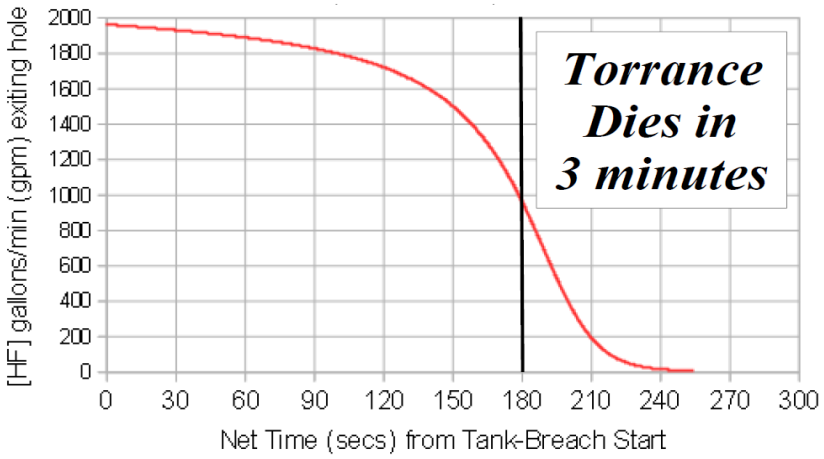
Citizen found that if Tank Breach occurs at or near the bottom of the *Settler Tank*, the Tank Breach outflow will be primarily governed by the Isobutane vapor pressure forcing the HF/MHF liquid out of the Tank bottom. Thus, the vapor pressure lowering effects of the Sulfolane additive to HF, which creates the MHF, is only a small correction compared to the Isobutane vapor-pressure.

Citizen HF/MHF Tank Breach Modeling due to a pipe break of area 40 sq.cm *{Doc-10, p.5}* gave:

HF-Cloud from 40 cm^2 Tank Breach at Bottom (96% full with MHF)

104°F Tank Breach: Anhydrous [HF] with 6 wt% Sulfolane

plus 3 wt% Liquid Hydrocarbon overlayer of Isobutane



- **Time to empty 50,000 lb [HF] Tank given present In-Tank materials.**

{Doc-12, p.6}

The Valero-Ultramar *Refinery* would likely have similar A-I-U conditions. This Figure sets a time-scale for the needed Emergency Response for the case of a Catastrophic HF/MHF release.

In addition, the SCAQMD disclosed that the normal A-I-U process has a continuous flow of HF/MHF and Isobutane mixtures which are pressurized to about 225 psig, which actually could result in an even faster emptying out of the Settler Tank. It means that the real worst-case A-I-U scenario would be worse than predicted by the above graphic, for a Tank Breach where this pressurization is not shut-off.

This fact is now beyond reasonable doubt: Catastrophic Category-4 HF/MHF Releases will result in extreme offsite consequences with a likely large toll in loss of human life, and great human injury. In this case, absent an 'Act of God', it is not clear whether any ERM (Emergency Response Manual) or ERP (Emergency Response Plan), or any amount of coordination or pre-coordination with outside agencies could prevent massive injury and loss of human life in the event of a Catastrophic Category-4 HF/MHF Release. However, with a robust ERM and ERP and coordination and pre-coordination with outside agencies may reduce the amount of injury and loss of human life in such an event from being 'Catastrophic' to only being 'massive'. The US EPA itself and the US Chemical Safety Board (CSB) has acknowledged the existence of this existential risk.

Claim_03a Details: Citizen finds that both the SCAQMD and US EPA erred in the *EPA-Permit*, which is an *EPA-Permit Renewal*, by having no NEW provisions as special considerations for the Underserved Community of Wilmington, CA 90744, in compliance EO-13985. Since there are now known, proven, available, and commercially-viable alkylation alternatives that do not require HF/MHF catalysis, both the Valero-Ultramar *Final-Title-V* and the Valero-Ultramar VRRP (Voluntary Risk Reduction Plans) need to include provisions to accommodate this technical advance.

Claim_03b Details: When the *Refinery 'Alkylation and Isomerization Unit'* (A-I-U) HF Alkylation Units were first installed in Los Angeles County *(1966 Mobil Torrance Refinery, 1969 Wilmington Refinery)*, as add-ons to the pre-existing original *Refinery* operations, the prevailing *Refinery* A-I-U Health and Safety model was that was **assumed** by the *Refinery Operators* was that any large-scale HF releases would result in the exiting HF falling to the ground as 'rainout', and thereby rendered harmless.

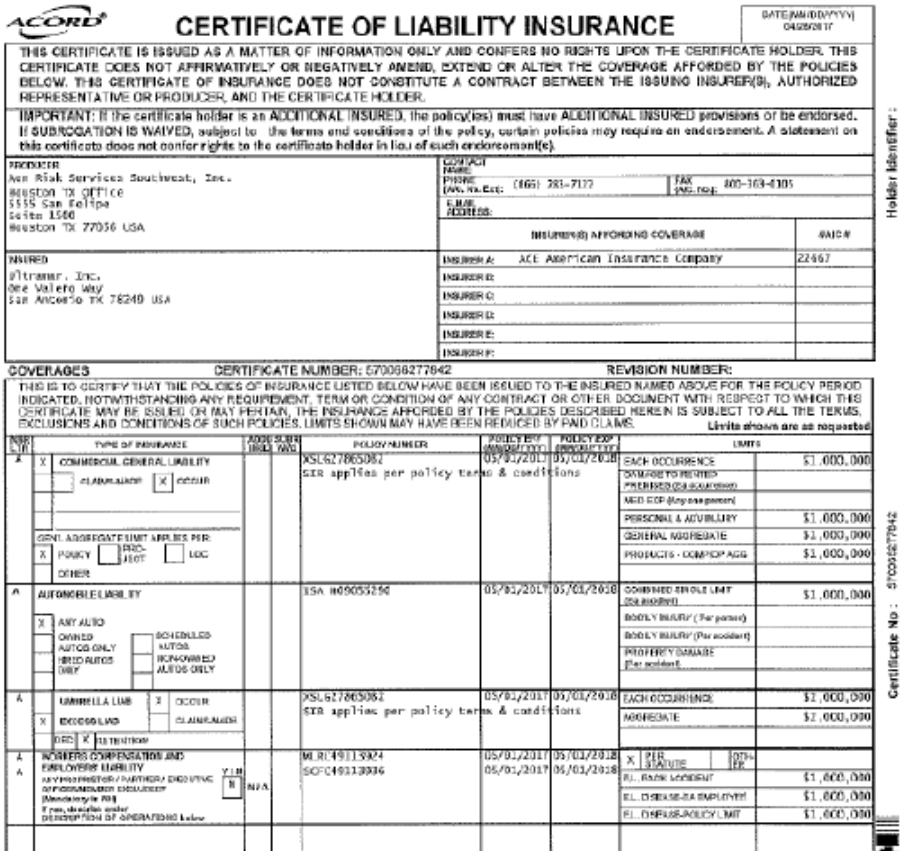
The concepts (a) of the HF release becoming 'rainout', i.e. falling to the ground, and (b) that released HF material merely hitting the ground would suddenly render the HF harmless; were both used as justification for the complete safety to the Public from any possible HF release impacts.

After the large-scale test of this 'rainout' model in the Nevada desert by Amoco Oil Co. and LLNL in 1986 experimentally proved that this 'rainout' model was 100% wrong, and that a large-scale ground-hugging toxic HF-cloud formed instead, which remained deadly to humans miles away within minutes, demonstrating that massive HF releases were a catastrophic hazard to Public Health and Safety; Citizen claims that the US EPA should have immediately begun the path to phase-out of massive HF use in *Refinery 'Alkylation and Isomerization Unit'* (A-I-U) HF Alkylation Units back then, and the US EPA erred in not doing so. Citizen further claims that this original US EPA error persists to this day.

In the 38 years since those 1986 tests, the viable and commercially-proven alternative of Ionic Liquid Alkylation has been fully demonstrated. Citizen claims that is is time for the US EPA to begin to correct this historical wrong, especially for the Underserved Community around the Valero-Ultramar HF Refinery in Wilmington, CA 90744, by having additional *Final-Title-V* conditions and enhanced Valero-Ultramar VRRP (Voluntary Risk Reduction Plans) that include provisions leading to the eventual phase out of HF/MHF Alkylation at this site, as well as these additional *Final-Title-V* conditions and enhanced Valero-Ultramar VRRP (Voluntary Risk Reduction Plans) being an appropriate US EPA Environmental Justice response that in accordance with the recent US President EO-13985 mandates.

Claim_03c Details: Citizen further claims that the present Valero-Ultramar General Insurance amount of only $1,000,000 per event is nowhere near sufficient to cover a Catastrophic Category-4 HF/MHF Release event, so that an additional Surety Bond is needed *{Doc-14, p.2}*.

ULTRAMAR-VALERO CERTIFICATION OF FINANCIAL RESPONSIBILITY GENERAL COMMERCIAL LIABILITY {p. 567 of 693} LIMIT OF $1,000,000 PER OCCURRENCE



ACORD

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DATE (MM/DD/YYYY) 04/28/2017

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Aon Risk Services Southwest, Inc.
Houston TX Office
5555 San Felipe
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E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: ACE American Insurance Company	22667
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	
INSURER F:	

INSURED
Ultramar, Inc.
One Valero Way
San Antonio TX 78249 USA

COVERAGES CERTIFICATE NUMBER: 570066277842 REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR			XSL627865082 SIR applies per policy terms & conditions	05/01/2017	05/01/2018	EACH OCCURRENCE	$1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	
							MED EXP (Any one person)	
							PERSONAL & ADV INJURY	$1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY PRO-JECT LOC OTHER:						GENERAL AGGREGATE	$1,000,000
							PRODUCTS - COMP/OP AGG	$1,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY			ISA H09055250	05/01/2017	05/01/2018	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
							BODILY INJURY (Per person)	
							BODILY INJURY (Per accident)	
							PROPERTY DAMAGE (Per accident)	
A	UMBRELLA LIAB X OCCUR X EXCESS LIAB CLAIMS-MADE DED X RETENTION			XSL627865082 SIR applies per policy terms & conditions	05/01/2017	05/01/2018	EACH OCCURRENCE	$1,000,000
							AGGREGATE	$1,000,000
A A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y / N	N/A	WLRC49113924 SCFC49113936	05/01/2017 05/01/2017	05/01/2018 05/01/2018	X PER STATUTE OTH-ER E.L. EACH ACCIDENT	$1,000,000
							E.L. DISEASE-EA EMPLOYEE	$1,000,000
							E.L. DISEASE-POLICY LIMIT	$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
SIR applies per terms and conditions of the policy.
Cancellation provision shown herein is subject to shorter or longer time periods depending on the jurisdiction of, and reason for, the cancellation.

CERTIFICATE HOLDER

State of California
State of Water Resources Control Board
Attn: Division of Financial Assistance
PO Box 944212
Sacramento CA 94244-2120 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services Southwest Inc.

Holder Identifier :

Certificate No : 570066277842

Claim_03a and Claim_03b Relief Sought: Citizen prays the US EPA Administrator allow, enable, and require *EPA-Permit* changes and modifications, as special considerations for the Underserved Community of Wilmington, CA 90744, in compliance EO-13985; including an updated Valero-Ultramar RMP (Risk Management Plan) as part of an updated Risk Management Program; as well having an updated RRP (Risk Reduction Plan) as part of an updated Risk Reduction Program; with this RMP and RRP development leading to the standing up an Alternative Alkylation Technology (AAT) Pilot Plant at the Valero-Ultramar HF Refinery during this *2024-2029 Final-Title-V* period, with the needed planning also completed so as to enable a full HF/MHF Phase-out in the follow-on *2030-2035 Title-V* period, including the elements as detailed next.

Presently, "Section D: Facility Description and Equipment Specific Conditions", paragraph *F24.1(a)*, notes the following *{Draft-Title-V*, p. 164 of 1381; *EPA-Permit*, p. 162 of 1369*}*:

> *F24.1(a): The Operator shall comply with the accidental release prevention requirements pursuant to 40 CFR Part 68 .. including the registration and submission of a Risk Management Plan (RMP).*

Its follow-on paragraph *F24.1(b)* should be relabeled *F24.1(d)*, so as to remain as the final Section *F24.1* item, with these new paragraphs added:

> *F24.1(b): The Refinery Facility Operator, as part of their RMP, shall maintain and upgrade their Refinery Facility Emergency Response Manual [ERM] for Corrosive Chemical Releases, including HF/MHF up through Category-4 ("Catastrophic") with off-site impacts.*
>
> *F24.1(c): Because a Category-4 (“Catastrophic”) HF/MHF release with off-site impacts will likely result in offsite injury or death, and given the advent of multiple commercially proven Alternative Alkylation Technologies (AAT), the Operator, as part of their ongoing Risk Reduction Program (RRP) shall:*
>
> > *F24.1(c)(1): Select an non-HF/MHF Alternative Alkylation Technology (AAT) within the 2024-2029 five-year Final-Title-V period, or earlier.*
> >
> > *F24.1(c)(2): Construct and make operational an on-site Pilot Plant demonstrating Operator ability to successfully perform large-scale alkylation using this AAT within this 2024-2029 5-year Title-V Permit period or earlier.*
> >
> > *F24.1(c)(3): Complete planning, vetted through the SCAQMD within the 2024-2029 five-year Final-Title-V period, for full phase-out of HF/MHF usage within the follow-on 2030-2035 Title-V timeframe, or earlier.*
>
> *F24.1(d): While a Catastrophic Category-4 HF/MHF off-site release may be unlikely, its economic and human and medical impact may be vast. Since the Operator is an LLC (Limited Liability Corporation), additional financial security needs to be provided to be provided to the pubic-at-large in case of such an event. Therefore, this period of Refinery Operator continued use of HF/MHF Alkylation needs to be supported by the LLC Operator posting a $1 billion Surety Bond with the City of Los Angeles, using an independent insurer vetted by the City of Los Angeles as capable of paying for human, medical, and property damages, in the unlikely event of such a scenario occurring, in order to mitigate the Public Health and Safety impacts of a Refinery 'Category-4' Catastrophic HF/MHF release.*

Claim_04: Continued *Refinery* HF/MHF Use Needs to be put under TSCA and RCRA

Claim_04 Background: Hydrogen Fluoride (HF) in all its forms, including Anhydrous Hydrogen Fluoride (AHF), Hydrofluoric Acid (HFA), and Modified Hydrofluoric Acid (MHF) are all toxic chemicals. As noted in:

https: // www.epa.gov / sites / default / files / 2013-09 / documents / citizens-guide.pdf

"The purpose of the Toxic Substances Control Act (TSCA) is to safeguard against unreasonable risks of harm to our health or the environment from toxic chemicals. TSCA does this by regulating the use, storage, and disposal of toxic chemicals."

"The Resource Conservation and Recovery Act (RCRA) protects our land as a valuable natural resource by reducing land disposal of hazardous wastes and by minimizing the risks posed by hazardous waste disposal. RCRA authorizes EPA to regulate hazardous wastes from “cradle to grave” (that is, from the point of generation to the point of disposal). Most notably, RCRA authorizes EPA to impose stringent requirements on facilities that treat, store, or dispose of hazardous waste by means of a permit program."

Claim_04 Details: Citizen claims that importing massive quantities of HF/MHF onto the *Refinery Operator* site poses a potentially unreasonable risks of harm to our health and the environment, due to the possibility large-scale HF/MHF release accidents forming ground-hugging toxic clouds. Thus the present *EPA-Permit* needs to have additional sections added to it, that go beyond the requirements of the Clean Air Act, and US President EO-13985, so as to conform to the TSCA and RCRA.

In particular, vetting the ongoing safety of the HF/MHF Settler Tanks, HF/MHF Storage Tanks, HF/MHF piping, and the whole 'Alkylation and Isomerization Unit' (A-I-U), and its associated *Refinery* structures to be done on an ongoing basis, with specific examination of all HF/MHF piping for thinning creating sensitivity for breakage, and specific examination of all flange connections for incipient leakage.

The *EPA-Permit* needs further sections added to it which specifically address the ongoing importation of HF/MHF onto the *Refinery* site, and to track in detail, by mass conservation, what the final “cradle to grave” disposition is for, all the flourine atoms from the originally imported HF/MHF, and to also fully assay all fluoride waste streams and fluoride waste materials what fluoride chemicals are present, and their amounts, as well as a full assay for other hasazardous non-fluoride materials that are present, and their amounts. These sections are needed in this *EPA-Permit* to conform to TSCA and RCRA requirements for the use, storage, treatment, and ultimate disposal of all HF/MHF brought onto the *Refinery Operator* site, to ensure ongoing Public Health and Safety from these toxic chemicals.

Claim_04 Relief Sought:

[Relief_04a] Sections need to be added to this *EPA-Permit* to bring under *EPA-Permit* control and specification all of the HF/MHF Settler Tanks, HF/MHF Storage Tanks, HF/MHF piping, and the whole 'Alkylation and Isomerization Unit' (A-I-U), with its associated *Refinery* structures; including what HF/MHF specific hardware safety and inspection metrics are needed that are different from the other *Refinery* structures, due to the materials in the A-I-U being mainly Monel(R), which is a nickel-copper alloy, instead of being a steel. The potential for HF/MHF corrosion of *Refinery* structures is different, because the acidity of the HF/MHF

creates different behaviors compared to the *Refinery FCCU (Fluidized Catalytic Converter Unit)*, which primarily handles crude and partially refined olefins.

Thus, *EPA-Permit* sections are needed that require yearly inspection of all Monel(R) pipes, tanks, flanges, and elbows to track wall thinning, and establish acceptance criteria vetted through the SCAQMD for when those pipes, tanks, flanges, and elbows need to be replaced.

[Relief_04b] Sections also need to be added to this *EPA-Permit* to bring the *Refinery Operator* under *EPA-Permit* control and specification to ensure proper *Refinery Operator* "cradle to grave" responsibility for all Flouride-containing materials brought onto the *Refinery* site, or already present at the *Refinery* site, including Hydrogen Fluoride (HF), Anhydrous Hydrogen Fluoride (AHF), Hydrofluoric Acid (HFA), and Modified Hydrofluoric Acid (MHF).

Citizen seeks improved assessment, as a function of time, of all the amounts of Hydrogen Fluoride (HF) or Modified Hydrofluoric Acid (MHF) that are in each category: (I) Incoming or imported into the *Refinery Facility*; (II) Stored on-site at the *Refinery Facility*; (III) In-use in the 'Alkylation and Isomerization Unit' and its associated structures at *Refinery Facility*; (IV) Converted at the *Refinery Facility* into other Fluoride-containing materials as *solid waste*; or (V) Escaped from the *Refinery Facility* as fugitive emissions or unaccounted for materials.

As concentrated levels of fluoride can be toxic to humans, this 'mass balance' for Fluorine atoms needs to be updated, with monthly reports to the SCAQMD, and releasable to the Public, so that both the Public and the SCAQMD can have increased confidence that the above (V) category is minimal, or to quickly identify when it is not. The SCAQMD should also be empowered to vet and validate the validity of all *Refinery* assessments in these different (I)-(V) categories, so as to be able to independently assess the accuracy of the *Refinery* reporting.

Claim_05 through Claim_16: Enhanced Valero-Ultramar RMPs and RRPs Needed

Claim_05 through Claim_16 Background: The LAFD-2022 *{Doc-13}* includes (pp. 312-510 of 693) the Valero-Ultramar "Emergency Response Manual" [ERM], which consists of 10 Parts ("ERM Part-1 – ERM Part-10") and 9 Appendices ("ERM Appendix A – ERM Appendix I"), with Part-1 through Part-5 constituting their "Emergency Response Plans [ERP]". These are only two portions of the entire required Valero-Ultramar Risk Management Program ("RMP"), the rest of which remains undisclosed. However, Citizen has already found numerous defects in those documents, thus Citizen seeks the US-EPA to require appropriate changes, enhancements, and modifications, to the:

[i] Valero-Ultramar *EPA-Permit*;
[ii] Valero-Ultramar ERM and its ERP subsections;
[iii] Valero-Ultramar ongoing "Voluntary Risk Reduction Plans" [VRRP], which is used as part of their required Risk-Reduction Plans ("RRP").

Citizen believes the risks and defects identified require curing and completion prior to granting the Valero-Ultramar *Refinery Final-Title-V*, in order to be properly protective of the Public Health and Safety. The defects found needing curing are summarized as "**Claim_05**" through "**Claim_16**".

Claim_05: Enhanced Report Submittals Needed

Claim_05 Background: Operating a *Refinery* in a manner that is properly protective of the Public Health and Safety requires ongoing attention to Risk Management through a having comprehensive Risk Management Program (RMP) and an ongoing Risk Reduction Program (RRP), which require ongoing updating and upgrading throughout the entire *Final-Title-V* operating period.

Claim_05 Details: The necessity for Valero-Ultramar to operate under a qualified RMP and RRP need to be explicitly called out in the *Final-Title-V*, as part of the "Section E: Administrative Conditions".

Claim_05 Relief Sought: Citizen prays the US EPA Administrator allow, enable, and require *EPA-Permit* changes and modifications, with language and modifications as follows: Under 'Section E: Administrative Conditions', the present "E-12" paragraph [*Draft-Title-V* {p. 353 of 1369} & *EPA-Permit* {p. 355 of 1381}], regarding Report Submittal should have these additional paragraphs added:

E-12: During this Final-Title-V period, Operator shall:

(E-12a) maintain, update, and upgrade their Risk Management Plans (RMP) and Risk Reduction Plans (RRP), and

(E-12b) make electronic copies of the most recent RMP and RRP automatically available to all on-site personnel on computer start-up, and

(E-12c) deliver all updated and upgraded RMP and RRP to the SCAQMD in a timely manner for review and concurrence.

E-13: A special RMP and RRP version, denoted here as "RMP-r" and "RRP-r", shall be delivered to the SCAQMD, with all proprietary, sensitive, and confidential information redacted out, so that these versions can be posted on the SCAQMD website for public comment and review, with such public comments and review handled by the SCAQMD in a manner consistent with their other operations.

E-14: The Operator Emergency Response Manual [ERM] and Emergency Response Plan [ERP], which are parts of the Operator RMP, shall be included as part of the RMP delivery. (E-14a) An ERM Paper Copy shall be made available in every physical office, for the case of a power-outage emergency.

E-15: The Operator Voluntary Risk Reduction Plans [VRRP] shall be included as part of the RRP delivery.

*{E-16: See 'Relief Sought' in **Claim_09**, as given in paragraphs following.}*

E-17: Defects in the Operator RMP, ERM, ERP and/or RRP identified by the SCAQMD, US EPA, or any other Public Agency, or the Public at large, with concurrence by the SCAQMD, shall be cured in a timely manner, according to a timetable set forth by the SCAQMD for defect curing, and delivered as an RMP or RRP update or upgrade.

(E-17a) All Operator Draft Versions of (E-17) shall be released to the Public for Public Comment, within 2 weeks of the SCAQMD receiving such Operator Draft Versions for compliance with (E-17).

*{E-18: See 'Relief Sought' in **Claim_11** as given in paragraphs following.}*

*{E-19: See 'Relief Sought' in **Claim_12** as given in paragraphs following.}*

E-20: {Present "E-12" paragraph regarding Report Submittal}

Claim_06: Operator ERM/ERP offers virtually no guidance for Category-4 Catastrophic HF/MHF Release Scenario

Claim_06 Background: The Valero-Ultramar ERM details their planned responses to various accident event scenarios, which are separated into the relatively innocuous 'Category-1', through the highest impact 'Catastrophic Category-4'. Properly included in Category-4 is a catastrophic HF/MHF release (LAFD-2022, p. 340 of 693) *{Doc-14, p. 5}*.

A Category-4 catastrophic HF/MHF release is considered by Valero-Ultramar as an event of this type:

"Energy Release: Corrosive Chemical Release".

A catastrophic HF/MHF release accident or scenario is expected to have extreme off-site consequences. The actions to be taken in this case are given in the Valero-Ultramar Emergency Response Plan (ERP) would then be governed by ERP_ Table_2-2 (LAFD-2022, p. 344 of 693) *{Doc-143a, p. 6}* as follows:

VALERO-WILMINGTON ERP (Emergency Response Plan), p. 339 of 693

"Category 4 Catastrophic Release"

Activation of emergency alarm

Management and emergency units required

Logistics Dispatcher to notify Los Angeles City Fire Department

Emergency Operations Center will be established.

Corporate Emergency Operations Center will be established.

Catastrophic release that will require internal or external evacuation, community or agency notification, emergency units, and major clean-up effort

Examples of Category 4 Incident are:

- Catastrophic H.F. Acid release Corrosive Chemical
- Catastrophic LPG release Flammable
- Catastrophic Pipeline rupture with spill Corrosive or Flammable
- Catastrophic Oil Spill at Marine Terminal Flammable

Representative Actions are listed in Tables 2.1 and 2.2.

{p. 342 of 693} Table 2.1: Flammable Liquid Vapor Release
{p. 343 of 693} Table 2.2: Corrosive Chemical Release

CORROSIVE CHEMICAL RELEASE

UNIT OPERATORS:

1. Report emergency to Lead Process Technicians LPT. Activate Emergency Response Plan.

NOTE: Some corrosive chemicals are not compatible with water.

2. Check MSDS information and know the chemicals in your area.

3. Activate deluge systems if available and safe to do so without protective equipment.

4. Activate fixed monitors to control the release at its source if safe to do so without protective equipment.

5. Evacuate personnel from area.

6. Isolate equipment at a safe distance, if possible. If the area cannot be safely entered by using protective equipment that the operator has been fully trained in its use, then divert the release to a safe containment area or continue dilution of the release using monitor streams.

FD/ERT:

1. Position portable monitors for the most effective control of the release at its source.

2. Personnel **trained in HAZMAT response will** don the **appropriate protective clothing** and attempt to isolate the release. Activities will be restricted to the level of training received including patching/plugging barrels and drums, installing special kits, control and containment of leaks and spills, neutralization, decontamination, etc. The possibilities of other emergencies that may occur are too numerous to discuss in detail. This section was provided to show typical response to the incipient stage of an emergency.

TABLE 2.2

To address this type of 'Catastrophic Category-4' event, the present Valero-Ultramar ERM/ERP appears to have only this 1-page. It contains just 6 items of generic information on what Valero-Ultramar staff and on-site Contractor Personnel might do, during such an accident or scenario with the added caveats: (i) if possible, (ii) if items are available, and (iii) where personnel activities will be restricted to the level of training received. The only other ERP advisement in Table 2-2 is that: "The possibilities of other emergencies that may occur are too numerous to discuss in detail." (LAFD-2022, p. 343 of 693).

Claim_06 Details: Citizen finds that the ERP advisement that: "*The possibilities of other emergencies that may occur are too numerous to discuss in detail*" is wholly inadequate. Thus, Citizen finds that this advisement means that **NO** actual guidance is being provided in the ERM/ERP for catastrophic Category-4 HF/MHF release accidents or scenarios. The *Refinery Operator* needs to cure this serious defect, as part of the *Final-Title-V*, by developing an upgraded RMP, ERP, and ERM in a timely manner that specifically includes Enhanced Guidance for the specific case of a Catastrophic Category 4 HF/MHF release scenario, as that event would constitute a Public Health and Safety Emergency of the highest order. As such, this Enhanced Guidance cannot involve, allow, or be restricted by any *Refinery Operator* claims of proprietary or confidential information, and it must be vetted by the SCAQMD.

Claim_06 Relief Sought: Citizen prays the US EPA Administrator concur with Citizen **Claim_06**, and mandate curing this defect by having the *Final-Title-V* specifically include:

> *F24.1(e): Because a Catastrophic Category-4 HF/MHF off-site release, although unlikely, can have vast economic and human and medical impacts, a further requirement for issuance of a Final-Title-V Renewal Permit, is that in addition to maintaining and upgrading their Refinery Facility Emergency Response Manual [ERM] for Corrosive Chemical Releases, including HF/MHF up through Category-4 ("Catastrophic") with off-site impacts, the Refinery Operator shall develop upgraded RMPs and ERPs, and ensure their upgraded ERM specifically includes:*
>
> > *F24.1(e)(1): Enhanced Guidance for all Refinery on-site personnel covering this case of a Catastrophic Category 4 HF/MHF release scenario with off-site impacts and make it available to all Refinery on-site personnel.*
> >
> > *F24.1(e)(2): Enhanced Guidance for outside agencies, on what pre-coordination is needed prior a Catastrophic Category 4 HF/MHF release with off-site impacts scenario.*
> >
> > *F24.1(e)(3): Enhanced Guidance for outside agencies, on what coordination should be done in the event of a Catastrophic Category 4 HF/MHF release scenario with off-site impacts, and what response time-scales are needed to minimize human injury and/or loss of life.*
> >
> > *F24.1(e)(4): The Enhanced Guidance for F24.1(e)(1) through F24.1(e)(3) shall be developed with a time-scale resolution of no coarser than a 10 second interval, and cover a period no smaller than 20 minutes (120 entries for Enhanced Guidance).*
> >
> > *F24.1(e)(5): Plan and develop a triple-redundant fail-safe system to detect HF/MHF Tank Breaches by the Refinery Operator.*
>
> *F24.1(f): Because a Catastrophic Category 4 HF/MHF release scenario with off-site impacts constitutes an extreme Public Health and Safety Emergency, the upgraded ERMs, RMPs, ERPs, and the Enhanced Guidance documents of F24.1(e)(1)-F24.1(e)(4), along with details of how the F21.1(e)(5) system operates in a manner that is protective of the Public Health and Safety, shall not be restricted by any Refinery Operator claims of proprietary or confidential information being involved.*

F24.1(g): As part of this Final-Title-V Renewal, the Refinery Operator shall deliver all F24.1(b) and F24.1(e) Enhanced Guidance documents and plans to the SCAQMD in a timely manner for vetting and review by the SCAQMD, and require SCAQMD concurrence prior to implementation.

F24.1(h): Because a Catastrophic Category 4 HF/MHF release scenario with off-site impacts constitutes a Public Health and Safety Emergency of the highest order, the SCAQMD shall be allowed to effect full release of all the F24.1(b) and F24.1(e) Enhanced Guidance documents and plans to the Public, so as to allow Public review and Comments in a timely manner to the SCAQMD, as part of achieving SCAQMD concurrence on the robustness of these Refinery Operator ERM, RMP, ERP, and Enhanced Guidance documents and plans.

F24.1(i): {Present "F24.1(b)" paragraph in Draft-Title-V and EPA-Permit.}

Claim_07: Operator ERM/ERP presently offers NO guidance for Category-4 Catastrophic HF/MHF Release Scenario that goes 'Outside the Refinery'.

Claim_07 Background: There is a 100% certainty (not a Claim but a fact) that a Valero-Ultramar Category 4 Catastrophic HF/MHF release scenario will go 'Outside the Refinery'. The Valero-Ultramar ERP details presented in the above **Claim_06 Background** shows that there are no ERP provisions for what coordination with outside agencies, or for what pre-coordination should be done or should have been done, to minimize the injury and loss of human life in a Category 4 Catastrophic HF/MHF release scenario. However, what the *Refinery Operator* presently does have is a 12-page *'Appendix E: Refinery Response Plan'*, as part of their EPR (Emergency Response Plan):

Claim_07 Details: Citizen finds that the Valero-Ultramar ERP does not even cover the case of Category 4 Catastrophic HF 'Leaks Outside the Refinery' *{Doc-03; Doc-14, p. 7}*. Furthermore, Citizen claims that, as a companion to the present-day Valero-Ultramar '*Fire Response Plan*', the *Refinery Operator* needs to develop a similar Comprehensive Emergency Response Plan (ERP) for a Category 4 Catastrophic HF/MHF Release *{Doc-14, p. 8}*, and update their ERP with this additional information. See also next page, which reproduces *{Doc-14, p. 7}* and *{Doc-14, p. 8}* regarding these items, as part of these **Claim_07 Details**.

Claim_07 Relief Sought: Citizen prays the US EPA Administrator concur with Citizen **Claim_06**, and **Claim_07**, and mandate that these defect be cured by including the above **Claim_06** language within the *Final-Title-V*, and by requiring the *Refinery Operator* to develop a companion document to their present-day '*Fire Response Plan*', for the case of a Category 4 Catastrophic HF/MHF Release *{Doc-14, p. 8}*.

VALERO-WILMINGTON ERP (Emergency Response Plan), p. 468-479 of 693

Appendix E: REFINERY FIRE RESPONSE PLAN

REFINERY

FIRE PREVENTION PLAN

1.0 GENERAL

1.1 This facility is engaged in the refining of crude oil to make a variety of petroleum products including gasoline. Flammable and combustible materials are therefore found throughout the refinery in either processing or storage areas or at loading racks where product is transferred to or from road vehicles. Areas where crude oil or intermediate or final products are present a special ignition hazard and are identified on Figure 1.1 the Refinery Process Area drawing. These areas are hereinafter referred to as "process areas". Other areas of the refinery are referred to as "non-process areas". Non-process areas include office and other buildings found with the non-process areas. Flammable and combustible materials may be found in non-process areas, but the hazard is generally less than that in process areas. Exceptions to this are as follows:

Warehouse - Flammable Gases

Laboratory - Flammable Gases, Liquids

These building areas are subject to similar controls to those for process areas. Conversely, controls may be relaxed in certain buildings within process areas where specifically posted.

1.2 This plan addresses process and non-process areas separately. All personnel not normally assigned to process areas should pay particular attention to restrictions on entry into process areas. All potential sources of ignition, including smoking materials, electrical devices and vehicles are prohibited unless specifically authorized under the refinery Hot Work Permit system or specifically exempted from permit requirements. The Safety Department shall be consulted if there is any doubt as to whether or not any item is a potential ignition source.

1.3 This Fire Prevention Plan is intended to meet the requirements of Section 3221 of the Cal-OSHA General Industrial Safety Orders. Because fire prevention is such an integral part of the design, operation and maintenance of the refinery, numerous programs and procedures exist to prevent fires. These programs and procedures are incorporated by reference herein.

12 Page Refinery Fire Response Plan

VALERO-ULTRAMAR
NEEDS TO DEVELOP A SIMILARLY
COMPREHENSIVE
RESPONSE PLAN

For a Category 4
Catastrophic H.F. Acid Release

VALERO-ULTRAMAR
APPENDIX I, pp. 490-510
ARE FORMS FOR SITE SAFETY PLANS

PAGE 510 IS LAST PAGE OF
VALERO-ULTRAMAR ERP

VALERO-WILMINGTON ERP (Emergency Response Plan), p. 352 of 693

No ERP for Category 4 Catastrophic HF 'Leaks Outside the Refinery'

2.5 HAZARDOUS MATERIAL LEAKS OUTSIDE THE REFINERY

Objectives

2.5.1 Identify the source and characterize the material.

2.5.2 Notify the appropriate local agencies.

2.5.3 Isolate the source and stop the leakage.

2.5.4 Contain the spill.

2.5.5 Clean-up the spill.

"Category 1 Minor"
Minor spill or leak of Five (5) gallons or less from a Valero owned and operated installation.

Leakage confined to land and not of sufficient quantity to cause a safety hazard or public concern.

"Category 2 Moderate"
Moderate leakage in or near a water way or any leakage of sufficient quantity to require more than a minor clean-up effort

Security will activate management call-out.

EOC members are required to report to the refinery anticipating EOC activation at discretion of the Incident Commander or Refinery Manager

Logistics Dispatcher to notify Los Angeles City Fire Department

"Category 3 Major"
Major Oil Spill or leak in or near a waterway has caused fire or injury or any leakage that has the potential to result in a serious hazard to environment or public.

Security to activate management call-out

Logistics Dispatcher notify Los Angeles City Fire Department

Emergency Operations Center will be established

Corporate Emergency Operations Center notified

NOTE: Appendix-H Located at the back of this ER Plan provides additional response instructions. You may also obtained additional detailed information in the Pipeline Contingency Plan and Marine Terminal Spill Response Manual.

APPENDIX H: HAZARDOUS MATERIALS DECONTAMINATION PLAN

pp. 485-487 of 693

Claim_08: The *Refinery Operator* does NOT have a comprehensive Risk Management Plan (RMP)

Claim_08 Background: Citizen notes that the "SCAQMD Response A-5" of 4/5/2024 to the original Citizen "Note 5" of 9/4/2023, expresses the present-day SCAQMD belief that *{Doc-13, p. 3 of 19}* that the *Refinery* has a “comprehensive Risk Management Plan (RMP)”.

> The refinery has a comprehensive Risk Management Plan (RMP) to reduce and prevent accidental chemical releases as required under Section 112(r) of the Clean Air Act (CAA). This RMP is updated and revised every 5 years with the US EPA. Facility Condition F24.1 on Ultramar’s Title V Permit requires the facility to comply with the accidental release prevention requirements of Section 112(r).

Claim_08 Details: Citizen finds that the information identified in the above **Claim_06** and **Claim_07** demonstrates that the Valero-Ultramar RMP is nowhere comprehensive. As such, Citizen finds that the SCAQMD erred in stating that the *Refinery* has a "comprehensive Risk Management Plan (RMP)".

Claim_08 Relief Sought: Citizen prays the US EPA Administrator concur with Citizen **Claim_06**, **Claim_07**, **Claim_08**, and mandate the Relief Sought by Citizen in these **Claims**.

Claim_09: 40 CFR_Part-63_Subpart-UUU Applies to Alkylation Unit

Claim_09 Background: Both the *{Doc-15}* 1381 page Draft, and the *{Doc-16}* 1369 page properly consider the Catalytic Converter Unit (CCU) transformation of input Crude Oil into *Refinery* Products, such as propane and other alkanes to be part the general process of Catalytic Reforming, which is proper. However, both the Draft and ignore the fact that the entire Valero-Ultramar *Refinery 'Alkylation and Isomerization Unit'* (A-I-U) should be considered as a Catalytic Reforming process, which, in this case, uses Modified Hydrofluoric Acid (MHF) as a catalyst to enable reforming of butanes and isobutanes into more profitable alkanes, such as octane.

The 'Refinery Feedstock' for the CCU is generally crude oil, or desulfurized crude. The 'Refinery Feedstock' for the A-I-U is generally n-butane and isobutane, combined with an MHF catalyst, primarily composed of anhydrous Hydrogen Fluoride (HF) mixed with HF vapor-pressure reducing agents such as Sulfolane ($C_4H_8O_2S$)

(Definition) 'Refinery Feedstock' [is] a product or combination of products derived from crude oil an destined for further processing other than blending in the refining industry. It is transformed into one or more components and/or finished products. {http: // www.unescwa.org > sd-glossary > Refinery-Feedstock}.

(Definition) 'Continuous Regeneration Reforming' means a catalytic reforming process characterized by continuous flow of catalyst material through a reactor where it mixes with Feedstock, and a portion of the catalyst is continuously removed and sent to a special regenerator where it is regenerated and continuously recycled back to the reactor. {40 CFR_Part-63, Section 63.1579}

(Definition) Monel(R) is a predominately nickel-copper alloy, with composition of approximately 63%-70% Nickel and 28%-34% Copper, along with small amounts of iron, manganese, carbon, and silicon. It is known has excellent corrosion resistance, especially in the presence of Hydrogen Fluoride (HF). However it is also known that the presence of HCl (Hydrogen Chloride) in pipeline streams made from Monel(R) tubing have been observed to be subjected to accelerated Stress-Corrosion Cracking so that HCl control in Monel(R) pipeline systems is important. {see: 'Stress-corrosion Cracking of a Monel 400 Tube' by A. I. Katsamas et al. (2004); https: // link.springer.com/article/ 10.1361 / 15477020421764 }.

https://link.springer.com/article/10.1361/15477020421764

Stress-corrosion cracking of a monel 400 tube

Peer Reviewed Articles | Published: December 2004
Volume 4, pages 44–50, (2004) Cite this article

Journal of Failure Analysis and Prevention

Aims and scope →
Submit manuscript →

A. I. Katsamas, G. N. Haidemenopoulos, A. D. Zervaki & I. Melas

Abstract

A bent Ni–Cu Monel 400 alloy tube, which operated as part of a pipeline in a petrochemical distillery installation, failed by through-thickness cracking. The pipeline was used to carry a stream of gaseous hydrocarbons containing hydrochloric acid (HCl) into a reaction tower. The tower provided a caustic solution (NaOH) to remove HCl from the stream, before the latter was directed to a burner. Metallographic examination showed that the cracks were intergranular and were frequently branched. Although nominal chemical composition of the component was found within the specified range, electron dispersive analysis by X-ray (EDXA) indicated significant segregation of sulfur and chlorine on grain boundaries. Failure was attributed to hypochlorous-acid (HClO)-induced stress-corrosion cracking (SCC). The HClO was formed by the reaction of HCl with atmospheric O_2, and the oxygen entered the tube during shutdowns/startups of the installation. Residual stresses, originating from the in situ bend forming of the tube during assembly of the line, provided a driving force for crack growth, and the segregation of sulfur on grain boundaries enhanced the susceptibility of the material to cracking.

Claim_09 Details: The Valero-Ultramar *Refinery 'Alkylation and Isomerization Unit'* (A-I-U) is a Catalytic Reforming process. Thus, the entire operation of the Valero-Ultramar A-I-U needs to be mandated to be made compliant the with the requirements of 40 CFR_Part-63_Subpart-UUU, with the *Final-Title-V* modified to require compliance to this Federal Regulation.

To provide additional documentation for some of the needed changes, Citizen has also prepared a companion document as part of the present Citizen Petition, entitled: "240505_GEng_HF-Alkylation_is-part of Catalytic-Reforming.pdf" *{Doc-17}*.

Claim_09 Relief Sought: Citizen prays the US EPA Administrator allow, enable, and require changes and modifications, so as to conform to the 40 CFR_Part-63_Subpart-UUU, including those paragraphs Citizen calls out in *{Doc-17}*. Critical to enabling this conforming is that a CMS (Continuous Monitoring System) is required for HCl (Hydrogen Chloride) throughout the A-I-U, with validation that HCl levels nowhere exceed 10 ppmv (10-parts-per-million-by-volume).

As part of the changes and modifications to conform to 40 CFR_Part-63_Subpart-UUU, the following paragraph *E-16* should be added:

> *E-16: The Refinery Operator shall effect and maintain all Refinery operations according to the requirements of 40 CFR_Part-63_Subpart-UUU. Any and all defects or deficiencies in their 'Catalytic Reforming' operations, with regard to 40 CFR_Part-63_Subpart-UUU, shall be cured by the Operator within one calendar year after initial defect or deficiency identification. In particular, the requirements of 40 CFR_Part-63_Subpart-UUU Table 22 shall apply to all aspects and areas of the Operator Alkylation Unit, where Continuous Monitoring System (CMS) data shall be developed and recorded to demonstrate compliance, with these CMS data made available for review, in a timely manner, to the SCAQMD, and to the Public, through the SCAQMD website.*

Claim_10: All on-site personnel should be Qualified Holders of the *Refinery* Emergency Response Manual [ERM]

Claim_10 Background: The Valero-Ultramar Wilmington Refinery has only 4 staff {M. Phair, R. Saint-Laurent, Jason Lee, and H. Pinto} and 4 small organizations {I-&-E-Shop, Safety Library, I.C. Vehicle, and the Primary Emergency Operations Center} as presently qualified to be "Holders of the Emergency Response Manual [ERM]" (LAFD-2022, p. 314 of 693). This defect needs to be cured prior to issuance of the *Final-Title-V.*

Claim_10 Details: Citizen believes that all *Refinery* on-site personnel should have the most recent Valero-Ultramar ERM on their electronic computer desktop, and every office should have its own paper copy, in case computers become unavailable during an emergency, much like the present-day requirements for MSDS/SDS distribution regarding chemical handling.

Claim_10 Relief Sought: Citizen prays the US EPA Administrator mandate above E-14 and E-14(a) of Citizen **Claim_05** as a method to cure this defect.

Claim_11: *Refinery Operator EPA-Permit* Record is NOT in compliance with applicable requirements as evidenced by *Refinery* – CUPA written communications

Claim_11 Background: The Valero-Ultramar information, given to the LAFD as the responsible CUPA (Certified Unified Program Agency) overseeing the operation of the Valero Ultramar Wilmington HF Refinery, as disclosed in LAFD-2022 *{Doc-13, Doc-14}*, is seriously deficient and incomplete.

Claim_11 Details: Citizen claims that because the Valero-Ultramar information, given to the LAFD as the responsible CUPA is seriously deficient and incomplete. Without needed changes and additions to the *Final-Title-V*, these deficiencies and incompleteness would carry over as unneeded and unnecessary continuing risks to the Public Health and Safety, so they need to be cured as part of the *Final-Title-V.*

In particular, this Citizen **Claim_11** finds this substantial flaw in the *EPA-Permit* Process: The *Refinery* staff can devote an arbitrarily large amount of effort to sending CUPA information that *appears*, in a cursory CUPA review, to be in conformance with applicable requirements. Whether the *Refinery* information disclosed to the CUPA is or is not actually complete or fully accurate likely requires a detailed examination of the *Refinery* provided *EPA-Permit Record*. The CUPA, as a single-point receiver of this *Refinery* information, is then a single-point failure for validating whether the *Refinery* provided information as a *EPA-Permit Record* is actually complete or fully accurate, or possibly not. In addition, the CUPA may not have the technical breadth or resources to actually determine the completeness or accuracy whether the *Refinery* provided information as a *EPA-Permit Record*. Citizen therefore finds that:

> [i] Having this single-point failure in the *EPA-Permit Process*, and
> [ii] Having the possibility that the CUPA may not have the technical breadth or resources to actually determine the completeness or accuracy of the *Refinery* provided information as a *EPA-Permit Record*,

both are serious flaws in the *EPA-Permit Process*, which needs to be cured as part of the *Final-Title-V.*

Claim_11 Relief Sought: Citizen prays that as part of the changes and modifications to cure the above identified defect in the *EPA-Permit Process*, the following paragraph *E-18* should be added:

E-18: The Refinery Operator shall continue to send all required Permit Record information to the Los Angeles Fire Department (LAFD) CUPA (Certified Unified Program Agency) for review and possible modification, as part of being properly protective of the Public Health and Safety.

(E-18a) Additionally, a copy of all (E-18) communications shall be sent to the SCAQMD (South Coast Air Quality Management District) as a second Agency with full power of review and modification, in order to be properly protective of the Public Health and Safety.

(E-18b) If any (E-18) communications contain proprietary, sensitive or confidential information, these shall be clearly identified by the Refinery Operator, in both the LAFD-CUPA and SCAQMD versions.

(E-18c) The SCAQMD shall be allowed to post all (E-18) communications on their website, with all Refinery proprietary, sensitive, and confidential information redacted out, so that these versions can be made available for Public Comment and review, with such Public Comments and review handled by the SCAQMD in a manner consistent with their other operations.

Claim_12: *Refinery Operator* disclosed *"Chemical Storage Inventory"* constitutes a seriously incomplete and deficient *Refinery Operator EPA-Permit Record* that needs to be cured prior to issuance of a *Final-Title-V.*

Claim_12 Background: The Valero-Ultramar information, given to the LAFD as the responsible CUPA (Certified Unified Program Agency) overseeing the operation of the Valero Ultramar Wilmington HF Refinery, as disclosed in LAFD-2022 *{Doc-14, Doc-13}*, is seriously deficient and incomplete.

In particular, a 55-page 'Ultramar Chemical Inventory' that was sent to the LADF-CUPA as part of the *Refinery Operator EPA-Permit Record* itself is seriously deficient and incomplete. Extracts from three of those 55-pages were combined in the following graphic *{Doc-14, p. 9}*, demonstrating several of these serious incompleteness and deficiency items:

From the LAFD CUPA: 55 Page Ultramar Chemical Storage Inventory, pp. 236-293 of 693

City of LOS ANGELES
CALIFORNIA

LOS ANGELES
FIRE DEPARTMENT
200 NORTH MAIN STREET
LOS ANGELES, CA 90012
(213) 978-3690

Hazardous Materials System
BP-8: Computer Listing of Inventory Submitted
Inspection Responsibility: VIU

Business No : FA0019079
First In : 038
Block # :

Printed on: 7/28/2011

Business Name	: VALERO WILMINGTON REFINERY	Business Address:	2402 E ANAHEIM ST,	Next Inspection Date:	06/15/2011
Business Owner	: ULTRAMAR INC A VALERO COMPANY		WILMINGTON, CA 90744	SIC Code	: 2911
On-Site Manager	: JASON LEE	Phone #	: (562) 491-6608	# of Employees	: 440
Emergency Contact	: JOHN BRIONES	Phone #	: (562) 495-5460 Ext:	Sq. Ft. of Facility	: N/A
Alt Emergency Contact	: JASON LEE	Phone #	: (562) 491-6608 Ext:	Permit Date	: 12/14/2010

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LOCATION: PROCESS AREA 16 — **NFPA-704: N/A**

Chemical Name	HM Type	Max Quantity on Hand	State	Fed Haz Catg
ALKYLATE	PURE	**408.00 OTHERS**	LIQUID	
Hazard Class:		*Storage Type:* ABOVEGROUND TANK		
Ingredients	*Max %*	*CAS #*		
ALKYLATE (C7-C12)		64741648		
Chemical Name	**HM Type**	**Max Quantity on Hand**	**State**	**Fed Haz Catg**
BUTANE MIXED	PURE	**1,257.00 OTHERS**	LIQUID	
Hazard Class:		*Storage Type:* OTHER		
Ingredients	*Max %*	*CAS #*		
N-BUTANE		106978		
ISOBUTANE		75285		
Chemical Name	**HM Type**	**Max Quantity on Hand**	**State**	**Fed Haz Catg**
CAUSTIC POTASH WALNUT	PURE	**40,000.00 POUNDS**	SOLID	
Hazard Class:		*Storage Type:* STEEL DRUM		
Ingredients	*Max %*	*CAS #*		
POTASSIUM HYDROXIDE	90.00	1310583		
WATER		7732185		
Chemical Name	**HM Type**	**Max Quantity on Hand**	**State**	**Fed Haz Catg**
HYDROGEN FLUORIDE, ANHYDROUS	PURE	**POUNDS**	GAS	
Hazard Class:		*Storage Type:* OTHER		
Ingredients	*Max %*	*CAS #*		
HYDROGEN FLUORIDE	100.00	7664393		
Chemical Name	**HM Type**	**Max Quantity on Hand**	**State**	**Fed Haz Catg**
IPC 6677C ADDITIVE SC-1043	PURE	**240.00 GALLONS**	LIQUID	
Hazard Class:		*Storage Type:* ABOVEGROUND TANK		
Ingredients	*Max %*	*CAS #*		
ACRYLAMIDE				
TRADE SECRET-HAZARDOUS				
Chemical Name	**HM Type**	**Max Quantity on Hand**	**State**	**Fed Haz Catg**
IPC 9315 CM ADDITIVE SC-221	PURE	**1,000.00 GALLONS**	LIQUID	
Hazard Class:		*Storage Type:* ABOVEGROUND TANK		
Ingredients	*Max %*	*CAS #*		
SODIUM HYDROXIDE				

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Claim_12a Details: Citizen finds the 55-page 'Ultramar Chemical Inventory' is a deficient and incomplete *EPA-Permit Record*, because of defects in the *'Maximum Quantity On Hand'*. Some units, such as *'pounds'* or *'gallons'* are universally recognized as quantities of matter. But in many cases, the quantity of matter is listed as *'others'*. Common sense requires that a *'1-pound'* unit of a Chemical-A should weigh the same as a *'1-pound'* unit of Chemical-B, and that the volume of a *'1-gallon'* unit of a Chemical-C should have the same volume as a *'1-gallon'* unit of Chemical-D.

However, in the 'Ultramar Chemical Inventory' is that there are multiple instances where the *'Maximum Quantity On Hand'* of a chemical is listed in the quantity unit of *'1-others'*. This unit of *'others'* is not specified as a unit of weight or a unit of volume, which is the first defect. The second defect is that as unit of weight, the quantity of *'1-others'*, may actually correspond to a different weights for different chemicals, or the quantity of *'1-others'*, as a unit of volume, may actually correspond to different volumes for different chemicals. In both cases, the quantity of *'1-others'* would be inconsistent, and thereby inaccurate. In addition to being a *EPA-Permit Record* defect, the *Refinery Operator* usage of the *'1-others'* unit, as disclosed a 55-page 'Ultramar Chemical Inventory', also violates "Section K(25) {(Permit) Administration}" [*Draft-Title-V* {p. 1352 of 1381} & *EPA-Permit* {p. 1339 of 1369}]:

> *"All records, reports, and documents required to be submitted by a Title-V Operator to AQMD or EPA shall contain a certification of accuracy consistent with Rule 3003(c)(7) by a responsible official (as defined in Rule 3000. [3004(a)(12)]"*

These defects render the Valero-Ultramar information provided to the LAFD CUPA as the responsible CUPA as deficient and incomplete, to the point that the actual hazard and risks associated with *Refinery* operation cannot be determined the CUPA or any other Agency, based on the *Refinery* information provided to the CUPA, which constitutes a serious risk to the Public Health and Safety.

Claim_12a Relief sought: Citizen prays the above defect needs to be cured prior to the issuance of a *Final-Title-V*, by having the 'Ultramar Chemical Inventory' redone by the *Refinery Operator*, with all chemical quantities listed in standard weight or volume units, with all '*others'* as a mass unit removed.

In addition, Citizen further prays, as part of the *EPA-Permit* changes and modifications to cure the above identified defects in the *EPA-Permit Process* and the *EPA-Permit Record*, that the following paragraph *E-19* be added to the *Final-Title-V*:

> *E-19: The Refinery Operator prepare an updated Chemical Storage Inventory at least yearly, which shall become part of the Final-Title-V Record information to the Los Angeles Fire Department (LAFD) CUPA (Certified Unified Program Agency) for review and possible modification.*
>
> *(E-19a) Additionally, a copy shall be sent to the SCAQMD (South Coast Air Quality Management District) as a second Agency with full power of review and modification.*
>
> *(E-19b) The SCAQMD shall be allowed to post all (E-19) material for Public Comment and review, with such Public Comments and review handled by the SCAQMD in a manner consistent with their other operations.*

Claim_12b Details: Citizen finds that the disclosed 55-page 'Ultramar Chemical Inventory' is a deficient and incomplete *EPA-Permit Record*, because many listed chemicals with a proper unit of quantity, such as *'pounds'* or *'gallons'*, have an amount that is BLANK. As shown in the above graphic *{Doc-14, p. 9}*, one of the most hazardous chemicals in the Inventory is Hydrogen Fluoride. The SCAQMD has independently disclosed that the *Refinery Operator* on-site amount of Hydrogen Fluoride ranges in the hundreds of thousands of pounds.

Therefore, in addition to being a *EPA-Permit Record* defect, the *Refinery Operator* having an amount that is BLANK, as disclosed a 55-page 'Ultramar Chemical Inventory', also violates "Section K(25) {(Permit) Administration}" [*Draft-Title-V* {p. 1352 of 1381} & *EPA-Permit* {p. 1339 of 1369}]:

> *"All records, reports, and documents required to be submitted by a Title-V Operator to AQMD or EPA shall contain a certification of accuracy consistent with Rule 3003(c)(7) by a responsible official (as defined in Rule 3000. [3004(a)(12)]"*

These additional defects render the Valero-Ultramar information provided to the LAFD CUPA as the responsible CUPA as deficient and incomplete, to the point that the actual hazard and risks associated with *Refinery* operation cannot be determined the CUPA or any other Agency, based on the *Refinery* information provided to the CUPA, which constitutes a serious risk to the Public Health and Safety.

Claim_12b Relief sought: Citizen prays the above defect needs to be cured prior to the issuance of a *Final-Title-V*, by having the 'Ultramar Chemical Inventory' redone by the *Refinery Operator*, with all chemical quantities having standard weight or volume units, with numerical amounts included.

In addition, Citizen further prays, as part of the *EPA-Permit* changes and modifications to cure the above identified defects in the *EPA-Permit Process* and the *EPA-Permit Record*, that the above paragraph *E-19* be added to the *Final-Title-V.*

Claim_12c Details: As the above **Claim_12 Background** graphic *{Doc-14, p. 9}* shows, the 55-page 'Ultramar Chemical Inventory' presented by the *Refinery Operator* bears a time-stamp of 7/28/2011. Subtracting 5-years from the present-day *EPA-Permit* date of 5-28-2024 gives 5-28-2019, indicating that the ***prior*** Valero-Ultramar *Title-V EPA-Permit* also had this defect. Subtracting another 5-years from that date gives 5-28-2014, indicating that the ***prior-prior*** Valero-Ultramar *Title-V EPA-Permit* also had this defect. Subtracting another 5-years from that 2014 date gives 5-28-2009, making it likely that this 55-page 'Ultramar Chemical Inventory' presented by the *Refinery Operator* was developed in response to a concern that was raised in the ***prior-prior-prior*** Valero-Ultramar *Title-V EPA-Permit* of circa 5-28-2009.

This is another serious violation of the "Section K(25) {(Permit) Administration}" [*Draft-Title-V* {p. 1352 of 1381} & *EPA-Permit* {p. 1339 of 1369}] requirements:

> *"All records, reports, and documents required to be submitted by a Title-V Operator to AQMD or EPA shall contain a certification of accuracy consistent with Rule 3003(c)(7) by a responsible official (as defined in Rule 3000. [3004(a)(12)]"*

as Citizen finds it inconceivable that the quantity for every listed chemical from more than 12 years ago remains valid today. This time-stamp defect renders the Valero-Ultramar information provided to the LAFD CUPA as the responsible CUPA as deficient, incomplete, and obsolete to the point that the actual hazard and risks associated with the present-day *Refinery* operation cannot be determined the CUPA or any other Agency, based on the *Refinery* information provided to the CUPA, which constitutes a serious risk to the Public Health and Safety.

Claim_12c Relief sought: Citizen prays the above defect needs to be cured prior to the issuance of a *Final-Title-V*, by having the 'Ultramar Chemical Inventory' redone by the *Refinery Operator*, with all chemical quantities having standard weight or volume units, with numerical amounts included, and including a new inventory time stamp. The SCAQMD should then be given the responsibility to actually spot-check the accuracy of this new inventory, including validating the chemical type, quantity unit, and quantity amount, with that spot-check specifically including Hydrogen Fluoride.

Citizen further prays, as part of the *EPA-Permit* changes and modifications to cure these identified defects in the *EPA-Permit Process* and *EPA-Permit Record*, that paragraph *E-19* be added to the *Final-Title-V.*

Claim_13: Only 7 of 286 'Chemical Description Pages' for OES 2731 given to the LAFD CUPA by the *Refinery Operator*

From the LAFD CUPA: 5 Pages Ultramar Chemical Storage Inventory, pp. 515-521 of 693

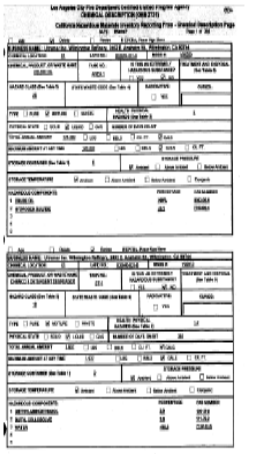
Los Angeles City Fire Department Certified Unified Program Agency
CHEMICAL DESCRIPTION (OES 2731) CD+
California Hazardous Materials Inventory Reporting From - Chemical Description Page
DATE: #Name? Page 1 of 286

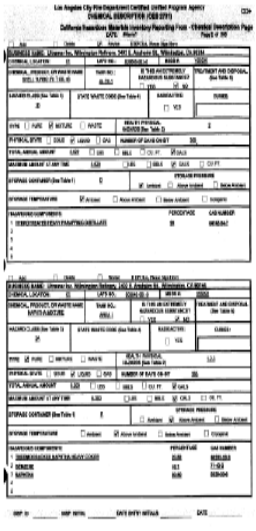
ONLY 7 PAGES OF 286 PAGES OF **OES-2731** RESPONSE INCLUDED
pp. 1-4, p. 176, p. 274-275

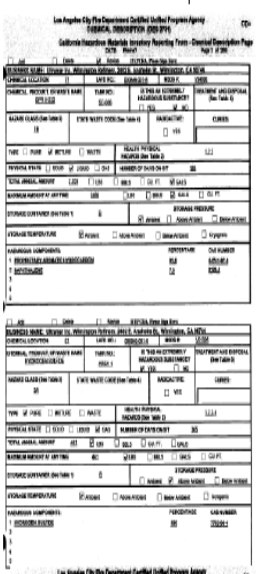

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS
HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION
☐ADD ☐DELETE ☐REVISE
I. FACILITY INFORMATION
BUSINESS NAME (Same as FACILITY NAME or DBA - Doing Business As)
CHEMICAL LOCATION
CHEMICAL LOCATION CONFIDENTIAL UCPA ☐ YES ☐ NO
FACILITY ID #
MAP#
GRID#
II. CHEMICAL INFORMATION
CHEMICAL NAME
TRADE SECRET ☐ Yes ☐ No
COMMON NAME
EHS* ☐ Yes ☐ No
CAS#
*If EHS is "Yes", all amounts below must be in lbs.
FIRE CODE HAZARD CLASSES
HAZARDOUS MATERIAL TYPE ☐a. PURE ☐b. MIXTURE ☐c. WASTE
RADIOACTIVE ☐ Yes ☐ No
CURIES
PHYSICAL STATE ☐a. SOLID ☐b. LIQUID ☐c. GAS
LARGEST CONTAINER
FED HAZARD CATEGORIES ☐a. FIRE ☐b. REACTIVE ☐c. PRESSURE RELEASE ☐d. ACUTE HEALTH ☐e. CHRONIC HEALTH
AVERAGE DAILY AMOUNT
MAXIMUM DAILY AMOUNT
ANNUAL WASTE AMOUNT
STATE WASTE CODE
UNITS* ☐a. GALLONS ☐b. CUBIC FEET ☐c. POUNDS ☐d. TONS
DAYS ON SITE
STORAGE CONTAINER ☐a. ABOVE GROUND TANK ☐b. UNDERGROUND TANK ☐c. PLASTIC/NONMETALLIC DRUM ☐d. CAN ☐e. FIBER DRUM ☐f. BAG ☐g. GLASS BOTTLE ☐h. PLASTIC BOTTLE ☐i. RAIL CAR ☐j. TANK INSIDE BUILDING ☐k. CARBOY ☐l. BOX ☐m. TOTE BIN ☐n. STEEL DRUM ☐o. SILO ☐p. CYLINDER ☐q. TANK WAGON
STORAGE PRESSURE ☐a. AMBIENT ☐b. ABOVE AMBIENT ☐c. BELOW AMBIENT
STORAGE TEMPERATURE ☐a. AMBIENT ☐b. ABOVE AMBIENT ☐c. BELOW AMBIENT ☐d. CRYOGENIC

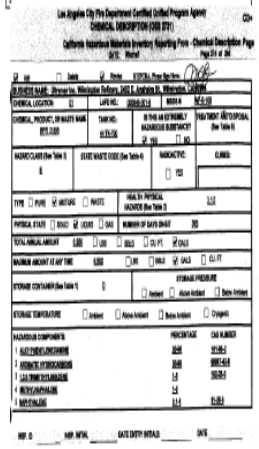
%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1		☐ Yes ☐ No	
2		☐ Yes ☐ No	
3		☐ Yes ☐ No	
4		☐ Yes ☐ No	
5		☐ Yes ☐ No	

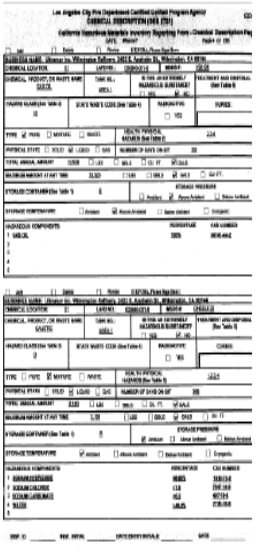
ADDITIONAL LOCALLY COLLECTED INFORMATION
Assessor's Parcel Number (APN):
If UCPA, Please Sign Here

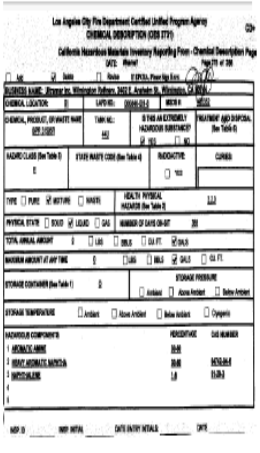












Claim_13 Background: The Valero-Ultramar information, given to the LAFD-CUPA overseeing the operation of the Valero Ultramar Wilmington HF Refinery, as disclosed in LAFD-2022 *{Doc-14, Doc-03}*, appears to be further incomplete, in that only 7 pages of an alleged 286 pages of "Chemical Description (OES 2731) Pages", appear to have been delivered by the *Refinery Operator* to the LAFD-CUPA, as reproduced here *{Doc3a, p. 10 of 10}*:

Claim_13 Relief Sought: The entire 286 pages of OES-2731 materials should be delivered to the LAFD-CUPA with a copy to the SCAQMD, which should then be allowed to make it available for Public Comment and Review through the standard SCAQMD channels, processes, and procedures.

Claim_14: Virtually no in-use *Refinery* Chemicals have "0.00E+00" Cancer Risk

Claim_14 Background: In "Section J: Air Toxics, Hazardous Air Pollution from Petroleum Refineries", the Risk Tables for Cancer Risk contain multiple entries listed as "0.00E+00". For virtually all *Refinery* use chemicals, having a "0.00E+00" value as a table entry makes those tables ***prima facie*** incorrect and inaccurate, rendering both the *Draft-Title-V* and the *EPA-Permit* as incomplete or improper documents [*Draft-Title-V* {pp. 1275-1295 of 1381} & *EPA-Permit* {pp. 1265-1285 of 1369}]. Allowing these "0.00E+00" is a defect in the *EPA-Permit Process*, with those values in documents being a defect in the *EPA-Permit Record*.

Citizen claims that these Tables need to be modified so as to contain **NO** inaccurate "0.00E+00" risk values associated with any listed *Refinery* use chemical. Citizen further claims all inaccurate "0.00E+00" values also violate "Section K(25) {(Permit) Administration}" [*Draft-Title-V* {p. 1352 of 1381} & *EPA-Permit* {p. 1339 of 1369}]

> *"All records, reports, and documents required to be submitted by a Title-V Operator to AQMD or EPA shall contain a certification of accuracy consistent with Rule 3003(c)(7) by a responsible official (as defined in Rule 3000. [3004(a)(12)]"*

These multiple pages of defects even more so further renders the Valero-Ultramar information provided to the LAFD CUPA, as the responsible CUPA, as deficient and incomplete, to the point that the actual hazard and risks associated with *Refinery* operation cannot be determined by the CUPA or any other Agency, which constitutes yet another additional very serious risk to the Public Health and Safety.

Claim_14 Details: Citizen originally believed that Valero-Ultramar response to the SCAQMD regarding these entries, would have been the equivalent of "The Computer Did It", which is not a valid excuse for matters of the Public Health and Safety. However, Citizen was stunned by the SCAQMD defending these inaccurate "0.00E+00" values as follows *{Doc-18, p. 5 of 19}*:

	Comment	South Coast AQMD Staff Response
A-7	**NOTE-B**: Appendix A, Tables 11-12, "Maximum Exposed Residential [Table 11] / Worker [Table 12] Cancer Risk Summary After Implementation of Risk Reduction Measures" contains two categories of tabulated entries under the column heading "Sum of RISK_SUM". One category are non-zero numerical values which range from 4.52E-06 to 3.44E-12. The other is 0.00E+00. There is NO ZERO RISK chemical. These tables need to be re-done with Valero's numerical values publicly disclosed.	"SUM of RISK_SUM" column is meant to reflect cancer risk. These tables are reproduced from output using software developed by California Air Resources Board (CARB), named Hotspots Analysis and Reporting Program (HARP). Some toxic air contaminants do not have approved cancer risk assessment health values, including some shown in Tables 11 and 12 of the VRRP. Thus, the resulting output from HARP correctly displays cancer risk to be 00E+00 for those toxic air contaminants without approved cancer risk health values.

The SCAQMD claim that the "*HARP **correctly** displays cancer risk to be 00E+00 for those toxic air contaminants without approved cancer risk health values*" in itself is a serious defect in the *EPA-Permit Process*, because it is a ***prima facie*** inaccurate value for virtually all hazardous *Refinery* chemicals.

Citizen claims that it is the *Refinery Operator's* responsibility to provide 'cancer risk health values', or a range thereof, for the chemicals they choose to have on-site and expose their workers, contractors, and visitors to. Citizen claims it is the job of the SCAQMD to review what the *Refinery Operator* provides, and ensure that the information is in accordance with "Section K(25) {(Permit) Administration}".

Citizen also claims *"HARP **correctly** displays cancer risk to be 00E+00"* would be a correct statement and correct process for the present-day "SUM of RISK_SUM" column **IF AND ONLY IF** the resulting cancer risk value is interpreted to be a **minimum** possible value for the cancer risk.

Citizen finds that this identified defect in both the *EPA-Permit Process* and *EPA-Permit Record* for this one item is likely an important contributor to why Environmental Justice Communities have significantly higher cancer rates than their surrounding communities. Citizen further claims being a **minimum** possible value does not relieve the *Refinery Operator* from the onus of developing a **maximum** possible value for each air toxic, even for those chemicals that does not have a specific approved cancer risk health value. The combination of both tables, one with the "SUM of RISK_SUM **minimum**" and one with the "SUM of RISK_SUM **maximum**" together would then be accurate and obey "Section K(25) {(Permit) Administration}".

Claim_14 Relief Sought: The listed cancer risk for each chemical in the *EPA-Permit*, and the "RISK_SUM" and "SUM of RISK_SUM" and associated values derived from those individual listed cancer risk entries must all be clearly labeled as a **Cancer Risk minimum**.

In addition, Citizen prays that the *Refinery Operator* be mandated to develop best-estimates for the **Cancer Risk maximum** for each of the chemicals they choose to have on-site and expose their workers, contractors, and visitors to, which do not yet have an *'approved cancer risk health value'*. The *Refinery Operator* should then produce companion **Cancer Risk maximum** tables that parallel the present **Cancer Risk minimum** *EPA-Permit* tables, and submit an updated *Final-Title-V* to both the SCAQMD and US EPA for review and concurrence.

Citizen also prays that the *Refinery Operator* be given a specific period of performance to complete an *Updated-Final-Title-V*, such as 1-year from the initial *Final-Title-V* issuance, with a fee or fine schedule for every month delay in table completion and submission of an updated *Final-Title-V* to both the SCAQMD and US EPA for review and concurrence.

Claim_15: Update "Statement of Findings … and Mitigation Monitoring Plan"

Claim_15 Background: Both the *Draft-Title-V* and the *EPA-Permit* contain this *Refinery Operator* requirement [*Draft-Title-V* {p. 162 of 1381} & *EPA-Permit* {p. 160 of 1369}]:

> *F8.1: The Operator shall comply with all applicable mitigation measures and/or project conditions stipulated in the 'Statement of Findings, Statement of Overriding Considerations, and Mitigation Monitoring Plan' document which is part of the SCAQMD Certified Subsequent Environmental Impact Report dated 8/30/2002 for this facility.*

This document over 20 years old. Citizen further notes that this document predates the massive Los Angeles Refinery Explosion of 18 February 2015 at the other HF Refinery within the SCAQMD purview, with that accident highlighting the potential need for new *Findings*, additional *Overriding Considerations*, and enhanced *Mitigation Monitoring Plans* at every *Refinery* that uses HF alkylation.

Claim_15 Details: Citizen claims that both the SCAQMD and US EPA erred in not having any documented review over the last 20 years to examine or justify whether any updates were or were not needed to any of the original 8/30/2002 *Refinery Mitigation Measures* or *stipulated project conditions* for the *Refinery Operator.* As a result, Citizen claims that an update to that original document is needed to be mandated by the US EPA.

Claim_15 Relief Sought: Citizen prays that the US EPA Administrator mandate the following additions to the *Final-Title-V* to cure the above defect:

> *F8.2: During this Final-Title-V renewal period (2024-2029), the Refinery Operator shall work with the SCAQMD to develop an "Updated SCAQMD Certified Subsequent Environmental Impact Report (UC-EIR)" including:*
>
> > *F8.2(a) An updated assessment of the Public Health and Safety risks associated with continued use of HF/MHF Alkylation by the Refinery Operator.*
> >
> > *F8.2(b) A specific evaluation of the Environmental Impacts of a 'Category 4' Catastrophic HF/MHF release, for HF/MHF release effects both within the Refinery, and 'Outside the Refinery'.*

Claim_16: Yearly Updates to Risk Management Programs (RMP) Needed

Claim_16 Background: In "Section D: Facility Description and Equipment Specific Conditions" [*Draft-Title-V {*p. 163 of 1381} & *EPA-Permit* {p. 161 of 1369}], it is noted that: "*The Operator shall comply with the terms and conditions set forth below: Hydrogen Fluoride*", with sub-sections (a.) through (e.) listed afterwards.

In addition, the regarding *Refinery Voluntary Risk Reduction Plans (VRRP)*, the SCAQMD document:

https: //www.aqmd. gov/docs/default-source/planning/ risk-assessment/ab-2588-vrrp-guidelines-201809.pdf}

notes on p. 2 of 21, for Voluntary Risk Reduction Plans (VRRP), that:

> "*Only those risk reduction measures that are needed to reduce Refinery Facility Risks below the Voluntary Risk Threshold (VRT) need to be identified in the VRRP*".

Claim_16 Details: Citizen claims that both the SCAQMD and US EPA erred in not establishing a *Refinery VRT and VRRP for Hydrogen Fluoride (HF) and Modified Hydrofluoric Acid (MHF)*, in order to be properly protective of the Public Health and Safety.

Citizen further claims that in order to be properly protective of the Public Health and Safety, that a yearly review, revision, and implementation of the Risk Management and Prevention Plan (RMPP) Reduction Program and the cognate California Accidental Release Prevention (CalARP) program are needed for continued *Refinery* use of Hydrogen Fluoride (HF) and Modified Hydrofluoric Acid (MHF), with those results made available to the Public through the SCAQMD.

Claim_16 Relief Sought: Citizen prays that the US EPA Administrator mandate and allow the following addition of sub-section (f) to the present-day "Section D: Facility Description and Equipment Specific Conditions" sub-sections (a)-(e) [*Draft-Title-V* {p. 162 of 1381} & *EPA*-Permit {p. 161 of 1369}], as follows:

> *(f). Conduct yearly review, revision, and implementation of the Risk Management and Prevention Plan (RMPP) Reduction Program and the cognate California Accidental Release Prevention (CalARP) program for Hydrogen Fluoride (HF) and Modified Hydrofluoric Acid (MHF), and make the results available for Public review and Public Comments through the SCAQMD.*
>
> > *(f)(1) As part of the RMPP, a specific Voluntary Risk Threshold (VRT) and a Voluntary Risk Reduction Plan (VRRP) for shall be developed by the Refinery Operator, with concurrence by the SCAQMD required, for both Hydrogen Fluoride (HF) and Modified Hydrofluoric Acid (MHF), within 6 months from the date of this Title-V permit first applicability.*
> >
> > *(f)(2) Updated VRT and VRRP shall be required, as in (f) above, as long as the Refinery Operator engages in HF/MHF based alkylation.*

Claim_17: Miscellaneous Claims

Claim_17a: HF/MHF Settler and Storage Tanks need to be put under similar requirements as tanks containing petroleum products.

The "Section J: Air Toxics, Hazardous Air Pollution from Petroleum Refineries", lists "Storage Tanks" containing petroleum products as being under "Control, Testing, Procedures, Monitoring, and Reporting Requirements". The Valero-Ultramar On-Site Storage Tanks for MHF need to be put under similar control, with a section added to the *Final-Title-V*, to accomplish that in a properly protective manner to the Public Health and Safety. This is especially important, because of the corrosive nature of hydrogen fluoride and MHF, and the need for special piping materials and special seal materials and flanges for pipe connections.

Claim_17b: HF/MHF Transfer Station needs to be put under similar requirements to the *Refinery* 'Gasoline Loading Dock'.

In "Section J: Air Toxics, Hazardous Air Pollution from Petroleum Refineries", it lists "Gasoline Loading Rack" as an Air Toxics source, with a page of Control, Testing, Procedures, Monitoring, and Reporting Requirements. The "MHF Transfer Station", which bring HF/MHF into the *Refinery Facility.* This "MHF Transfer Station" needs to be put under similar control, with a section added to this *Final-Title-V*, to accomplish that in a properly protective manner to the Public Health and Safety.

Claim_17c: *Refinery* Asphalt Plant needs to be put under the new SCAQMD Rule 1180.1

There is a Table in both the *Draft-Title-V* and the *EPA-Permit*, [*Draft-Title-V* {p. 1314 of 1381} & *EPA-Permit* {p. 1304 of 1381}], which lists 27 Units, of which 9 are marked with an asterisk and the note "Unit Not Included in Plan". Citizen claims that many of these units need to be "Included in Plan" before the *Final-Title-V* is issued. In addition, four of the 27 Units, {Devices #D179, #D13, #D63, #D64} all asterisked as "Unit Not Included in Plan", are located in the Valero-Ultramar "Asphalt Plant". Regarding those units, Citizen notes the following:

> *On 1/5/2024, the SCAQMD Governing Board amended Fenceline and Community Air Monitoring for Petroleum Refineries and Related Facilities (Rule 1180), and adopted Rule 1180.1 -- Fenceline and Community Air Monitoring for Other Refineries.*

The newly adopted Rule 1180.1 applies to "Asphalt Plants". The present Title-V Valero-Ultramar *Final-Title-V* needs to be revised to be fully compliant with this newly adopted Rule 1180.1. These revisions should include having Units from the "Asphalt Plant" be "Included in Plan".

Several items of this Table have "N/A" entries. "N/A" can mean "Not Applicable" or that the data is "Not Available". Which one it is be spelled out in the *Final-Title-V* on every page “N/A” used, with similar notation for all other occurrences. All "N/A" designations should be revisited, and reviewed to see if the newly adopted Rule 1180.1 creates a new "Now Applicable" condition.

Finally, in Section K {Title-V Administration}, Rule 1180, Rule 1181.1, and Rule 1410 also need to be added to those lists [*Draft-Title-V* {p. 1354 of 1381} & *EPA-Permit* {p. 1341 of 1369}].

Claim_17d: Updated Flare Minimization Plans (FMP) Needed

The *Draft-Title-V* pages detail Rule 1118 Flare Minimization Plans (FMP) with Calendar Year (CY) dates of: 2009, 2011, 2012, 2014, and 2016. The SCAQMD required revisions to the CY-2016 FMP, with the 8/21/2019 version approved by the SCAQMD 1/29/2020, so there never was more than a 2 year delay in Valero-Ultramar providing an updated FMP. It is now more than 4 years after 1/29/2020. so an updated 2024 FMP needs to be required of Valero-Ultramar, as part of the *Final-Title-V.*

Doc-01:

Citizen Emergency Petition to the US EPA Region 9 staff, dated 10 May 2024, appealing the original SCAQMD 5/28/2024 decision to grant a Valero-Ultramar 'Title V Permit Renewal' *{"EPA Permit"}*, and further requesting *EPA Permit* additions and modifications to be properly protective of the Public Health and Safety.

29 pages.

It is Superseded by the present Amended Citizen Petition (33 pages) to:

US EPA Administrator
US EPA Headquarters (HQ)
Attn: Operating Permits Group Leader
Mail Drop: C-504-01
109 T.W. Alexander Drive,
P.O. Box 12055
RTP Research Triangle Park
NC 27711

Doc-02:

Letter of June 18, 2024 to Citizen from US EPA Region 9 Staff noting that no *EPA Permit* changes were made, due to Region 9 Staff accepting the EPA Permit as-is, and that Citizen should submit a Petition directly to US EPA Headquarters (HQ).

REGION 9
SAN FRANCISCO, CA 94105

June 18, 2024

Genghmun Eng
5215 Lenore Street
Torrance, California 90503

Via electronic mail

Dear Genghmun Eng,

Thank you for submitting your "Emergency Petition to the US EPA for Timely and Needed Additions and Modifications to the Proposed Title V Permit Renewal for the Valero Ultramar HF Refinery" to EPA Region 9 for the Ultramar, Inc – Valero Wilmington Refinery 800026 title V permit renewal. We received your submission at the San Francisco office on May 15, 2024, during our 45-day review period (April 5 to May 20, 2024).

Because EPA Region 9 did not object to the permit, the public has 60 days to submit a petition to the EPA Administrator requesting that EPA object to the permit. We encourage you to submit a petition directly to EPA Headquarters (HQ) as we are currently in the petition period (which runs from May 21 to July 18, 2024). Any petition requesting the Administrator's objection must be submitted directly to HQ using one of the three methods identified on EPA's website, https://www.epa.gov/title-v-operating-permits/title-v-petitions.

Before submitting a petition, we encourage you to review 40 CFR 70.12 for the public petition requirements. Additionally, citizen petitions have special rules, which are contained in Clean Air Act Section 505(b)(2) and EPA's regulations at 40 CFR sections 70.8(d), 70.12, and 70.14. Among other requirements, any issue raised in the petition as grounds for an objection must be based on a claim that the permit, permit record, or permit process is not in compliance with applicable requirements of the Clean Air Act or the regulations in 40 CFR part 70. Please note that we cannot object to a permit based on concerns about health and safety that are not related to a Clean Air Act requirement. EPA's rules can be found at https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-70.

If you have a question about how to file a petition, please email titleVpetitions@epa.gov. If you have questions about the specific permit submittal in EPS, please contact Nidia K. Trejo at (415) 972-3968 or email R9AirPermits@epa.gov.

Sincerely,

PO-CHIEH TING

Digitally signed by PO-CHIEH TING
Date: 2024.06.18 10:14:52 -07'00'

Po-Chieh Ting
Acting Manager on behalf of

Gerardo C. Rios, PE
Manager, Air Permits Section
Air and Radiation Division

cc (via email):
Bhaskar Chandan, SCAQMD Senior Air Quality Engineering Manager, bchandan@aqmd.gov
Steven Goldsmith, President, Torrance Refinery Action Alliance, sgoldsmith84@gmail.com

Doc-03:

“40CFR_Part-70_rev-6-25-2024_84pp.pdf”.

Freely Available on the Web.

Doc-04:

“40CFR_Part-63-Subpart-UUU_rev-5-02-2024_151pp.pdf”.

Freely Available on the Web.

Doc-05:

“40CFR_Part-68_Appendix-A_55pp.pdf”.

Freely Available on the Web.

Doc-06:

2021-01-20_US President Executive Order (EO) 13985

Presidential Documents

Executive Order 13985 of January 20, 2021

Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered:

Section 1. *Policy.* Equal opportunity is the bedrock of American democracy, and our diversity is one of our country's greatest strengths. But for too many, the American Dream remains out of reach. Entrenched disparities in our laws and public policies, and in our public and private institutions, have often denied that equal opportunity to individuals and communities. Our country faces converging economic, health, and climate crises that have exposed and exacerbated inequities, while a historic movement for justice has highlighted the unbearable human costs of systemic racism. Our Nation deserves an ambitious whole-of-government equity agenda that matches the scale of the opportunities and challenges that we face.

It is therefore the policy of my Administration that the Federal Government should pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. Affirmatively advancing equity, civil rights, racial justice, and equal opportunity is the responsibility of the whole of our Government. Because advancing equity requires a systematic approach to embedding fairness in decision-making processes, executive departments and agencies (agencies) must recognize and work to redress inequities in their policies and programs that serve as barriers to equal opportunity.

By advancing equity across the Federal Government, we can create opportunities for the improvement of communities that have been historically underserved, which benefits everyone. For example, an analysis shows that closing racial gaps in wages, housing credit, lending opportunities, and access to higher education would amount to an additional $5 trillion in gross domestic product in the American economy over the next 5 years. The Federal Government's goal in advancing equity is to provide everyone with the opportunity to reach their full potential. Consistent with these aims, each agency must assess whether, and to what extent, its programs and policies perpetuate systemic barriers to opportunities and benefits for people of color and other underserved groups. Such assessments will better equip agencies to develop policies and programs that deliver resources and benefits equitably to all.

Sec. 2. *Definitions.* For purposes of this order: (a) The term ''equity'' means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.

(b) The term ''underserved communities'' refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by the list in the preceding definition of ''equity.''

Sec. 3. *Role of the Domestic Policy Council.* The role of the White House Domestic Policy Council (DPC) is to coordinate the formulation and implementation of my Administration's domestic policy objectives. Consistent with this role, the DPC will coordinate efforts to embed equity principles, policies, and approaches across the Federal Government. This will include efforts to remove systemic barriers to and provide equal access to opportunities and benefits, identify communities the Federal Government has underserved, and develop policies designed to advance equity for those communities. The DPC-led interagency process will ensure that these efforts are made in coordination with the directors of the National Security Council and the National Economic Council.

Sec. 4. *Identifying Methods to Assess Equity.* (a) The Director of the Office of Management and Budget (OMB) shall, in partnership with the heads of agencies, study methods for assessing whether agency policies and actions create or exacerbate barriers to full and equal participation by all eligible individuals. The study should aim to identify the best methods, consistent with applicable law, to assist agencies in assessing equity with respect to race, ethnicity, religion, income, geography, gender identity, sexual orientation, and disability.

(b) As part of this study, the Director of OMB shall consider whether to recommend that agencies employ pilot programs to test model assessment tools and assist agencies in doing so.

(c) Within 6 months of the date of this order, the Director of OMB shall deliver a report to the President describing the best practices identified by the study and, as appropriate, recommending approaches to expand use of those methods across the Federal Government.

Sec. 5. *Conducting an Equity Assessment in Federal Agencies.* The head of each agency, or designee, shall, in consultation with the Director of OMB, select certain of the agency's programs and policies for a review that will assess whether underserved communities and their members face systemic barriers in accessing benefits and opportunities available pursuant to those policies and programs. The head of each agency, or designee, shall conduct such review and within 200 days of the date of this order provide a report to the Assistant to the President for Domestic Policy (APDP) reflecting findings on the following:

(a) Potential barriers that underserved communities and individuals may face to enrollment in and access to benefits and services in Federal programs;

(b) Potential barriers that underserved communities and individuals may face in taking advantage of agency procurement and contracting opportunities;

(c) Whether new policies, regulations, or guidance documents may be necessary to advance equity in agency actions and programs; and

(d) The operational status and level of institutional resources available to offices or divisions within the agency that are responsible for advancing civil rights or whose mandates specifically include serving underrepresented or disadvantaged communities.

Sec. 6. *Allocating Federal Resources to Advance Fairness and Opportunity.* The Federal Government should, consistent with applicable law, allocate resources to address the historic failure to invest sufficiently, justly, and equally in underserved communities, as well as individuals from those communities. To this end:

(a) The Director of OMB shall identify opportunities to promote equity in the budget that the President submits to the Congress.

(b) The Director of OMB shall, in coordination with the heads of agencies, study strategies, consistent with applicable law, for allocating Federal resources in a manner that increases investment in underserved communities, as well as individuals from those communities. The Director of OMB shall report the findings of this study to the President.

Sec. 7. *Promoting Equitable Delivery of Government Benefits and Equitable Opportunities.* Government programs are designed to serve all eligible individuals. And Government contracting and procurement opportunities should be available on an equal basis to all eligible providers of goods and services. To meet these objectives and to enhance compliance with existing civil rights laws:

(a) Within 1 year of the date of this order, the head of each agency shall consult with the APDP and the Director of OMB to produce a plan for addressing:

(i) any barriers to full and equal participation in programs identified pursuant to section 5(a) of this order; and

(ii) any barriers to full and equal participation in agency procurement and contracting opportunities identified pursuant to section 5(b) of this order.

(b) The Administrator of the U.S. Digital Service, the United States Chief Technology Officer, the Chief Information Officer of the United States, and the heads of other agencies, or their designees, shall take necessary actions, consistent with applicable law, to support agencies in developing such plans.

Sec. 8. *Engagement with Members of Underserved Communities.* In carrying out this order, agencies shall consult with members of communities that have been historically underrepresented in the Federal Government and underserved by, or subject to discrimination in, Federal policies and programs. The head of each agency shall evaluate opportunities, consistent with applicable law, to increase coordination, communication, and engagement with community-based organizations and civil rights organizations.

Sec. 9. *Establishing an Equitable Data Working Group.* Many Federal datasets are not disaggregated by race, ethnicity, gender, disability, income, veteran status, or other key demographic variables. This lack of data has cascading effects and impedes efforts to measure and advance equity. A first step to promoting equity in Government action is to gather the data necessary to inform that effort.

(a) *Establishment.* There is hereby established an Interagency Working Group on Equitable Data (Data Working Group).

(b) *Membership.*

(i) The Chief Statistician of the United States and the United States Chief Technology Officer shall serve as Co-Chairs of the Data Working Group and coordinate its work. The Data Working Group shall include representatives of agencies as determined by the Co-Chairs to be necessary to complete the work of the Data Working Group, but at a minimum shall include the following officials, or their designees:

(A) the Director of OMB;

(B) the Secretary of Commerce, through the Director of the U.S. Census Bureau;

(C) the Chair of the Council of Economic Advisers;

(D) the Chief Information Officer of the United States;

(E) the Secretary of the Treasury, through the Assistant Secretary of the Treasury for Tax Policy;

(F) the Chief Data Scientist of the United States; and

(G) the Administrator of the U.S. Digital Service.

(ii) The DPC shall work closely with the Co-Chairs of the Data Working Group and assist in the Data Working Group's interagency coordination functions.

(iii) The Data Working Group shall consult with agencies to facilitate the sharing of information and best practices, consistent with applicable law.

(c) *Functions.* The Data Working Group shall:

(i) through consultation with agencies, study and provide recommendations to the APDP identifying inadequacies in existing Federal data collection programs, policies, and infrastructure across agencies, and strategies for addressing any deficiencies identified; and

(ii) support agencies in implementing actions, consistent with applicable law and privacy interests, that expand and refine the data available to the Federal Government to measure equity and capture the diversity of the American people.

(d) OMB shall provide administrative support for the Data Working Group, consistent with applicable law.

Sec. 10. *Revocation.* (a) Executive Order 13950 of September 22, 2020 (Combating Race and Sex Stereotyping), is hereby revoked.

(b) The heads of agencies covered by Executive Order 13950 shall review and identify proposed and existing agency actions related to or arising from Executive Order 13950. The head of each agency shall, within 60 days of the date of this order, consider suspending, revising, or rescinding any such actions, including all agency actions to terminate or restrict contracts or grants pursuant to Executive Order 13950, as appropriate and consistent with applicable law.

(c) Executive Order 13958 of November 2, 2020 (Establishing the President's Advisory 1776 Commission), is hereby revoked.

Sec. 11. *General Provisions.* (a) Nothing in this order shall be construed to impair or otherwise affect:

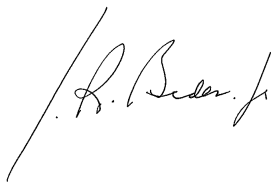
(i) the authority granted by law to an executive department or agency, or the head thereof; or

(ii) the functions of the Director of the Office of Management and Budget relating to budgetary, administrative, or legislative proposals.

(b) This order shall be implemented consistent with applicable law and subject to the availability of appropriations.

(c) Independent agencies are strongly encouraged to comply with the provisions of this order.

(d) This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person.



THE WHITE HOUSE,
January 20, 2021.

[FR Doc. 2021–01753
Filed 1–22–21; 11:15 am]
Billing code 3295–F1–P

Doc-07:

Listing of 145 California Underserved Communities b
Zip Code out of 1765 total, as determined by the
California Department of Insurance,
Structural Analysis Division.

2011 Commissioner's Report on Underserved Communities

Table A - ZIP Codes in Underserved Communities

ZIP Codes	City	County
90001	LOS ANGELES	LOS ANGELES
90002	LOS ANGELES	LOS ANGELES
90003	LOS ANGELES	LOS ANGELES
90004	LOS ANGELES	LOS ANGELES
90005	LOS ANGELES	LOS ANGELES
90006	LOS ANGELES	LOS ANGELES
90007	LOS ANGELES	LOS ANGELES
90010	LOS ANGELES	LOS ANGELES
90011	LOS ANGELES	LOS ANGELES
90012	LOS ANGELES	LOS ANGELES
90013	LOS ANGELES	LOS ANGELES
90014	LOS ANGELES	LOS ANGELES
90015	LOS ANGELES	LOS ANGELES
90016	LOS ANGELES	LOS ANGELES
90017	LOS ANGELES	LOS ANGELES
90018	LOS ANGELES	LOS ANGELES
90019	LOS ANGELES	LOS ANGELES
90020	LOS ANGELES	LOS ANGELES
90021	LOS ANGELES	LOS ANGELES
90022	LOS ANGELES	LOS ANGELES
90023	LOS ANGELES	LOS ANGELES
90026	LOS ANGELES	LOS ANGELES
90029	LOS ANGELES	LOS ANGELES
90031	LOS ANGELES	LOS ANGELES
90032	LOS ANGELES	LOS ANGELES
90033	LOS ANGELES	LOS ANGELES
90037	LOS ANGELES	LOS ANGELES
90038	LOS ANGELES	LOS ANGELES
90040	LOS ANGELES	LOS ANGELES
90043	LOS ANGELES	LOS ANGELES
90044	LOS ANGELES	LOS ANGELES
90047	LOS ANGELES	LOS ANGELES
90057	LOS ANGELES	LOS ANGELES
90058	LOS ANGELES	LOS ANGELES
90059	LOS ANGELES	LOS ANGELES
90061	LOS ANGELES	LOS ANGELES
90062	LOS ANGELES	LOS ANGELES
90063	LOS ANGELES	LOS ANGELES
90065	LOS ANGELES	LOS ANGELES
90201	BELL	LOS ANGELES

2011 Commissioner's Report on Underserved Communities

Table A - ZIP Codes in Underserved Communities

ZIP Codes	City	County
90220	COMPTON	LOS ANGELES
90221	COMPTON	LOS ANGELES
90222	COMPTON	LOS ANGELES
90247	GARDENA	LOS ANGELES
90255	HUNTINGTON PARK	LOS ANGELES
90262	LYNWOOD	LOS ANGELES
90270	MAYWOOD	LOS ANGELES
90280	SOUTH GATE	LOS ANGELES
90301	INGLEWOOD	LOS ANGELES
90302	INGLEWOOD	LOS ANGELES
90303	INGLEWOOD	LOS ANGELES
90304	INGLEWOOD	LOS ANGELES
90501	TORRANCE	LOS ANGELES
90716	HAWAIIAN GARDENS	LOS ANGELES
90723	PARAMOUNT	LOS ANGELES
90744	WILMINGTON	LOS ANGELES
90806	LONG BEACH	LOS ANGELES
90810	LONG BEACH	LOS ANGELES
90813	LONG BEACH	LOS ANGELES
91204	GLENDALE	LOS ANGELES
91303	CANOGA PARK	LOS ANGELES
91331	PACOIMA	LOS ANGELES
91340	SAN FERNANDO	LOS ANGELES
91343	NORTH HILLS	LOS ANGELES
91352	SUN VALLEY	LOS ANGELES
91402	PANORAMA CITY	LOS ANGELES
91405	VAN NUYS	LOS ANGELES
91406	VAN NUYS	LOS ANGELES
91601	NORTH HOLLYWOOD	LOS ANGELES
91605	NORTH HOLLYWOOD	LOS ANGELES
91606	NORTH HOLLYWOOD	LOS ANGELES
91731	EL MONTE	LOS ANGELES
91733	SOUTH EL MONTE	LOS ANGELES
91746	LA PUENTE	LOS ANGELES
91761	ONTARIO	SAN BERNARDINO
91766	POMONA	LOS ANGELES
92102	SAN DIEGO	SAN DIEGO
92113	SAN DIEGO	SAN DIEGO
92173	SAN YSIDRO	SAN DIEGO
92231	CALEXICO	IMPERIAL

Table A - ZIP Codes in Underserved Communities

ZIP Codes	City	County
92236	COACHELLA	RIVERSIDE
92249	HEBER	IMPERIAL
92254	MECCA	RIVERSIDE
92259	OCOTILLO	IMPERIAL
92273	SEELEY	IMPERIAL
92335	FONTANA	SAN BERNARDINO
92337	FONTANA	SAN BERNARDINO
92401	SAN BERNARDINO	SAN BERNARDINO
92408	SAN BERNARDINO	SAN BERNARDINO
92410	SAN BERNARDINO	SAN BERNARDINO
92411	SAN BERNARDINO	SAN BERNARDINO
92701	SANTA ANA	ORANGE
92703	SANTA ANA	ORANGE
92704	SANTA ANA	ORANGE
92707	SANTA ANA	ORANGE
92801	ANAHEIM	ORANGE
92805	ANAHEIM	ORANGE
93036	OXNARD	VENTURA
93219	EARLIMART	TULARE
93227	GOSHEN	TULARE
93234	HURON	FRESNO
93239	KETTLEMAN CITY	KINGS
93241	LAMONT	KERN
93256	PIXLEY	TULARE
93261	RICHGROVE	TULARE
93266	STRATFORD	KINGS
93272	TIPTON	TULARE
93458	SANTA MARIA	SANTA BARBARA
93608	CANTUA CREEK	FRESNO
93624	FIVE POINTS	FRESNO
93640	MENDOTA	FRESNO
93646	ORANGE COVE	FRESNO
93648	PARLIER	FRESNO
93660	SAN JOAQUIN	FRESNO
93701	FRESNO	FRESNO
93702	FRESNO	FRESNO
93703	FRESNO	FRESNO
93706	FRESNO	FRESNO
93721	FRESNO	FRESNO
93725	FRESNO	FRESNO

Table A - ZIP Codes in Underserved Communities

ZIP Codes	City	County
93925	CHUALAR	MONTEREY
94063	REDWOOD CITY	SAN MATEO
94124	SAN FRANCISCO	SAN FRANCISCO
94601	OAKLAND	ALAMEDA
94603	OAKLAND	ALAMEDA
94606	OAKLAND	ALAMEDA
94607	OAKLAND	ALAMEDA
94612	OAKLAND	ALAMEDA
94621	OAKLAND	ALAMEDA
94710	BERKELEY	ALAMEDA
94801	RICHMOND	CONTRA COSTA
95019	FREEDOM	SANTA CRUZ
95110	SAN JOSE	SANTA CLARA
95111	SAN JOSE	SANTA CLARA
95112	SAN JOSE	SANTA CLARA
95116	SAN JOSE	SANTA CLARA
95122	SAN JOSE	SANTA CLARA
95202	STOCKTON	SAN JOAQUIN
95205	STOCKTON	SAN JOAQUIN
95231	FRENCH CAMP	SAN JOAQUIN
95351	MODESTO	STANISLAUS
95365	PLANADA	MERCED
95387	WESTLEY	STANISLAUS
95824	SACRAMENTO	SACRAMENTO
95838	SACRAMENTO	SACRAMENTO

Doc-08:

US EPA "Equity Action Plan Summary"
in response to
U.S. President Executive Order EO-13985.

Pursuant to Executive Order 13985 (January 20, 2021) on "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government"

Equity Action Plan Summary

U.S. Environmental Protection Agency

The Environmental Protection Agency's (EPA) mission is to protect human health and the environment.

Delivering equity through EPA

EPA has committed to making equity, environmental justice, and civil rights a centerpiece of the agency's mission. The agency's pursuit of equity must include environmental justice, which EPA has defined as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies." In practice, this means everyone enjoys the same degree of protection from environmental and health hazards and equal access to the benefits of environmental resources and the decision-making process. To achieve the "same degree of protection" and "equal access," EPA also must consider individuals living in communities overburdened by pollution who may be even more vulnerable or marginalized, such as persons with disabilities or limited English proficiency. Scientific research consistently and increasingly demonstrates that the disproportionate levels of pollution experienced by communities with environmental justice concerns result in adverse health outcome disparities directly associated with these exposures. Notably, the successful implementation of all six of these priority actions depends on meaningful engagement. Members of the White House Environmental Justice Advisory Council (WHEJAC) have defined "meaningful participation" as a process wherein

“potentially affected populations have an opportunity to participate in decisions that will affect their health or environment, that the population’s contributions can influence the agency’s decisions, that the viewpoints of all participants involved will be considered in the decision-making process, and that the agency will seek out and facilitate the involvement of the population potentially affected, including consultation with Tribal and indigenous communities and by providing culturally appropriate information, access for people with disabilities, and language access for persons with limited English proficiency, considering issues of access raised by location, transportation, and other factors affecting participation, and by making available technical assistance to build community-based capacity for participating.”

New strategies to advance equity

- **Develop a comprehensive framework for considering cumulative impacts in relevant EPA decisions and operationalize that framework in EPA's programs and activities**

  For decades, environmental regulators and zoning officials have made decisions that contributed to the disproportionate pollution burden on people of color and other underserved communities across the country, such as decisions to site and permit new industrial facilities in ways that concentrate them within these communities. Communities overburdened by pollution often raise concerns about the cumulative impacts of these individual environmental management decisions on public health and quality of life. To address these concerns, EPA is now developing a consistent and comprehensive framework for assessing and considering cumulative impacts on populations and communities in its decision-making. Such a framework needs to incorporate the vulnerabilities and susceptibilities related to the accumulation of multiple environmental and social stressors, such as persistent poverty and noise pollution, that lead to adverse health and quality of life outcomes. Environmental justice leaders have identified addressing cumulative impacts as critical to achieving equitable and just outcomes across EPA programs in permitting, compliance monitoring and enforcement, cleanup, rulemaking, and other contexts.

- **Build the capacity of underserved communities to provide their experience to EPA and implement community-led projects**

  Communities with environmental justice concerns and other underserved communities are often on the frontlines of the outcomes of environmental policymaking. Yet these underserved communities—by virtue of being systematically denied a full opportunity to participate in aspects of economic, social, and civic life—can face multiple resource and capacity challenges to engaging with EPA or accessing its programs. These communities often have experienced decades of chronic underinvestment in infrastructure. They may lack the technological, financial, or human

New strategies to advance equity

capital-related capacity to prepare competitive proposals or manage federal awards. To address these barriers, EPA will provide robust support to help communities by building the technological, financial, and human capital-related capacity of underserved communities; enhance EPA's engagement with underserved communities to ensure their ability to meaningfully engage with EPA and other government agencies and participate in decision-making processes; and ensure EPA's investments in infrastructure and pollution remediation benefit disadvantaged and underserved communities as envisioned by the Biden-Harris Administration's Justice40 Initiative.

- **Develop EPA's internal capacity to engage underserved communities and implement clear and accountable processes to act based on communities' input**

  EPA's budget, internal processes, and culture can slow or impede meaningful engagement with underserved communities. Expanded capacity would support EPA's ability to conduct the wide variety and volume of external-facing stakeholder engagement needed to reach underserved communities, including the important task of disseminating stakeholder feedback to the right agency staff to create responsive actions. Some EPA staff also may lack awareness of, or appreciation for, some stakeholder communities (for example, informal environmental justice or community groups, faith groups, and civil rights organizations) and the extra time and care required to authentically engage. To address these barriers, EPA will expand its internal capacity to engage with underserved communities in a way that is meaningful and accessible and works to overcome the communities' barriers to participation.

- **Strengthen EPA's external civil rights compliance program and ensure that civil rights compliance is an agency-wide responsibility**

  Advancing equity rests on the presumption of equal opportunities and protection under the law. To meet this objective and to enhance compliance with existing civil rights laws, agencies were obligated to address the

operational status and level of institutional resources available to offices or divisions within the agency that are responsible for advancing civil rights or whose mandates specifically include serving underrepresented or disadvantaged communities. To meet this mandate, EPA will strengthen its external civil rights compliance program and ensure that civil rights compliance is an agency-wide responsibility. Historically, EPA has not fully used its civil rights implementation and enforcement authority to vigorously enforce federal civil rights laws. EPA also has not integrated civil rights compliance throughout its programs and activities and has not elevated it as a strategic goal. To strengthen civil rights compliance and enforcement, EPA's external civil rights program will shift from being primarily reactive, responding only to complaints, to proactively initiating compliance activities. The Agency will initiate proactive pre-award and post-award civil rights compliance activities, including affirmative compliance reviews to address the impacts of potentially discriminatory activities on overburdened communities, and will enhance communication and engagement with environmentally overburdened communities to meaningfully inform EPA's civil rights work and to empower and increase their participation in critical decision-making.

Integrate community science into EPA's research and program implementation

"Community science" is defined as research and science conducted by the community on its own behalf to inform decision-making. In contrast to traditional initiatives led by government agencies or research scientists, community-led projects are often characterized by use of local and traditional ecological knowledge or locally generated data. Communities collect this information to address environmental, public health, social, and economic justice issues important for environmental self-determination. Communities may face multiple barriers when attempting to conduct community science, including insufficient financial support, limited expertise in relevant science disciplines, lack of trust in scientists and government agencies, and concerns about sharing sacred cultural knowledge with government agencies that may be compelled to disclose

it publicly. EPA's vision is that community science is equitably supported, viewed, and used as an asset in the range of decisions associated with environmental management by local, state, and federal programs. To achieve this mission and address barriers, EPA will build capacity for community science and access to community data by funding community science grants, and issue policies and guidance documents to support the use of community science.

Make EPA's procurement and contracting more equitable

Small disadvantaged businesses (SDBs) and Minority-Serving Institutions (MSIs), including Historically Black Colleges and Universities (HBCUs), may face unique barriers when seeking federal contracting and procurement opportunities, including cumbersome federal procurement regulations and processes, and unreasonable or unnecessary requirements for vendor past performance. To address these barriers, EPA will challenge EPA program offices and regions (including senior leadership) to conduct and participate in agency outreach events to provide the underserved and underrepresented business community with access to EPA decision-makers, and develop and implement policies and procedures to promote the use of underserved and underrepresented businesses and level the playing field between incumbent contractors and new firms.

Building on EPA's progress

This equity action plan builds on EPA's progress delivering on equity and racial justice in the first year of the Biden-Harris Administration.

Providing historic environmental justice funding

During calendar year 2021, EPA awarded more environmental justice grant funding to community-based organizations, Tribal and indigenous organizations, and other partners than it awarded altogether in the preceding decade.

Investing American Rescue Plan resources

EPA has prioritized significant portions of American Rescue Plan Act funding to provide technical assistance and capacity building opportunities directly to communities and their local partners, such as additional Brownfields resources, funding for circuit riders to assist with rural and low-capacity water utilities, and more specific assistance programs focused on supporting community resilience to respond to climate change issues such as wildfires and extreme heat events.

Creating regional environmental justice advisory councils

EPA has initiated the formation of regional Environmental Justice Advisory Councils working groups for all ten of EPA's regional offices to ensure better long-term relationship building and feedback on priority efforts as EPA implements its equity, environmental justice, and civil rights activities.

Addressing the backlog of Superfund site cleanups

On December 17, 2021, EPA announced a $1 billion investment from the Bipartisan Infrastructure Law to initiate cleanup and clear the backlog of 49 previously unfunded Superfund sites and accelerate cleanup at dozens of other sites across the country.

Building on EPA's progress

Putting environmental justice at the heart of EPA's strategy

For the first time, EPA is including equity, environmental justice, and civil rights compliance as a distinct and core goal of EPA's multiyear strategic plan. No longer will the agency's work to advance justice and live up to its civil rights responsibilities be left outside of the EPA's bedrock planning documents. In addition, in 2021, EPA's Office of Enforcement and Compliance Assurance issued four memoranda directing a renewed focus on environmental justice across EPA enforcement activities with a consistent direction for enforcement staff to regularly engage with communities with environmental justice concerns as a part of program implementation.

Embarking on a "Journey to Justice" tour

In November 2021, Administrator Regan embarked on a "Journey to Justice" tour, traveling to Mississippi, Louisiana, and Texas to spotlight longstanding environmental justice concerns in historically marginalized communities and hear firsthand from residents dealing with the impacts of pollution. Throughout the tour, the Administrator highlighted the benefits of President Biden's Bipartisan Infrastructure Law, focusing on historic investments in water infrastructure, Superfund, Brownfields, and air quality improvements that will lead to lasting public health protections in communities that need them most.

Expanding civil rights engagement

On October 27, 2021, EPA held its first ever public listening session on civil rights enforcement and heard input from more than 200 stakeholders.

Advancing community science

In December 2021, EPA's Office of Air and Radiation launched a $20 million grant competition that calls for proposals to conduct monitoring of pollutants of greatest concern in communities with health outcome disparities. EPA's objective in issuing these awards is to empower communities to monitor their own air quality and promote monitoring

partnerships between communities and Tribal, state, and local governments.

- **Promoting equitable contracting and procurement**

  EPA awarded more than 44% of its contract dollars -- $679 million – to small businesses, far exceeding the agency's negotiated goal of 37% and the government-wide goal of 23%. This goal achievement represents an $86 million increase from last fiscal year. Also, for the first time in the agency's history, EPA exceeded all five of the established statutory socioeconomic goals, including the never before realized goal of 3% for small businesses located in Historically Underutilized Business Zones (HUBZones).

Doc-09:

1987-11-04

“Conduct of Anhydrous Hydrofluoric Acid Spill Experiments”;
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CRC 00304

R. Koopman

Conduct of Anhydrous Hydrofluoric Acid Spill Experiments

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Abstract:

During the summer of 1986 Lawrence Livermore National Laboratories and Amoco Oil Company conducted a series of six experiments involving atmospheric releases of anhydrous hydrofluoric acid at the Department of Energy Liquified Gaseous Fuels Test Facility. The purpose of these tests was to examine source characteristics, dispersal properties and water spray mitigation techniques. A description of the experimental design and limited results of the first three experiments are presented in this paper.

1.0 Introduction

During the summer of 1986 Amoco Oil Company and Lawrence Livermore National Laboratory (LLNL) conducted a series of six experiments involving atmospheric releases of anhydrous hydrofluoric acid (HF). This series of dispersion experiments is known as the Goldfish test series. These experiments were conducted at the Department of Energy (DOE) Liquified Gaseous Fuels Facility (LGF) which is located on the Nevada Test Site at Frenchman's Flats (Johnson 1986). The purpose of these experiments was threefold. First, to obtain basic information regarding the source characteristics during an atmospheric release of HF stored at an elevated pressure and temperature. Secondly, to provide downwind measurements of HF concentrations in both the dense gas and toxic gas regions against which the performance of dense gas dispersion models could be tested. Thirdly, the last three experiments were designed to provide information regarding the effectiveness of water spray systems to reduce the downwind concentrations of HF.

Hydrofluoric acid is a widely used chemical. Its applications range from use in the electronics industry to catalysts for refining in the petroleum and chemical industries. HF boils at 20^{o}C and reacts with water vapor in an exothermic manner. HF also forms polymers, including a hexamer state. As these polymers decompose back to the monomer state energy is absorbed (Schotte 1986). Because of these competing thermodynamic reactions it was uncertain what properties a cloud released into the atmosphere would exhibit. In addition to the

competing thermodynamic reactions, the amount of HF aerosol formed, the formation of HF/water vapor aerosol and subsequent evaporation and or deposition were unknown.

Section 2 of this paper presents a summary of the experimental procedures used for these tests. Section 3 contains a discussion of test conditions for Tests 1, 2 and 3. Limited results for these tests are presented in Section 4. Results from Tests 4, 5 and 6 are described in another paper (Blewitt, et al. 1987).

2.0 Experimental Procedures

This section presents a summary of the experimental procedures which were employed during the six HF experiments. Section 2.1 discusses the process control equipment and the associated instrumentation which was used to release HF into the atmosphere. Section 2.2 presents information on the meteorological measurements which were made during these experiments. In Section 2.3 information is presented regarding the downwind measurements of HF. Section 2.4 presents information on photographic documentation which was made during these tests.

2.1 Spill Equipment and Instrumentation

The spill equipment was designed to release HF as a horizontal jet. The HF Spill Facility (Figure 2-1) was composed of the following components: 1) spill tank and discharge pipe; 2) liquid collection pad; 3) liquid

collection pipe; 4) vent pipe; and 5) ancillary equipment. The spill tank was a 5000 gallon trailer modified to accommodate a 4-inch diameter spill line. The spill tank was equipped with electrical heating capable of maintaining the liquid HF at a temperature of approximately 40°C. A load cell was located at one end of the HF trailer to provide a continuous record of the weight of the trailer and hence the rate at which HF was released through the discharge pipe. A high-pressure gaseous nitrogen tube trailer was used to pressurize the spill tank. The discharge pipe was equipped with a remote controlled spill valve which was used to initiate and terminate the spill. The flow rate was controlled by an orifice plate which was located at the end of the discharge pipe.

A collection pad was constructed at the end of the discharge pipe. The purpose of this pad was to collect and drain into the liquid collection pipe any HF which was not entrained into the atmosphere as part of the jet release. The collection pad was approximately 9 meters by 61 meters and was constructed of 80 mil UV stabilized polyethylene.

The ancillary equipment included a generator trailer to supply power, a water truck with pump to supply a safety shower and wash down hose and a breathing air supply system.

During each test the following data were recorded: HF tanker weight; orifice temperature and pressure; HF temperature; and drive gas pressure. The HF spill

facility was controlled remotely by the LGF spill control facility computer system (TCS). This system was located in the control building approximately 1.5 kilometers upwind of the spill point.

During Tests 3 through 6 an attempt was made to provide additional atmospheric water vapor at the spill point in order to study the effects of increased relative humidity on the resulting cloud. This was done to determine the importance of the exothermic reaction of HF and water.

Two methods were used to increase the amount of water vapor in the atmosphere at the spill point. First, a 500 hp steam boiler and water injection system was located upwind of the spill point. Second, a shallow pond having dimensions of 250 meters by 600 meters was constructed upwind of the spill point.

The steam and water spray system consisted of an array of spray nozzles, half for steam and the remainder for warm water. These spray nozzles were located approximately 25 meters upwind of the release point. The length of the spray array was 22 meters and the nozzles were approximately 3 meters above the ground. The spray nozzles were horizontal and pointed upwind.

2.2 Meteorological Instrumentation

In order to describe the behavior of the HF cloud it was necessary to make detailed measurements of atmospheric conditions during the releases. The outputs from the

various meteorological instruments were recorded by the LGF data acquisition and control systems.

Wind Field

In order to conduct the tests under the steadiest and safest wind conditions and to determine the trajectory and location of the cloud over the range of concentration measurements, it was necessary to determine wind speed and direction at many locations upwind and downwind of the release point. Figure 2-2 presents a plot plan of these locations. Eighteen wind field stations were used. These locations spanned an upwind and downwind distance of 5 kilometers. The array was approximately 800 meters wide at a distance of 3 kilometers downwind. These cup and vane sensors were located at an elevation of 2 meters above the ground.

Turbulence

Measurements of vertical wind speed profile and three dimensional turbulence using Gill bi-vane anemometers were made at 3 locations. The locations of these stations are indicated on Figure 2-2.

Temperature

The three types of temperature measurements made were cloud temperature, ambient temperature (including atmospheric lapse rate) and dewpoint temperature.

at an elevation of 1 meter and were located at crosswind distances of ± 45 meters and ± 60 meters. After Test 1 additional sensors (elevation of 1 meter) were located at ± 75 meters.

For the 1000 meter downwind distance, sensors were located at elevations of 1, 3 and 8 meters. The horizontal spacing between sensors was 50 meters. These sensors spanned crosswind distances of ± 150 meters. For Test 1, 1 meter sensors were located at ± 200 meters and ± 250 meters. For Tests 2 through 6, additional 1 meter sensors were located at ± 300 meters.

At a downwind distance of 3000 meters the spacing between sensors was 150 meters. Sensors covered a crosswind distance of ± 750 meters. Measurements were made at 1, 3 and 8 meters elevations at the array centerline location and at locations of ± 150 meters for Test 1. All other measurements were made at an elevation of 1 meter. For Tests 2 through 6, measurements were made at 1, 3 and 8 meter elevations at the centerline and at ± 300 meters from the centerline.

Two types of HF sensors were employed in this test series. The first was the Integrated Filter sampler (IF) developed by Amoco and the second was the GMD HF analyzer.

The IF samplers were based on an analytical procedure developed for the measurement of HF (Baughman 1987) . Typically a total of 62 IF samplers were used during each test. Each sampler employed 10 Gelman filter cassettes

Figure 2-3 presents the locations at which cloud temperature measurements were made. These temperature measurements were made with a type J thermocouple which has an absolute accuracy of approximately ± 3°C (Johnson 1986). The thermocouples were housed in naturally aspirated radiation shields.

Ambient temperature and temperature lapse rate were measured at two locations as indicated on Figure 2-3. These measurements were made with platinum resistance temperature devices which have an absolute accuracy of ± 0.1°C (Johnson 1986). It should be noted that these measurements were influenced by the presence of the pond located upwind of the spill point on Tests 3 through 6.

Dewpoint temperature was measured at one station as indicated in Figure 2-3.

2.3 HF Measurements

An array of three arcs of sensors was constructed downwind of the spill point (Figure 2-4). Figure 2-4a shows the sensor locations at a downwind distance of 300 meters. Figure 2-4b shows the 1000 meter and 3000 meter sensor arcs. The centerline of the array was aligned on a 225 degree azimuth.

At the 300 meter downwind distance, sensors were located at elevations of 1 meter, 3 meters and 8 meters. The horizontal spacing between sensors was 15 meters. The design of the arc at this distance covered a crosswind distance of ± 30 meters. Additional sensors were located

which were treated with a sodium formate solution. These were loaded into a sampling manifold on each sampler. The sampling manifold included 10 solenoid valves which opened in sequence to draw a sample through each of the 10 cassettes. The flow rate of these analyzers was approximately 3.5 liters per minute. The sampling time per filter cassette was 66.6 seconds, 83.3 seconds or 100 seconds depending on the sampler location and the test conditions.

The sampling time was controlled by a digital timing circuit which allowed the selection of a sampling time for each sampler. Sampling was initiated by the data acquisition system computers and the starting time for the samplers during each test was based on cloud transport time. Prior to a test each filter cassette was labeled, and the flow rate through each filter was measured by a mass flow meter.

After each test, the fluoride was chemically extracted from the filter in the filter cassette. The extract was then analyzed by the University of Las Vegas Environmental Research Center for fluoride content using a fluoride specific ion electrode

During the analysis of the exposed filters, the laboratory also analyzed filters which had been treated with a known concentration of fluoride. The concentrations on these control filters was not revealed to the analytical laboratory. One control filter was analyzed for every five test filters from a test.

Because of the range of the fluoride specific ion electrode, HF concentrations could be measured over a range of 0.3 ppm to 42,000 ppm.

As part of the development of these samplers, the collection efficiency was determined and is shown in Figure 2-5. The reported data have been adjusted to account for sampling efficiency. It should be noted that for the majority of the samples the collection efficiency was at or greater than 90 percent. For Test 1 at the 300 meter row there may have been some saturation of the samplers since loadings of 40 mg were reported.

Approximately 30 HF GMD analyzers were also used during each test. This analyzer employed a chemically treated paper tape which darkened when exposed to HF. The analyzer then measured the change in reflectivity of the tape, which was proportional to HF concentration. When this analyzer operated on the nominal 0-300 ppm range the unit would expose the tape for a period of 10 seconds and then require 20 seconds for development time. The tape would then advance for the next sample (3 seconds). For samplers which operated on the 0-30 ppm range the sampling time was 45 seconds, development time was 45 seconds and tape advance required 3 seconds.

These analyzers were calibrated before each test using a three point calibration curve with known concentrations of HF.

Because of problems encountered with these instruments the data collected has not been analyzed at this time.

At the 300 meter array only IF samplers were employed because of expected high concentrations. At the 1000 meter array IF samplers and GMD analyzers were located at 1, 3 and 8 meters above the ground. However, only IF samplers were located at ± 300 meters for the 1000 meter downwind samplers. At 3000 meters downwind both GMD analyzers and IF samplers were used.

During the sensor development phase of this program it was concluded that commercial instruments were not available which could provide HF measurements at a faster response time. It was also concluded that it was not possible to develop new measurement techniques in the time frame required for this project. While it would have been desirable to make concentration measurements at a higher sampling rate than was performed during these tests, it should be remembered that our interest was development of information concerning toxicological risks associated with releases of HF into the atmosphere. These typically are described by a concentration averaged over some time period. Additionally, as long as the averaging time is known, projections can be made for different averaging times based on known statistical properties of the atmosphere.

2.4 Photographic Documentation

Photographic records were made as part of this experimental program. For all six tests, continuous video tape recordings were made from three different locations. The field of view for all three cameras was

manually controlled from the control center during each test.

In addition to the video records of each spill, two framing cameras were used. The framing cameras took 35mm pictures at 10 to 30 second intervals.

On Tests 2-6 aerial photographs were taken from a helicopter at an altitude of 500 meters above the ground and approximately 500 meters upwind of the spill point. During these flights different photographic techniques were attempted. On Test 2 both a still frame and a video camera were used to record the plume. On Test 3 the still frame camera was used in conjunction with an infrared thermal scanner. On Tests 4, 5 and 6 the thermal scanner was used with both video and still frame cameras.

3.0 Test Conditions

Table 3-1 summarizes the test conditions (meteorological and spill conditions) as well as the purpose of each of the six tests.

The spill rate data listed in this table were obtained by performing a linear regression of the load cell data. This determination of spill rate was checked by performing an orifice calculation for a liquid jet using Bernoulli's equation. The spill rates computed by both methods were within 10 percent of each other. Figure 3-1 presents a plot of orifice temperature, pressure and the load cell weight as a function of time for Test 3. As

Table 3-1
Test Condition for the HF Spill Experiments

Test Number	Purpose of Test	HF Spill Rate (gal/min)	HF Temperature (°C)	HF Pressure (psig)	Duration (sec)	Mean Wind Speed (M/S)	Atmospheric Stability Class	Ambient Temperature (°C)	Dewpoint Temperature (°C)
1	System check out and dispersion experiment.	469.2	40	111	125	5.6	D	37.0	-8.5
2	Dispersion experiment.	175.1	38	115	360	4.2	D	36.0	1.1
3	Dispersion experiment.	171.6	39	117	360	5.4	D	26.5	6.6
4	Air/water mitigation technique.	67.5	36	116	840	6.8	D	21.3	-2.0
5	Upflow water spray.	32.5	40	118	960	3.8	C/D	21.3	5.6
6	Downflow water spray.	33.0	38	114	960	5.4	C/D	21.5	4.6

indicated by the figure, the point at which the liquid spill stopped is confirmed by all three measurement techniques.

The wind speed listed in Table 3-1 is the mean wind speed measured over the entire wind field and averaged for 15 minutes starting at spill time. The atmospheric stability class listed was determined using a 15-minute sigma theta (EPA 1986).

Test 1

The purpose of this test was to provide system checkout and to determine what size spills would be feasible for the rest of the test series. The spill rate for this test was 469 gallons per minute and the duration was 125 seconds. This test was conducted with a mean wind speed of 5.6 meters per second and a 15-minute mean sigma theta of 10.8 degrees.

During this test the cloud was visible to a distance of approximately 700-800 meters. The concentration data and the wind field data indicate that the plume centerline was measured at all three downwind sampling arrays.

Data recovery for the IF samplers during this test was approximately 99 percent. The data collected by the GMD analyzers indicated that most of the analyzers either were exposed to concentrations greater than their upper concentration limit or experienced mechanical failures.

Test 2

This test was conducted to examine the dispersion properties of HF at low relative humidities. The spill rate was 175 gallons per minute with a duration of 360 seconds. Although a wind shift occurred during the experiment, the plume centerline was measured at the 300 meter and 1 kilometer sampling arrays. Unfortunately, because of inoperative sensors, the centerline was not measured at 3 kilometers. The mean wind speed measured during this test was 4.2 meters per second and the mean 15-minute sigma theta was 12.9 degrees.

The cloud was visible to a distance of approximately 400-500 meters from the spill point. The concentration data indicate that steady state conditions were achieved at both the 300 meter and 1 kilometer arrays.

The data recovery for the IF samplers was approximately 95 percent. Some of the GMDs collected valid data, however these data have not yet been analyzed. With the exception of the thermocouple located under the spill pad all other data are valid.

Test 3

This was the first test which attempted to humidify the atmospheric boundary layer at the spill point. The dewpoint temperature upwind of the spill point was 6.6 ^{o}C compared to Test 2, which had a dewpoint temperature of 1.1 ^{o}C. It was almost identical in spill rate and duration to Test 2 (171 gallons per minute and 360 seconds duration). For this test the cloud was visible to a distance of approximately 400 to 500 meters.

Figures 3-2 through 3-3 present wind field plots and estimates of cloud location at 3 minutes and 6 minutes after spill initiation. These figures show the location of each of the wind field sensors. The arrow associated with each station indicates the 10-second average wind direction and the length of the arrow indicates the velocity measured at each location. The plume location is indicated by the solid lines orignating from the spill point. The middle line indicates an estimate of the plume centerline. The standard deviation of wind direction is indicated by the lines plotted on either side ofthe centerline. These figures illustrate the spatial and temporal uniformity of the wind field. The mean wind speed for this test was 5.4 meters per second and the 15-minute mean sigma theta was 6.5 degrees.

Data recovery for the IF samplers was 100 percent. Some GMD data were collected during this test but have not been analyzed. All other data except the spill pad temperature are valid.

4.0 Experimental Results

This section discusses the results obtained from Tests 1, 2 and 3. No liquid was collected on the spill pad during any of the six tests . Approximately 20 percent of the liquid released flashed adiabatically to vapor and the remaining 80 percent of the acid was transported downwind as a HF/water vapor aerosol. This aerosol subsequently evaporated or was deposited on the desert floor at some distance downwind. During all six tests dense gas

phenomena were exhibited at substantial distances downwind.

Test 1

Figures 4-1 and 4-2 provide crosswind plots of HF concentrations (66.6 second average concentrations) 300 meters downwind for the first two filters (30.5 and 97.1 seconds after the spill was initiated). The vertical scale has been expanded by a factor of two on these figures. Comparison of these figures illustrates the dominance of density gradient in the plume after the leading edge of the plume had passed the sensors. The temporal variation in cloud concentrations as a function of crosswind distance is illustrated in Figures 4-3, 4-4 and 4-5 for 1 meter, 3 meter and 8 meter sensor elevations. It is interesting to compare these figures with respect to the leading edge of the plume. From these data it is evident that the cloud was traveling faster at 3 and 8 meters elevations than at the 1 meter elevation. The arrival of the peak at the 1 meter elevation is consistent with wind trajectory transport times. It is also interesting to note the measurement of a second peak which occurs after the liquid release has stopped. This second peak is more apparent at an elevation of 8 meters than at the lower elevations and is probably more buoyant. This peak may be associated with the venting of gaseous HF after the spill was completed.

Figures 4-6, 4-7 and 4-8 present crosswind contour plots as a function of height (66.6 second averages) for the 1000 meter row of sensors 92.3, 158.9 and 225.5 seconds

after the spill had started. The vertical scale has been expanded by a factor of two on these figures. Figure 4-9 presents a plot of temporal variations in HF concentrations as a function of crosswind measurements for the 1 meter sampler elevations at the 1000 meter sensors. From these figures it is interesting to note the arrival of the leading edge of the plume on the left side of the array independent of the bulk of the plume which arrived later on the right side of the array.

Figure 4-10 presents a plot of temporal changes of HF concentrations (66.6 second averages) 1 meter above the ground as a function of crosswind distance at the 3000 meter array. Analysis of trajectory data indicates that the plume should have arrived at the samplers 449 seconds after the spill started. These samplers, however, were started at 470 seconds after the spill began, thus missing the leading edge of the gas cloud. It is likely that the peak closely resembles the maximum 66.6 second average concentration. This figure also indicates the arrival of a second peak, as was observed at the other sampling arcs.

Test 2

Test 2 crosswind concentration isopleths for the 300 meter sensors are presented in Figures 4-11 and 4-12. These plots present 66.6 second averages from 54.0 and 120.6 seconds after the spill had started. The vertical scale has been expanded by a factor of two. Figure 4-12 shows that when the leading edge of the plume passed the 300 meter row the edges of the cloud produced higher concentrations than the center of the cloud. This

bifurcation is characteristic of other dense gas experiments (Koopman, et al. 1982; Ermak and Chan 1985). After the leading edge of the plume had passed, concentrations were relatively uniform across the cloud for a specific sampler height (Figure 4-12). The data collected at this downwind distance indicate that both steady state conditions and the majority of the plume was measured by these samplers.

Figure 4-13 presents a crosswind plot of 1 meter HF concentrations as a function of time. As indicated by this figure, steady state concentrations were observed and plume centerline concentrations were measured. This figure also indicates the shift in wind direction which occured during this test.

Test 3

Crosswind HF concentration contours for Test 3 are presented in Figures 4-14 through 4-16 for the 300 meter sampling array with the vertical scale expanded by a factor of two. Figure 4-17 presents a crosswind contour concentration plot as a function of time for these samplers. As indicated by these data, concentrations at 300 meters exhibited a gradual rise and then steady state conditions for a period of about 300 seconds. These data also indicate that the entire plume was captured by these samplers. Figures 4-18 and 4-19 present crosswind concentration isopleths for 225 and 358 seconds after the spill had started for the 1 kilometer array. Vertical scale has been expanded by a factor of four. A plot indicating crosswind concentration at 1 meter elevation versus time is presented for the 1 kilometer sensors in

Figure 4-20. As indicated in this plot, steady state conditions as well as measurement of the entire cross section of the plume were achieved at this downwind distance. It is interesting to note that Figure 4-21 shows that the maximum observed concentration for this array occured at an elevation of 3 meters.

Crosswind concentrations at an elevation of 1 meter versus time are presented in Figure 4-22 for the 3 kilometer array of sensors. As indicated by these data, steady state conditions were approached at this downwind distance.

Comparison of Temperature Data Between Tests

Figure 4-23 shows cloud temperatures for Tests 1, 2 and 3 at 20 meters downwind. At this location Test 1 produced a cloud temperature drop of 57°C. During Test 2 the cloud temperature decreases were more than those observed in Test 3 (49°C for Test 2 versus 32°C for Test 3). Since the only difference between Test 2 and Test 3 was the addition of water vapor, the exothermic (hydrolysis) reaction of water vapor with the HF may be altering cloud temperatures and thus affecting the density of the cloud. At a distance of 60 meters downwind (Figure 4-24), the same trends were observed as were found at 20 meters downwind. Test 1 produced the largest temperature decreases (54°C). Test 2 had larger cloud temperature decreases than those observed in Test 3 (35°C versus 18°C for the same time after the spill occurs). At 100 meters downwind (Figure 4-25) Test 1 had larger temperature decreases than Test 2 and 3 (19°C for Test 1 versus 10°C for Test 2 and 9°C for Test 3). At this distance there

is no real difference between Tests 2 and 3. Figure 4-26 presents temperatures at 200 meters downwind for the three tests and are consistent with the data collected at 100 meters downwind.

Thermodynamic modeling of these experiments has been conducted using the Schotte model (Diener 1987). This modeling was performed as a means of confirming the temperature measurements. Table 4-1 presents a comparison of observed and predicted cloud temperatures.

Table 4-1

Comparison of Maximum Differences Between Air Temperature and Cloud Temperatures

Test Number	Observed Differences(°C)	Predicted Differences(°C)	T_a(°)	RH(%)
1	103	91	37	5
2	83	89	34	11
3	70	81	34	19

The differences between the observed and predicted temperatures are within the limits of uncertanties of the data and the model.

Conclusions

These experiments have provided a high quality experimental data base against which the performance of dense gas models can be tested. Because these releases only examined one set of pressure and temperature conditions, a large uncertainty in source term characteristics still exists for releases at other temperatures and pressures. Additional research needs to be conducted in this area. Humidity effects are measurable and may make a difference in cloud dispersion. Inclusion of thermodynamics with flashing two phase jets interacting with atmospheric water vapor are necessary to more accurately predict the dispersion of HF releases. Further analyses of these data and additional research are needed to better quantify the thermodynamic contribution to atmospheric dispersion.

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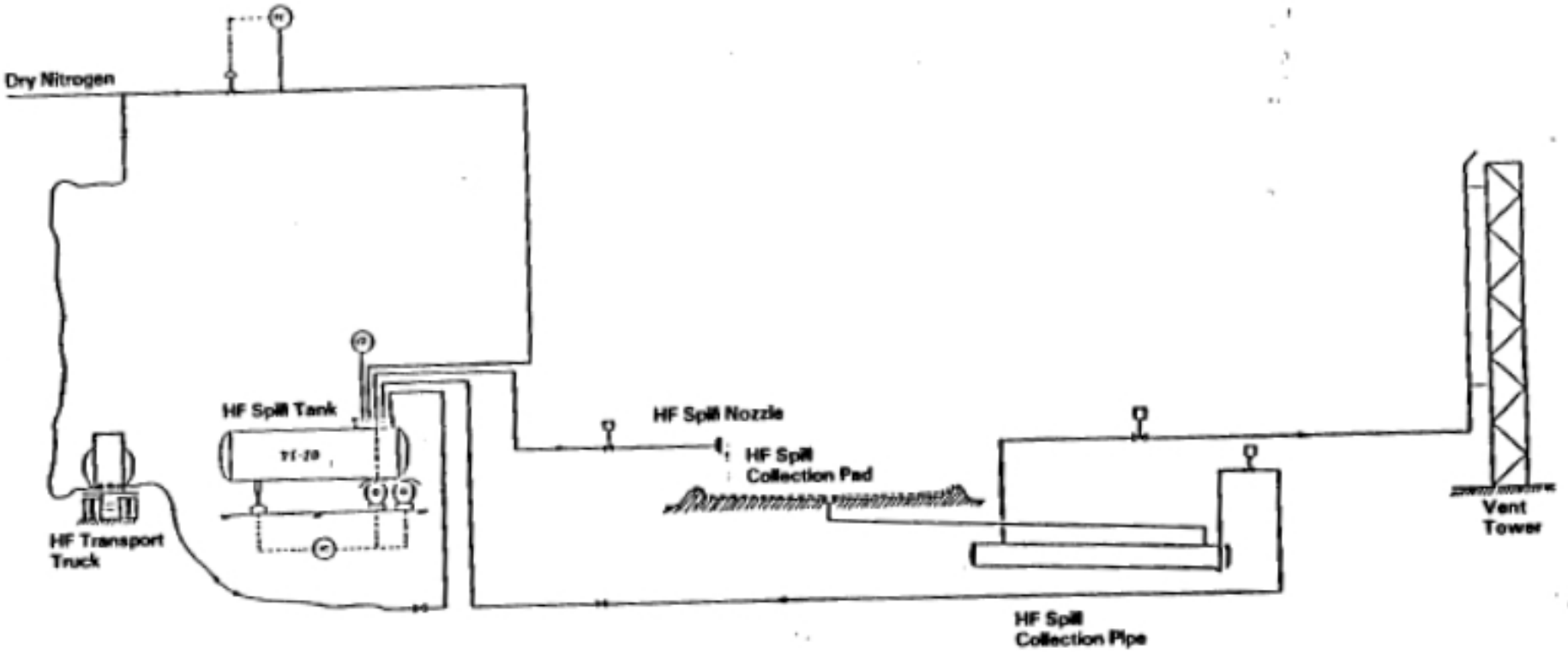
Figure 2-1

Schematic of the Hydrogen Fluoride Spill Test Facility



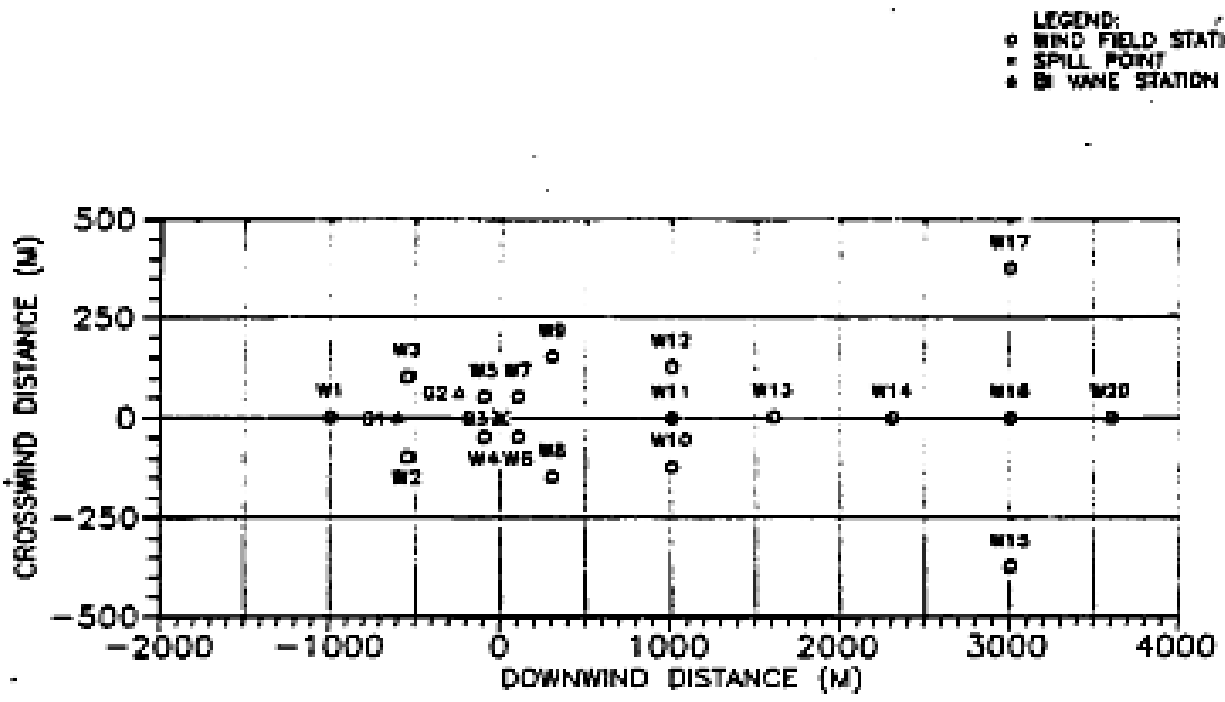


FIGURE 2-2
PLOT PLAN OF WIND SENSORS

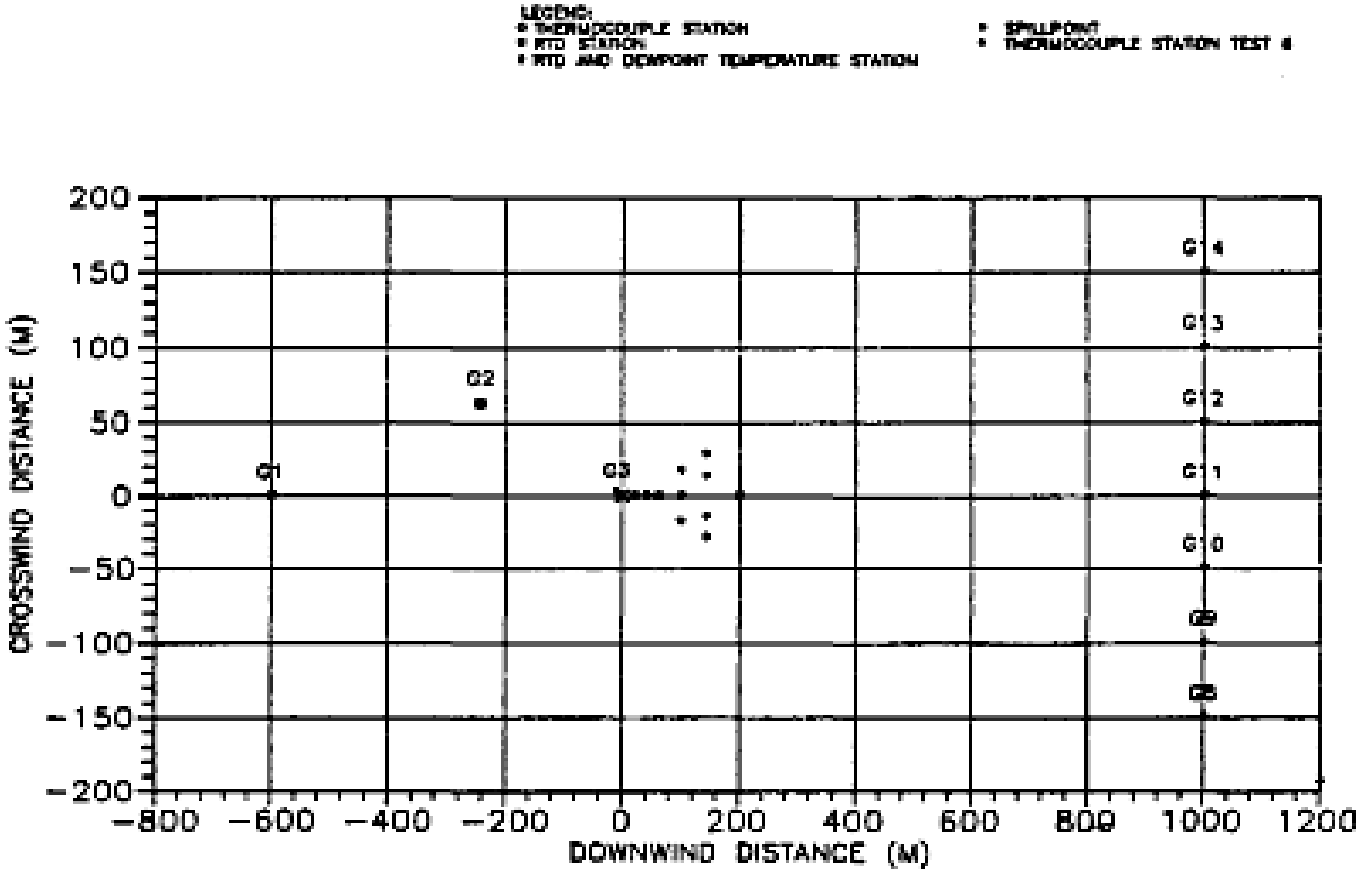


FIGURE 2-3
PLOT PLAN OF TEMPERATURE SENSORS

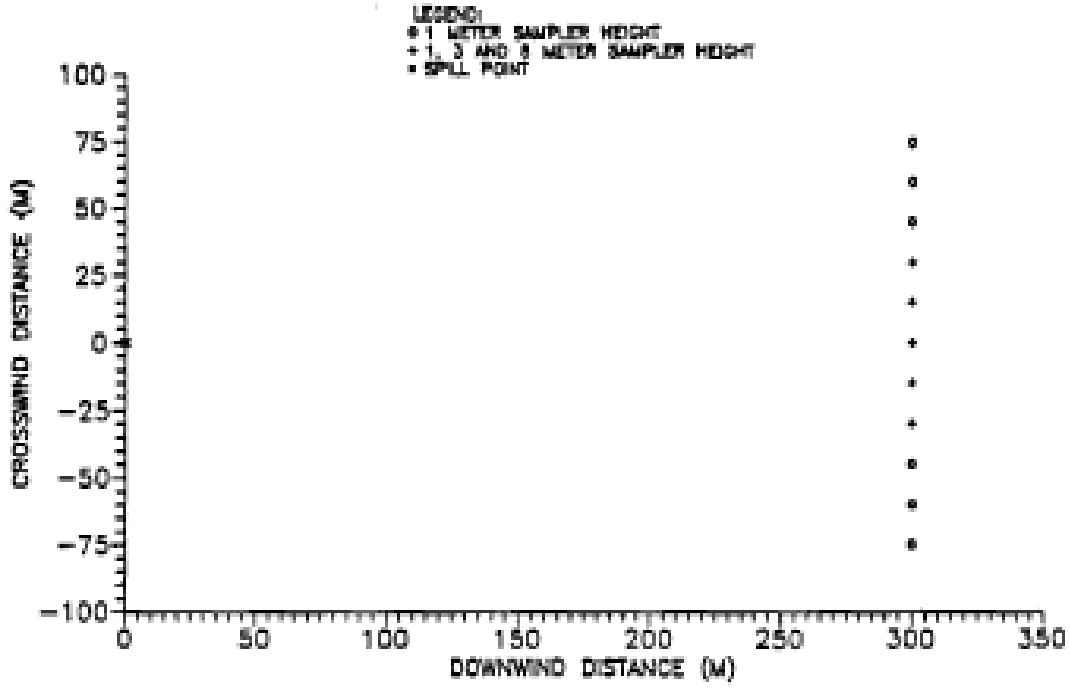


FIGURE 2-4a 300 METER SAMPLERS

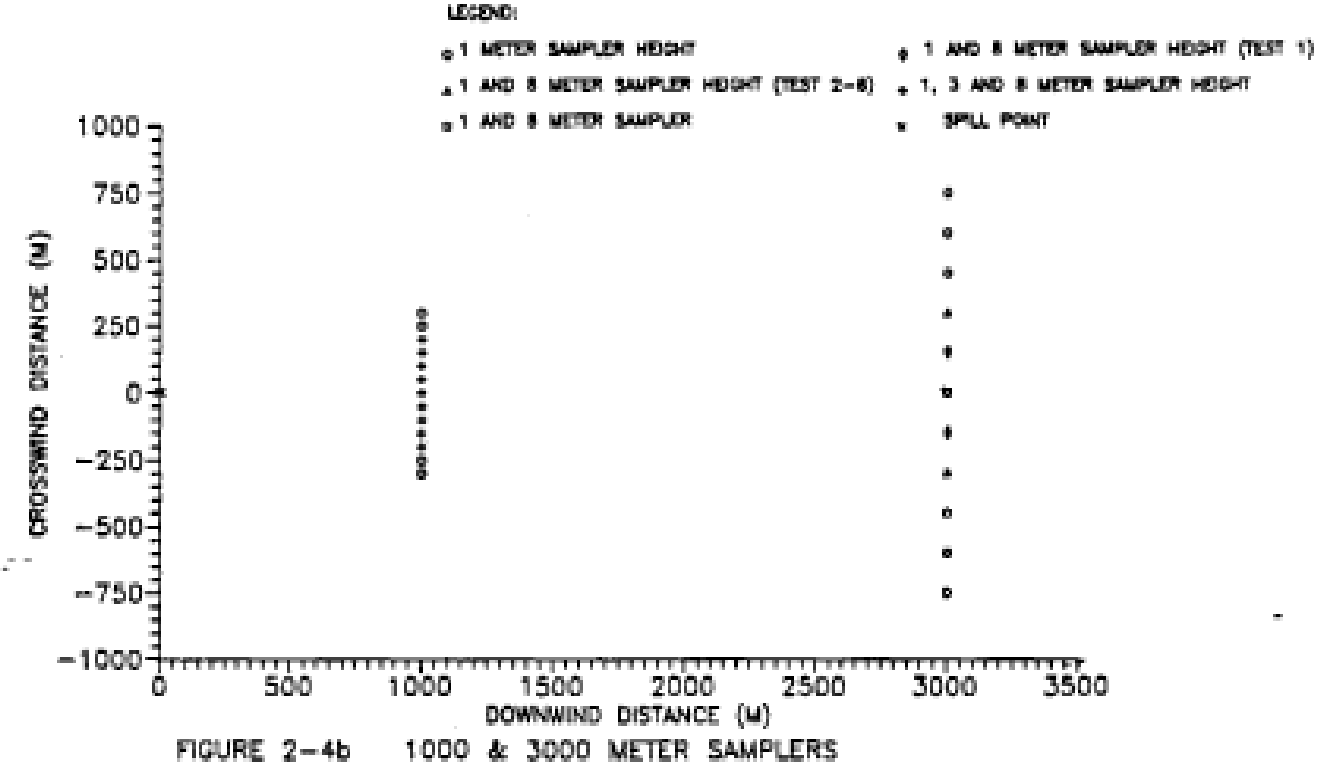


FIGURE 2-4b 1000 & 3000 METER SAMPLERS

FIGURE 2-4
PLOT PLAN OF THE IF SAMPLERS

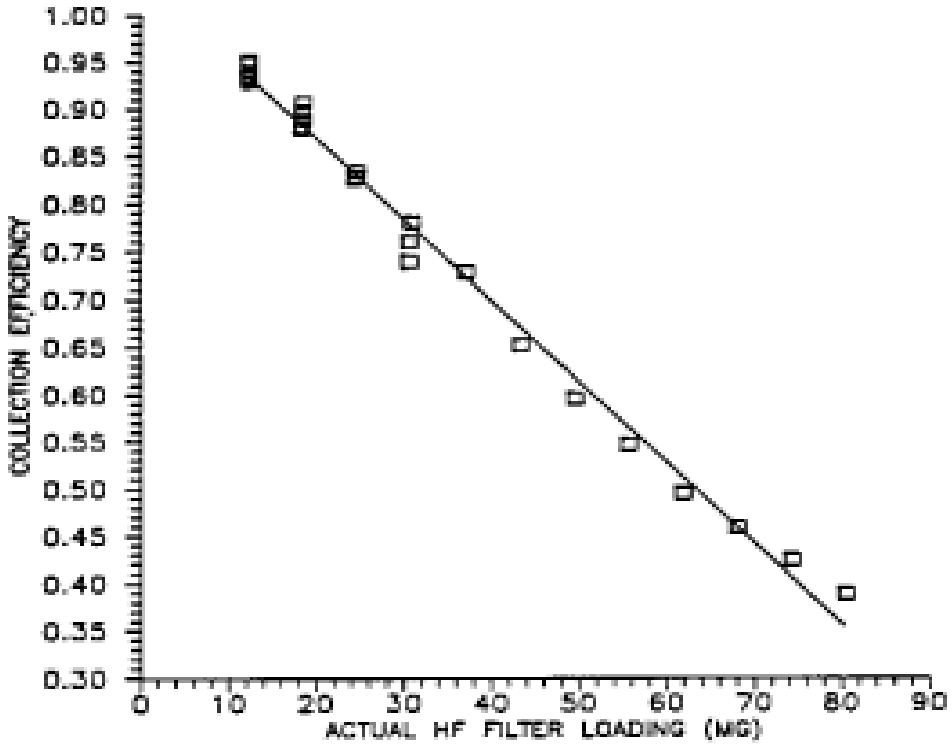


FIGURE 2-5
AMOCO INTEGRATED FILTER SAMPLER COLLECTION EFFICIENCY

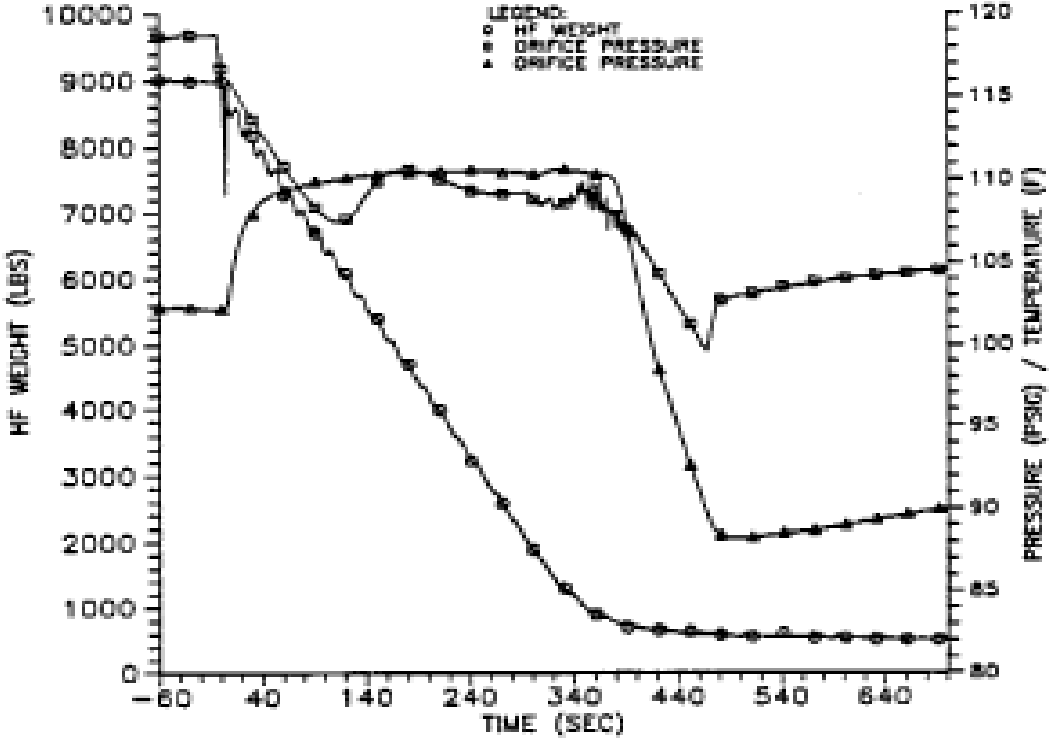


FIGURE 3-1
SPILL RATE, ORIFICE PRESSURE AND ORIFICE TEMPERATURE FOR TEST 3

FIGURE 4-1, HF CONCENTRATIONS (PPM) FOR TEST 1, 300 METERS DOWNWIND, TIME 30.5 SECONDS

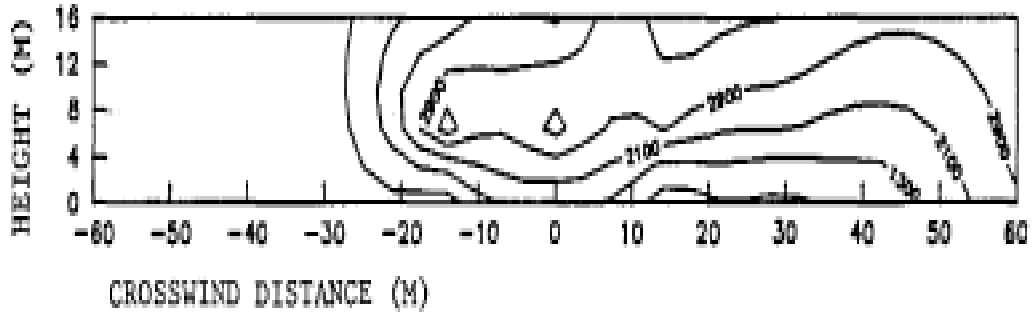


FIGURE 4-2, HF CONCENTRATIONS (PPM) FOR TEST 1, 300 METERS DOWNWIND, TIME 97.1 SECONDS

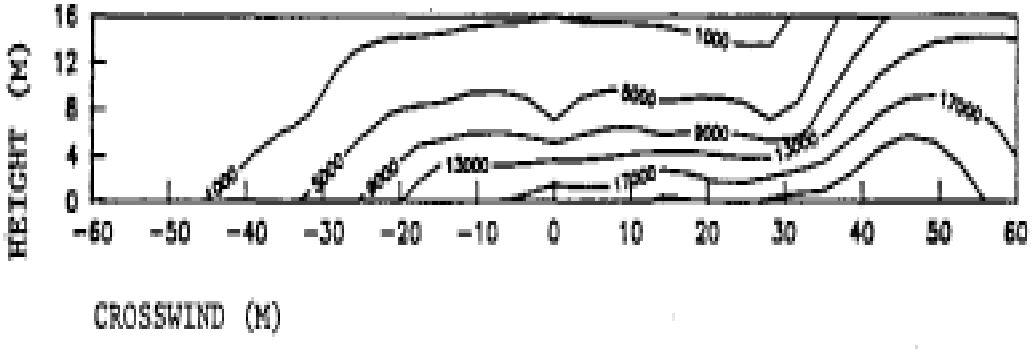


FIGURE 3-2
WIND TRAJECTORY PLOT

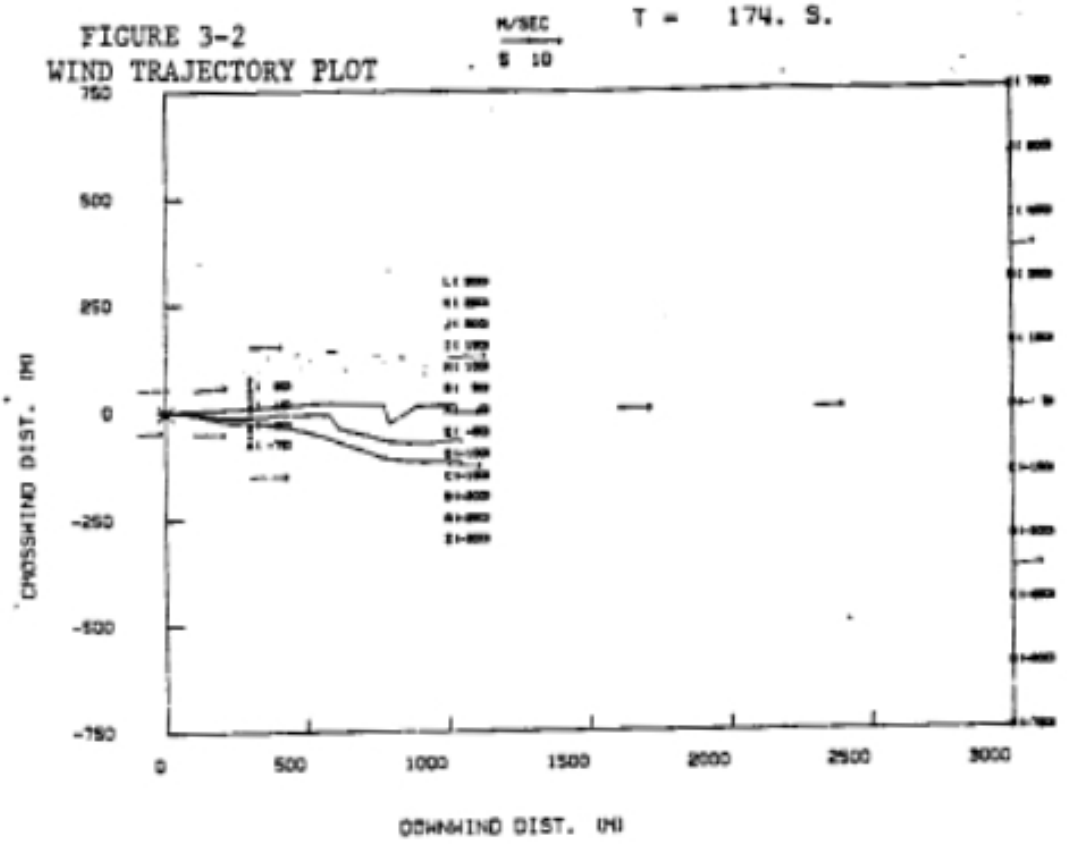


FIGURE 3-3
WIND TRAJECTORY PLOT

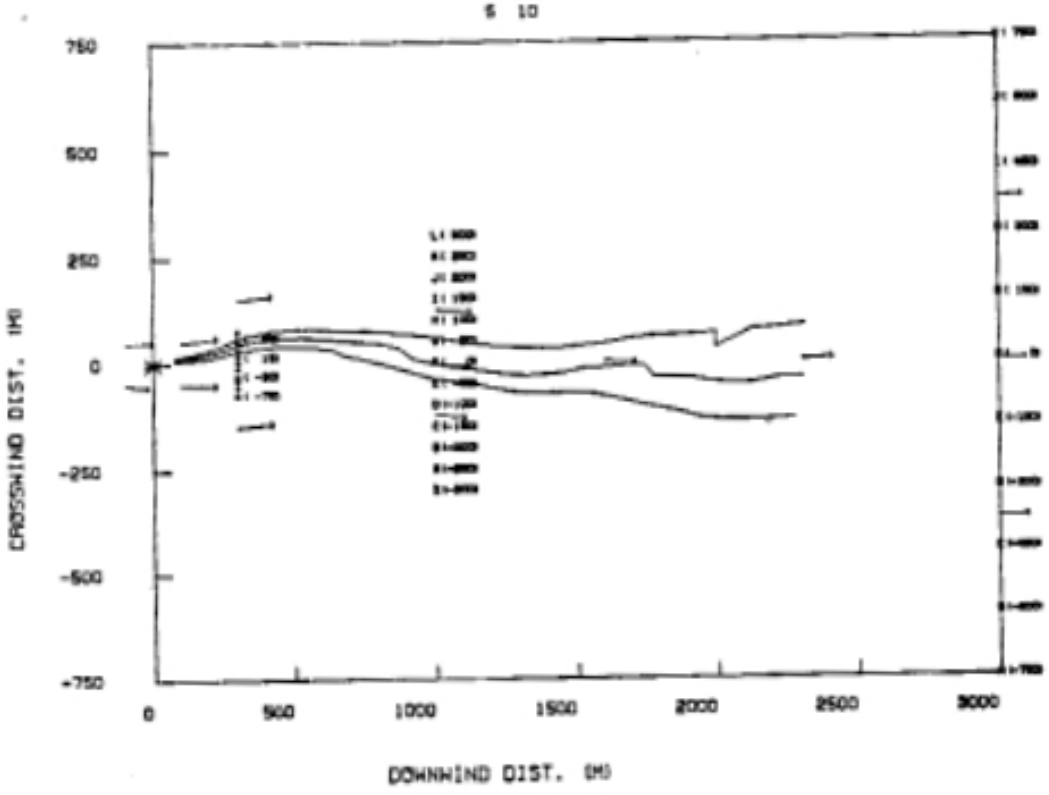


FIGURE 4-3. TEST 1 HF CONCENTRATIONS, 300 METERS, 1 METER SENSOR HEIGHT

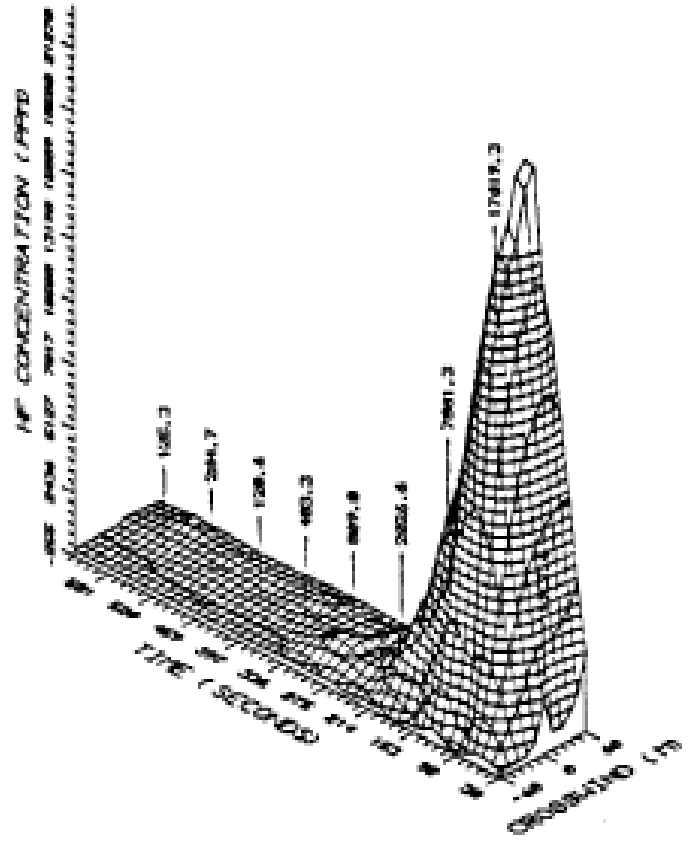


FIGURE 4-4. TEST 1 HF CONCENTRATIONS, 300 METERS, 3 METER SENSOR HEIGHT

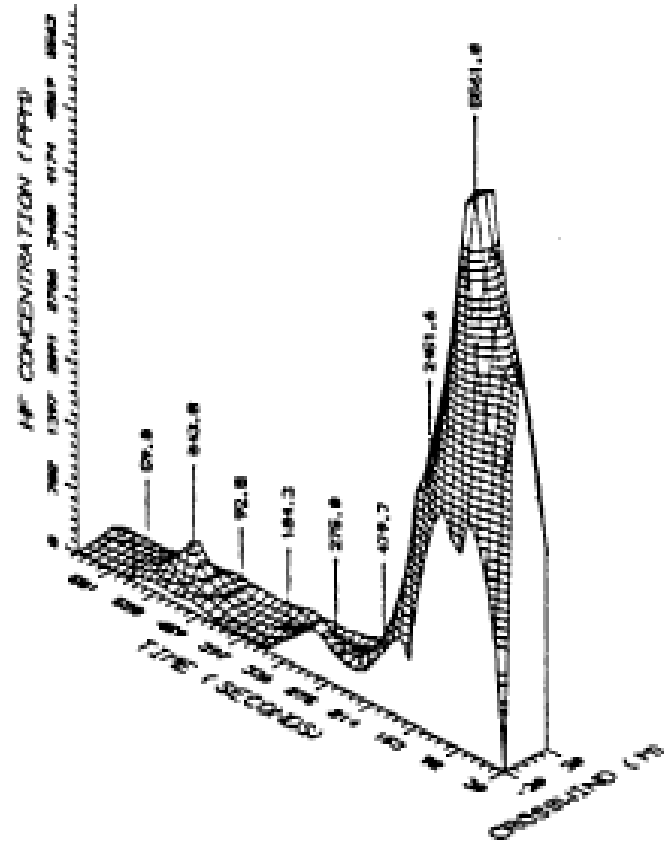


FIGURE 4-5. TEST 1 HF CONCENTRATIONS, 300 METERS, 6 METER SENSOR HEIGHT

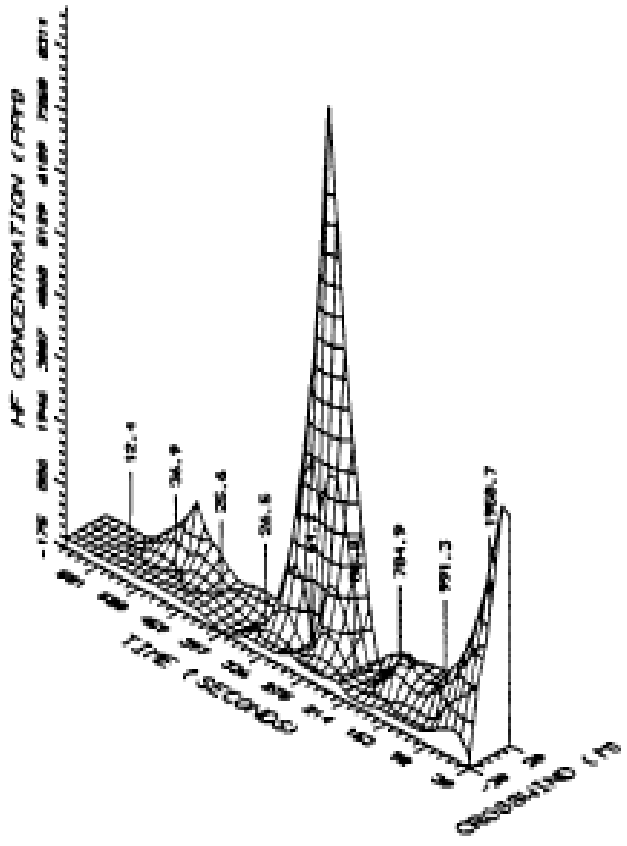


FIGURE 4-6. HF CONCENTRATIONS (PPM) FOR TEST 1, 1 KILOMETER DOWNWIND, TIME 92.3 SECONDS

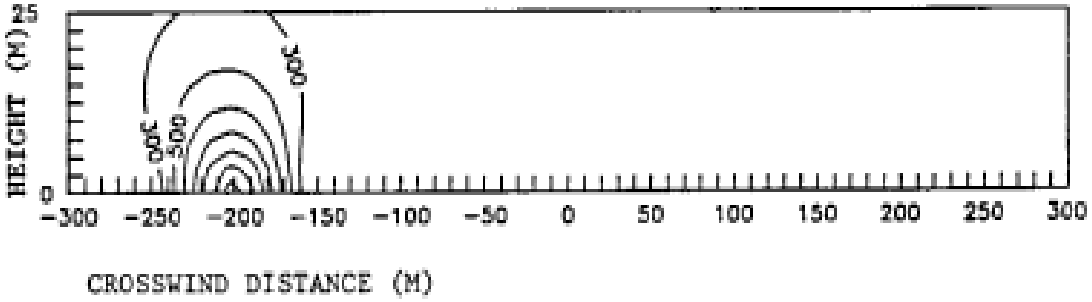


FIGURE 4-7, HF CONCENTRATIONS (PPM) FOR TEST 1, 1 KILOMETER DOWNWIND, TIME 159 SECONDS

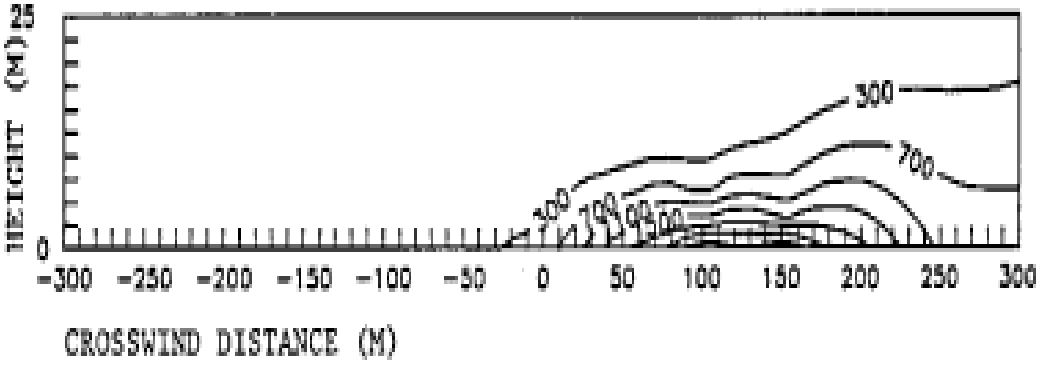


FIGURE 4-8, HF CONCENTRATIONS (PPM) FOR TEST 1, 1 KILOMETER DOWNWIND, TIME 226 SECONDS

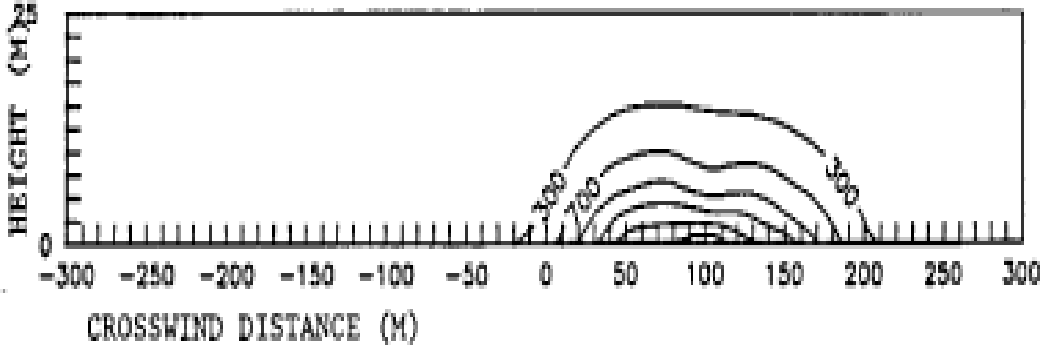


FIGURE 4-9, TEST 1 HF CONCENTRATIONS, 1000 METERS, 1 METER SENSOR HEIGHT

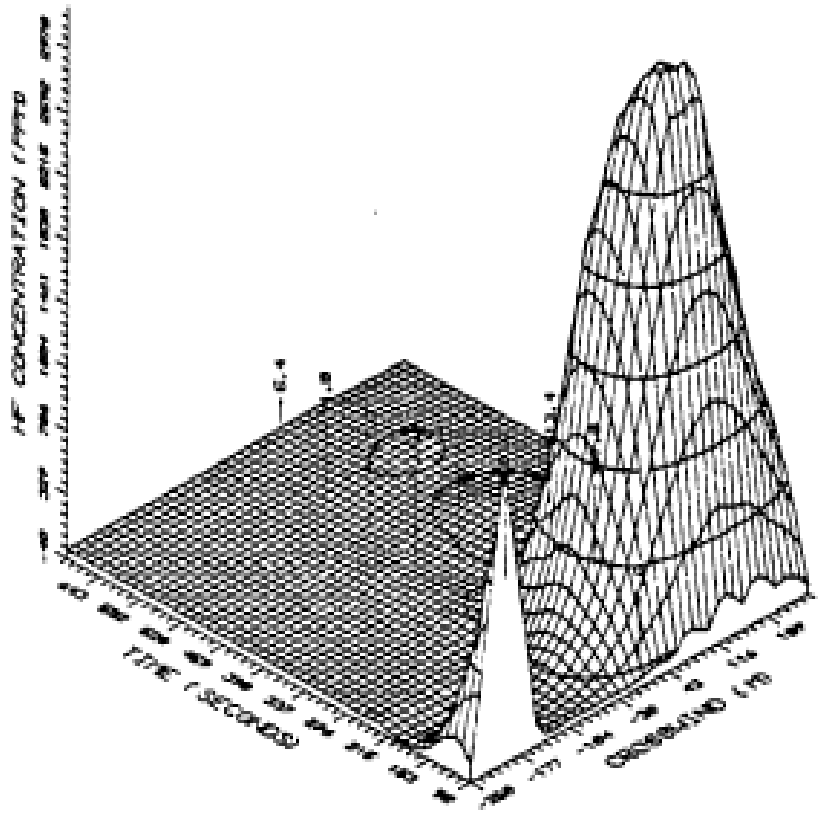


FIGURE 4-10, TEST 1 HF CONCENTRATIONS, 3000 METERS, 1 METER SENSOR HEIGHT

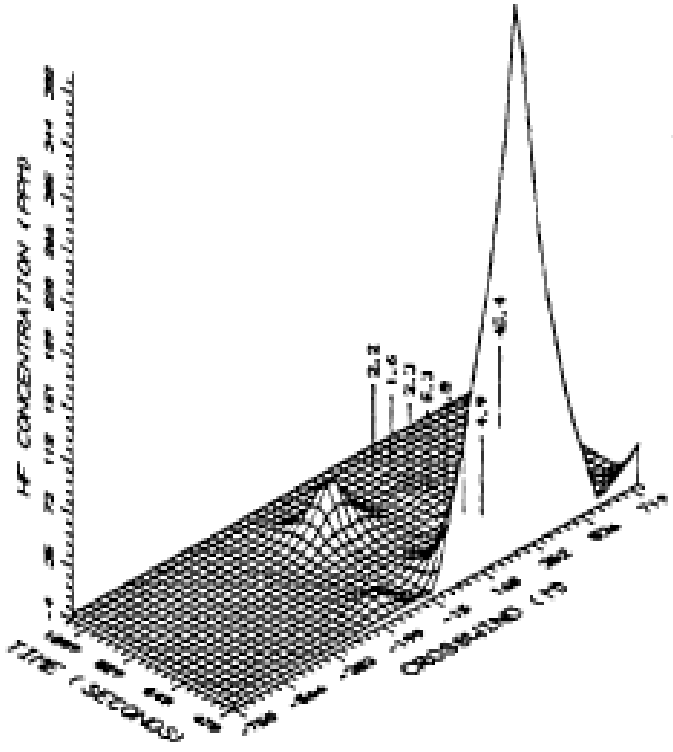


FIGURE 4-11, HF CONCENTRATIONS (PPM) FOR TEST 2, 300 METERS DOWNWIND, TIME 54 SECONDS

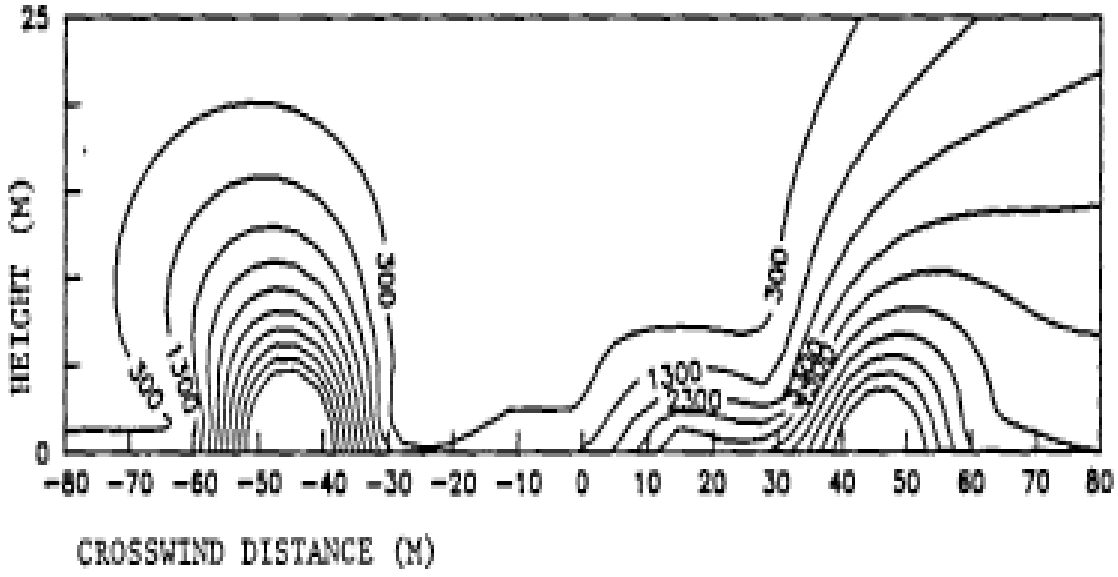


FIGURE 4-12, HF CONCENTRATIONS (PPM) FOR TEST 2, 300 METERS DOWNWIND, TIME 121 SECONDS

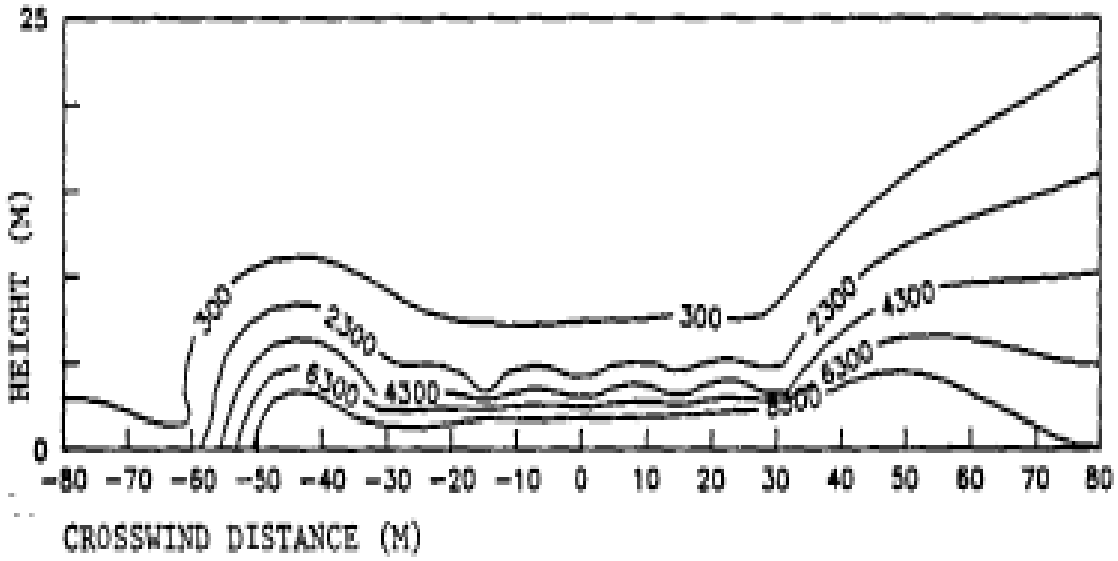


FIGURE 4-13. TEST 2 HF CONCENTRATIONS, 1000 METERS, 1 METER SENSOR HEIGHT

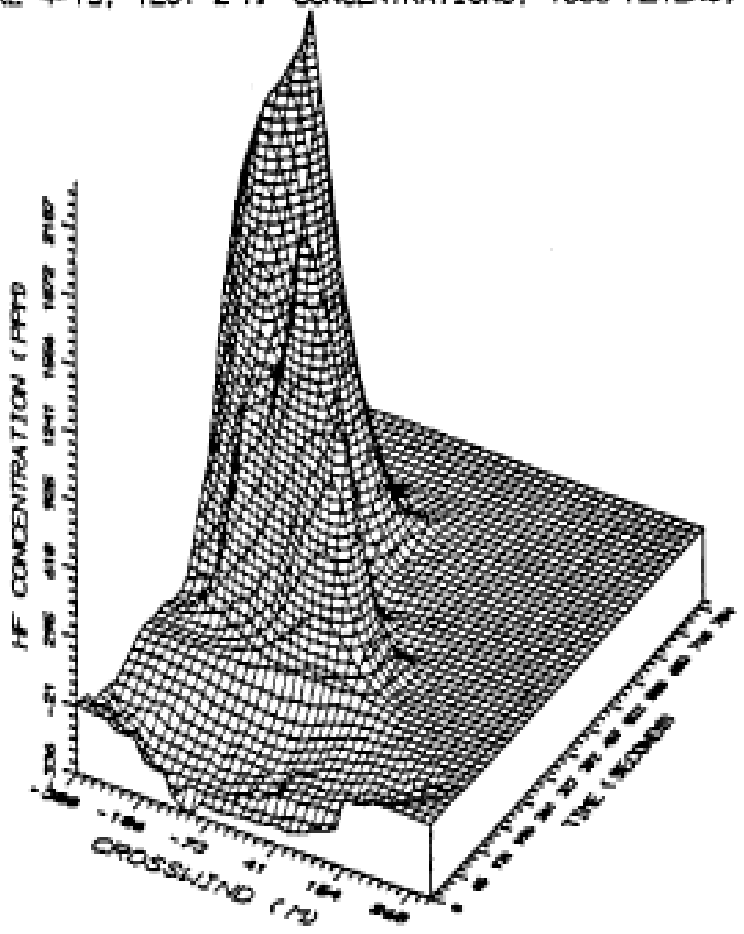


FIGURE 4-14. HF CONCENTRATIONS (PPM) FOR TEST 3, 300 METERS DOWNWIND, TIME 43 SECONDS

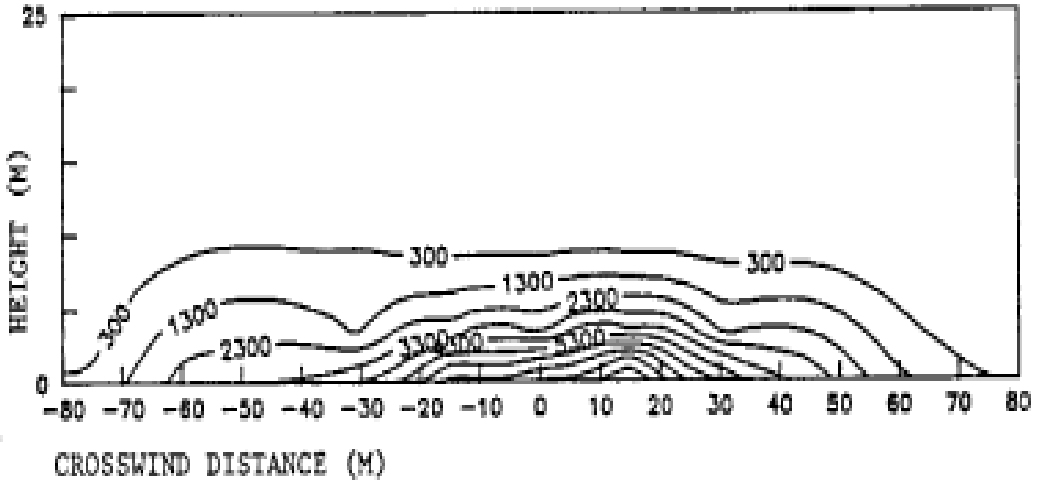


FIGURE 4-15, HF CONCENTRATIONS (PPM) FOR TEST 3, 300 METERS DOWNWIND, TIME 113 SECONDS

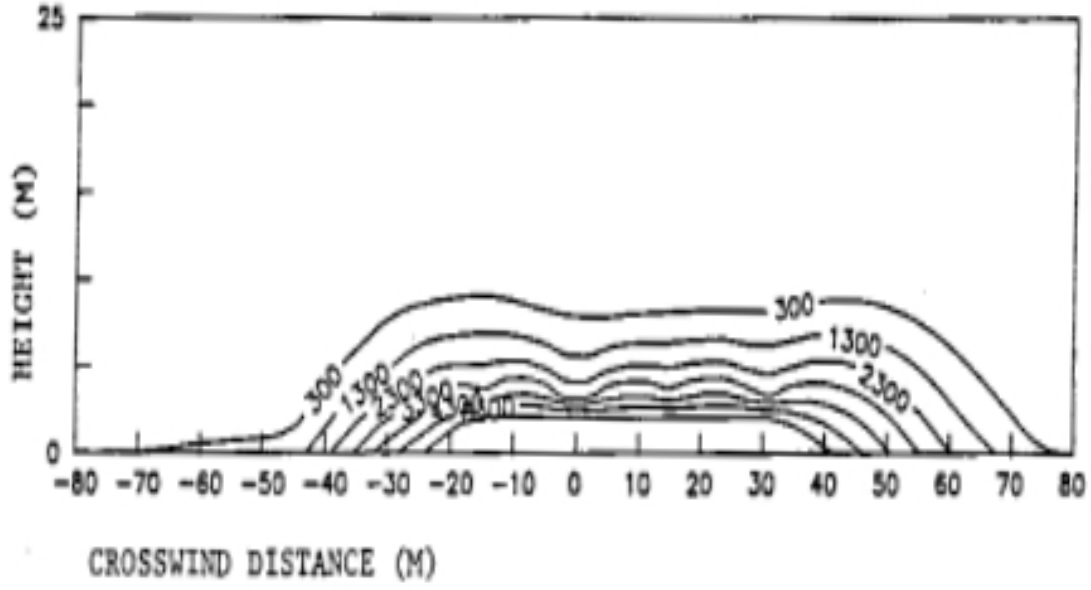


FIGURE 4-16, HF CONCENTRATIONS (PPM) FOR TEST 3, 300 METERS DOWNWIND, TIME 113 SECONDS

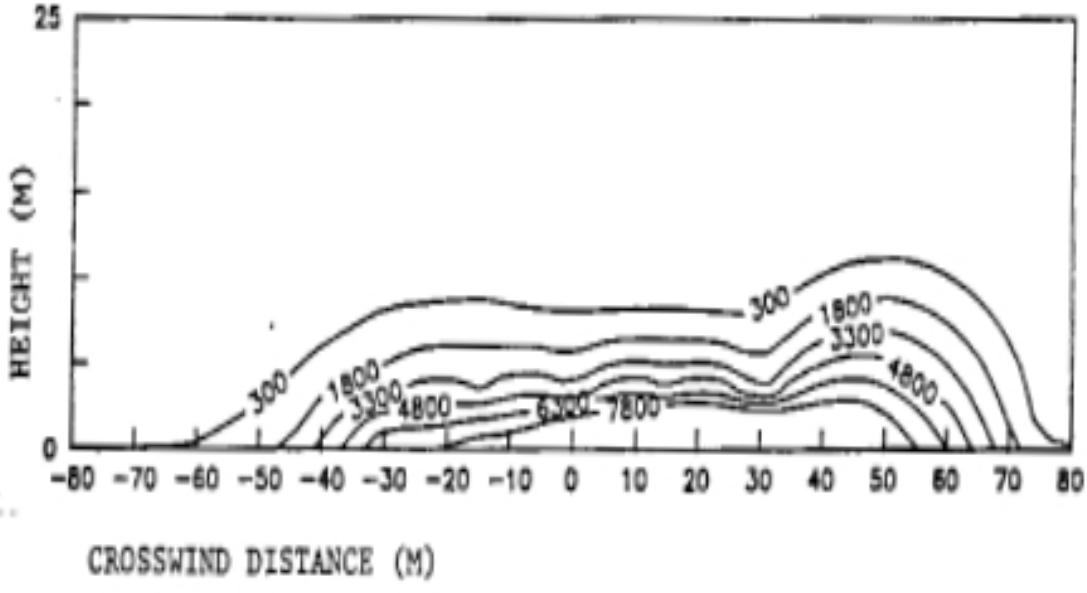


FIGURE 4-17. TEST 3 HF CONCENTRATIONS, 300 METERS, 1 METER SENSOR HEIGHT

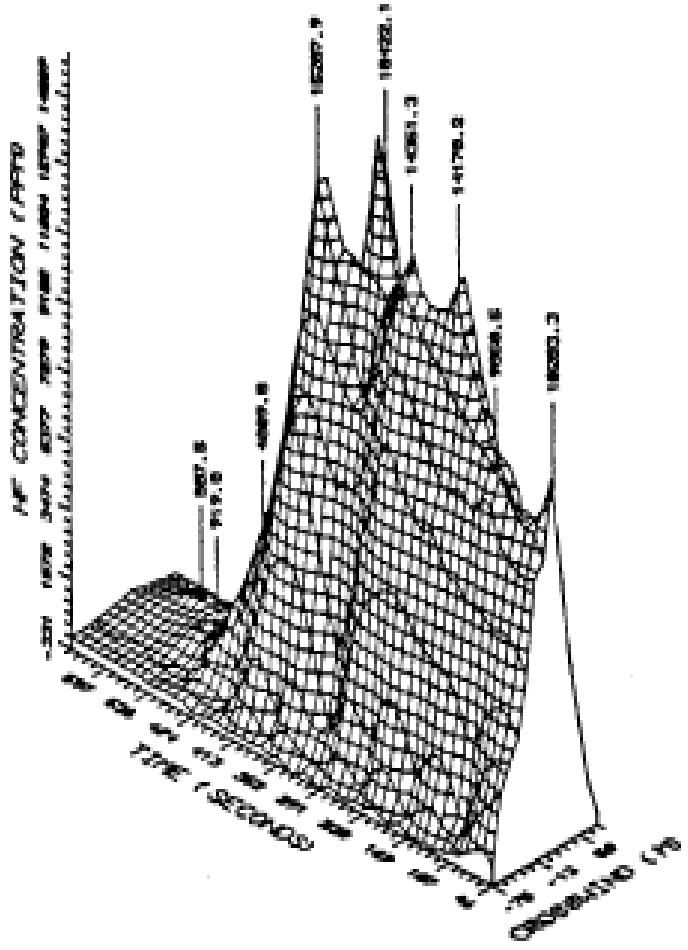


FIGURE 4-18. HF CONCENTRATIONS (PPM) FOR TEST 3, 1000 METERS DOWNWIND, TIME 225 SECONDS

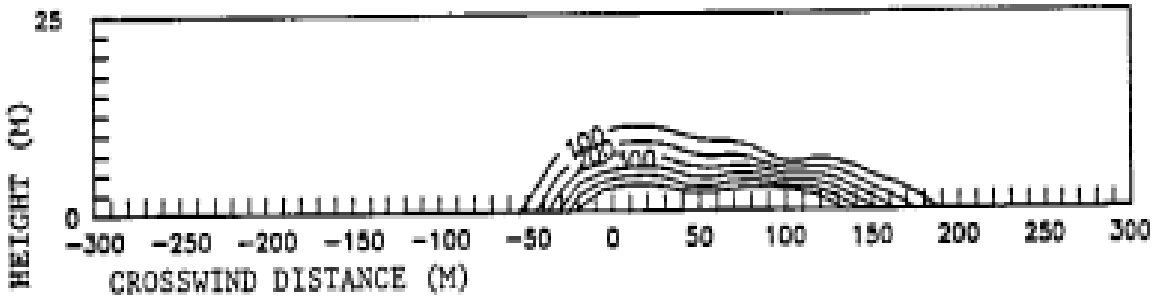


FIGURE 4-19. HF CONCENTRATIONS (PPM) FOR TEST 3, 1000 METERS DOWNWIND, TIME 282 SECONDS

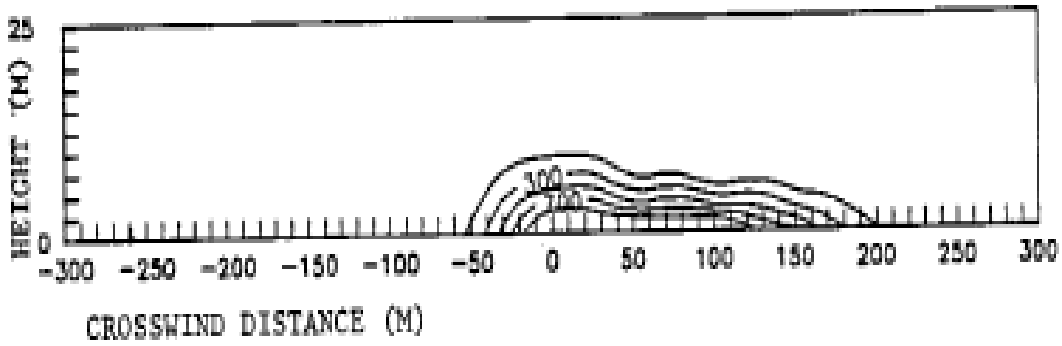


FIGURE 4-20. TEST 3 HF CONCENTRATIONS, 1000 METERS, 1 METER SENSOR HEIGHT

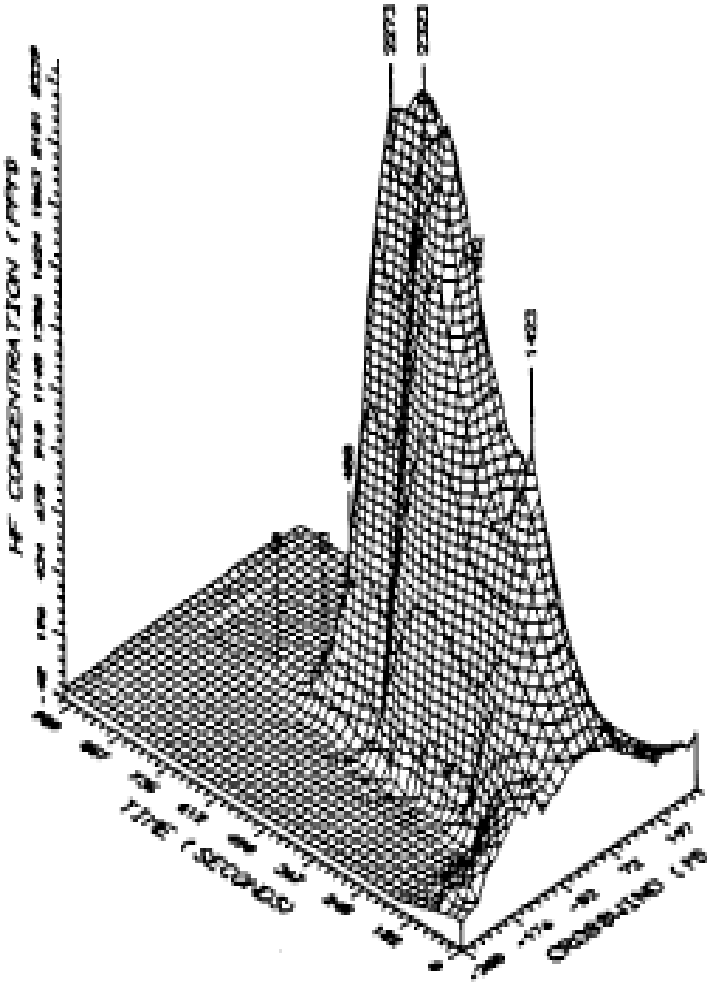


FIGURE 4-21, HF CONCENTRATIONS (PPM) FOR TEST 3, 1000 METERS DOWNWIND, TIME 625 SECONDS

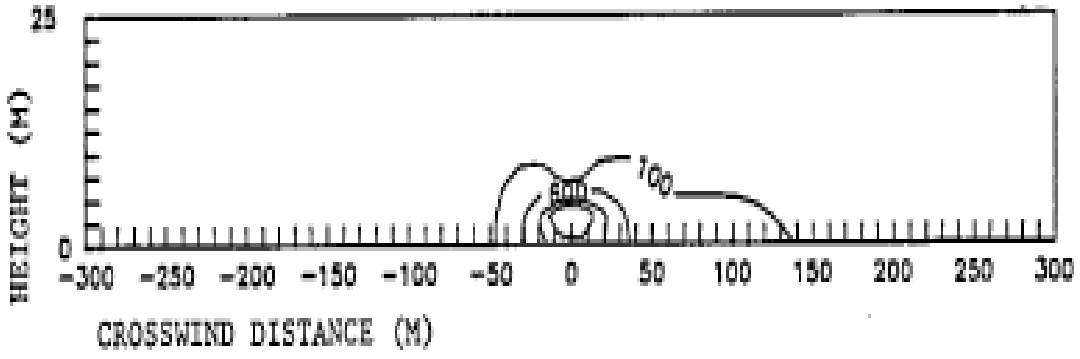
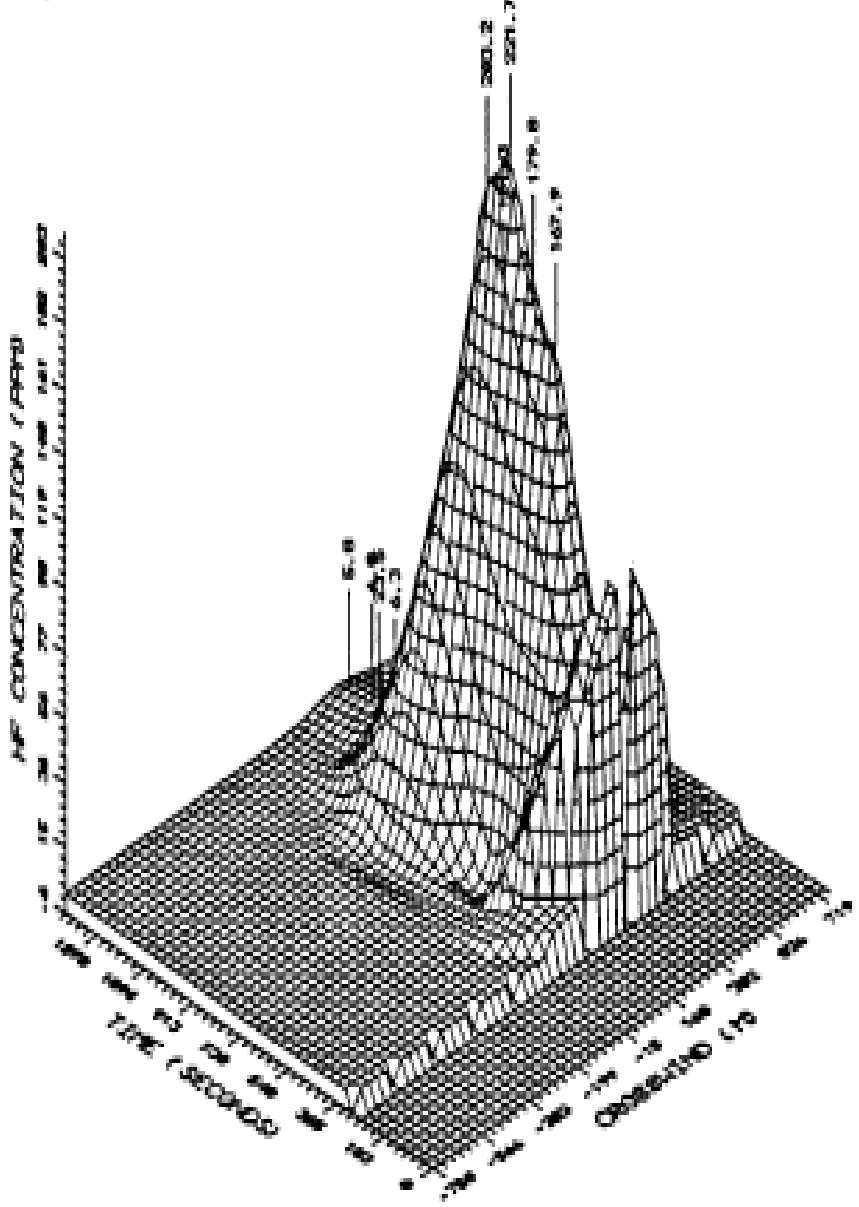


FIGURE 4-22. TEST 3 HF CONCENTRATIONS, 3000 METERS, 1 METER SENSOR HEIGHT



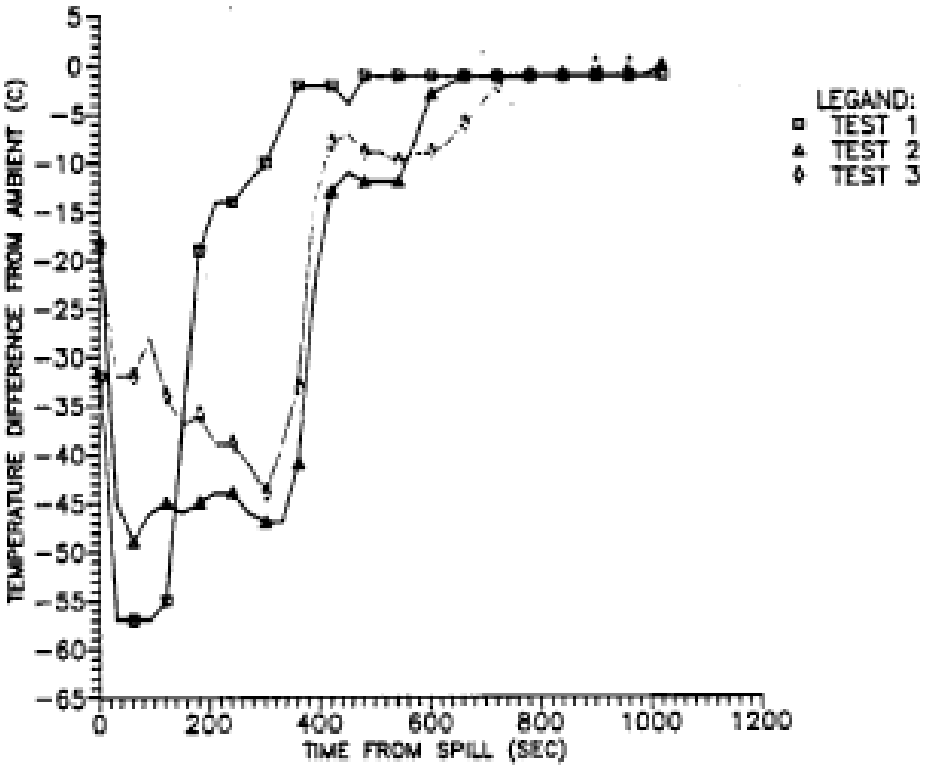


FIGURE 4-23, TEMPERATURE DIFFERENCES FOR TEST 1, 2 AND 3 MEASURED 20 METERS DOWNWIND OF THE SPILL POINT

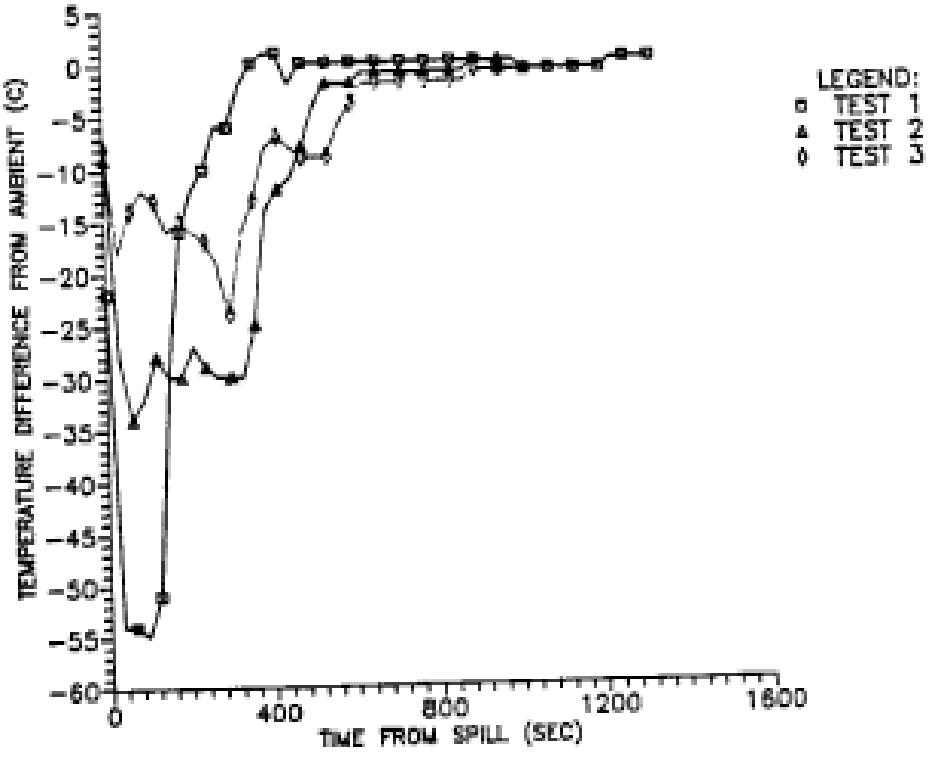


FIGURE 4-24, TEMPERATURE DIFFERENCES FOR TEST 1, 2, AND 3 MEASURED AT 60 METERS DOWNWIND OF THE SPILL POINT

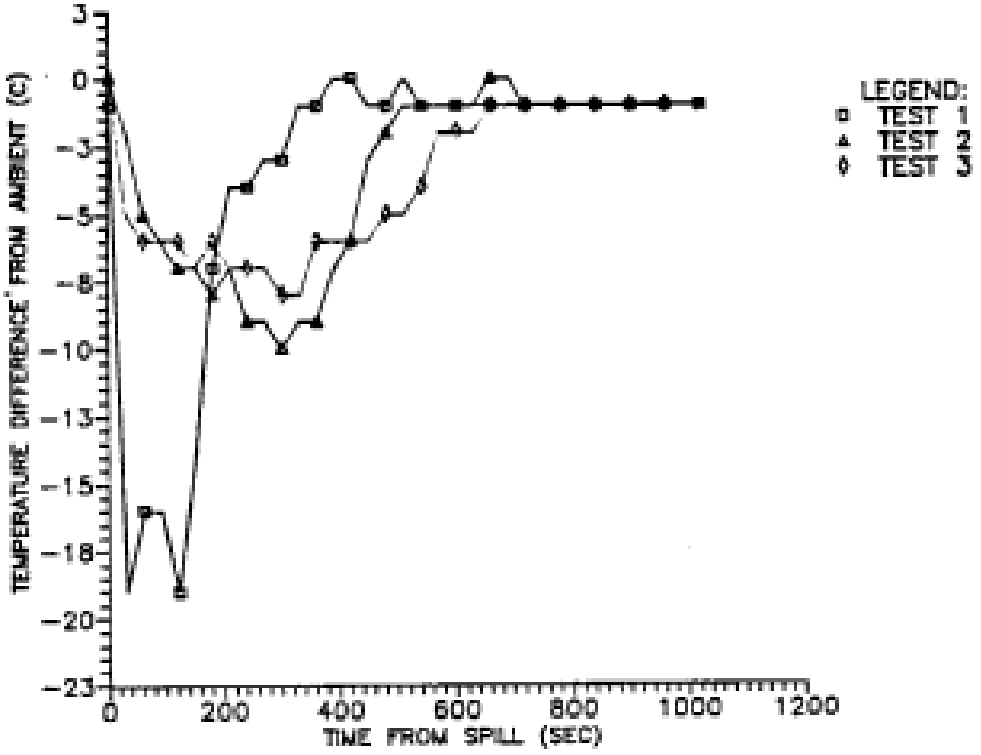


FIGURE 4-25. TEMPERATURE DIFFERENCES FOR TEST 1, 2, AND 3 MEASURED AT 100 METERS DOWNWIND OF THE SPILL POINT

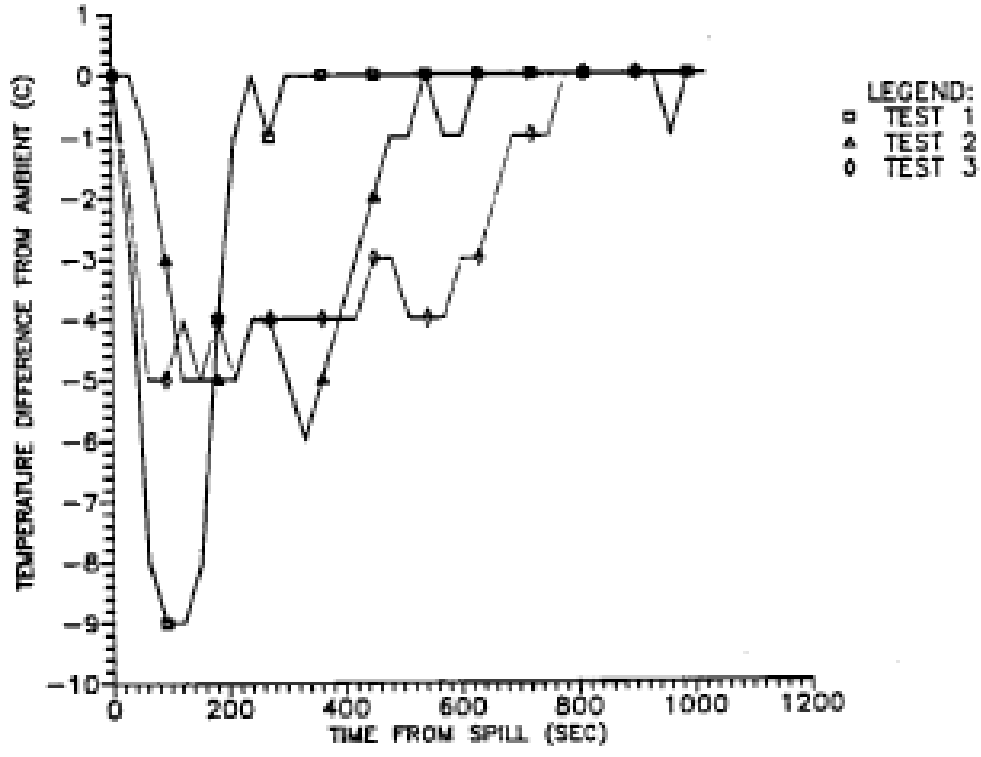


FIGURE 4-26. TEMPERATURE DIFFERENCES FOR TEST 1, 2, AND 3 MEASURED AT 200 METERS DOWNWIND OF THE SPILL POINT

Doc-10:

"2018-09-22_GEng_Rainout-plus_to-SCAQMD.pdf"

Important Elements of a Model for Estimating Hydrogen Fluoride (HF) Airborne Release and Rainout Associated with a Major HF Tank-Breach

Dr. Genghmun Eng, PhD Physics 1978

Original: 21 July 2017, Updated: 6/20/2018, 9/22/2018

geng001@socal.rr.com

1986 Pure HF Release Test in Nevada Desert

8300 lbs HF Release at 104°F ≈ 3764.82 Kg ≈ 3986.28 Liters (orig. liquid)

http://www.aristatek.com/newsletter/0602February/PeekAtPeac.aspx

Figure 2 – Goldfish Series Anhydrous Hydrogen Fluoride release at HSC

"The assumption.. was that any HF released.. would stay in liquid form and could be captured on site. *'None of the HF was collected as a liquid'*, said [Ron] Koopman [*Livermore Lab Physicist who oversaw test*]".*

* https://www.publicintegrity.org/2011/02/24/2118/use-toxic-acid-puts-millions-risk

How Dense Whitish HF Clouds Can Form

- HF has a nominal molecular weight of 20.01 gms/mole.
  - It is less than N_2(g) (~28 gms/mole) and O_2(g) (32 gms/mole)
- Why doesn't HF just rise up and float away?
  - HF weighs less than N_2(g) (~28 gms/mole) and O_2(g) (32 gms/mole)
  - However, HF(g) is known to form dimers $(HF)_2$ and hexamers $(HF)_6$
- HF is normally colorless, how come we see a cloud?
  - If Tank is warmer than ambient, exiting HF(g) can form *Condensation Fog*
  - Average molecular energy = $^3/_2$ kT, so slower moving $(HF)_2$ and $(HF)_6$ can seed HF(ℓ) micro-droplet formation by gas-gas collisions
- HF(g) has a large affinity for H**2**O(g), where the formation of HF-H**2**O(g) complexes can further stabilize the persistence of a ground-hugging cloud
- HF(ℓ) has a low 67.136ºF b.p. (boiling point), while **HFA**=Hydrofluoric Acid (HF-H**2**O) has ~234.41ºF=112.45ºC b.p. Azeotrope (**HFZ**) of ~ (HF+2▪H**2**O)
- Downwind of an HF-Cloud, ambient air H**2**O molecules can exceed HF molecules by >1000:1, even with very low RH (relative humidity) conditions
- Ambient H**2**O(g) can slowly convert HF(g) in HF-Cloud to **HFA**/**HFZ** droplets

Example of an Exiting Vapor Forming *Condensation Fog*

http://blogs.nbc12.com/weather/2015/02/why-do-we-see-our-breath-when-its-cold.html

"Why do we see our breath when it's cold out? Our lungs and mouths are filled with moisture .. some of this moisture exits in the form of water vapor. When the air temperature is cold enough, this vapor is forced to change from a gas into tiny liquid droplets [via] condensation."
Meteorologist Matt Holiner (2/6/2015)

When the In-Tank HF(ℓ) is warmer than ambient, HF(g) exiting from a Tank-Breach can quickly form an HF(ℓ) *Condensation Fog*

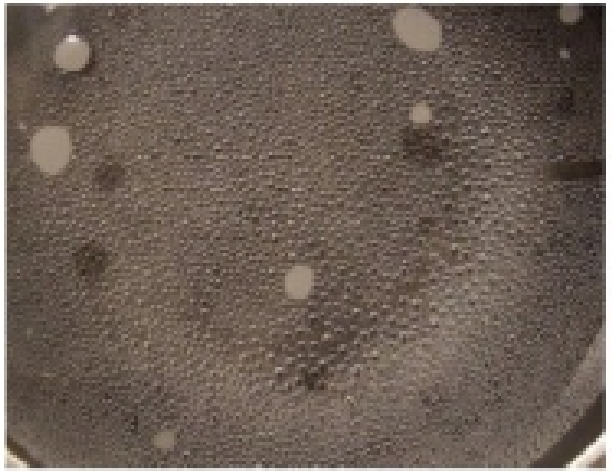
What if Temperatures are BELOW the HF b.p. ?

Apply Lessons Learned from the Chinese Tea Masters:

5 Stages of Boiling Tea Water

https://www.goldenmoontea.com/blogs/tea/106687623-the-5-different-stages-of-boiling-water-and-how-the-chinese-use-them-for-tea

Shrimp Eyes: ~160.F
Tiny Bubbles



Crab Eyes: ~175.F
Wisps of Steam

Fish Eyes: ~180.F
Larger Bubbles, Rising Steam

Rope-of-Pearls: ~200-205.F
Bubbles Stream to Surface

Raging-Torrent: 212.F
Turbulent Rolling Boil

MHF Liquid Exiting in a Tank Breach at < 67.136°F Should Have Similar Type Pre-Cursors

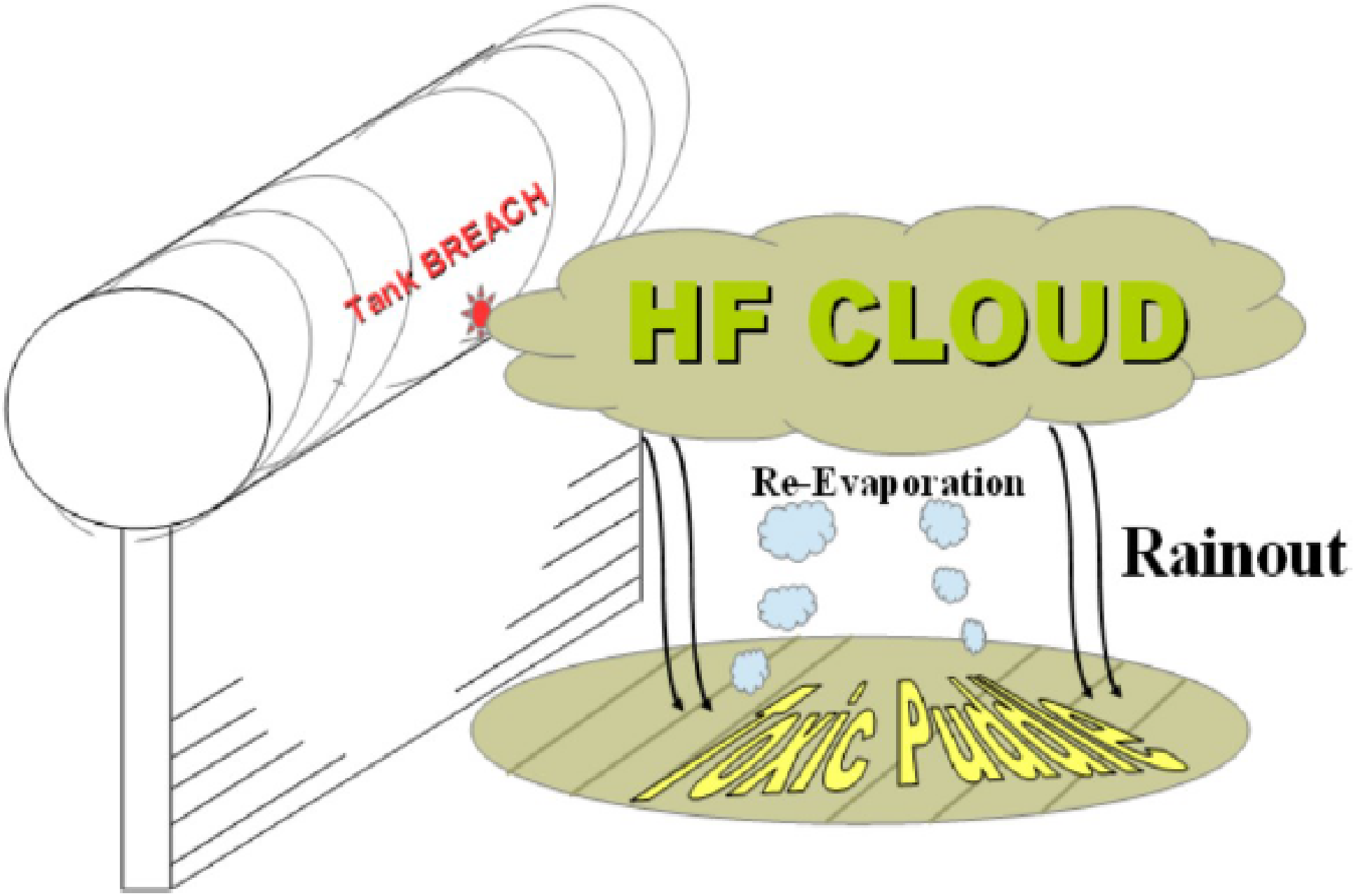
Initial Model for HF Tank-Breach Chemistry

- HF (Hydrogen Fluoride) includes both HF(g) gas and HF(ℓ) liquid
- MHF is "Modified Hydrogen Fluoride": MHF = HF(ℓ)+Additive(ℓ)
  - Since MHF is a liquid, it is often called "Modified Hydrofluoric Acid"
  - Additive(ℓ) here is presumed to be SF(ℓ) = Sulfolane = $C_4H_8O_2S$
    - **Sulfolane vapor pressure assumed negligible for all conditions**
- HFA is "Hydrofluoric Acid" = HF(ℓ)+H_2O(ℓ)
  - HFA azeotrope ["**HFZ**"] is an HFA mixture that vaporizes coherently
    - **HFZ** ≈ 64.2976 wt% H_2O(ℓ) + 35.7024 wt% HF(ℓ)
    - **HFZ** = 2 ▪ H_2O(ℓ) + 1 ▪ HF(ℓ) = $H_3(OH)_2F$ (~36 wt% HF)
- H_2O(ℓ) in MHF assumed to react with HF(ℓ) to form HFZ
  - At Low H_2O(ℓ) levels, In-Tank Liquid expected to be [MHF + **HFZ**]
  - Lots of H_2O(ℓ) added to [MHF + HFZ] eventually forms (SF + **HFZ**)
- [MHF + HFZ] liquid exiting tank can evolve HF(g)+HFZ(g)
  - **HF(g) can absorb H2O(g) from ambient, forming even more HFZ(g)**
  - **On-ground [MHF(ℓ) + HFZ(ℓ)] ("*Rainout*") also can absorb H_2O(g), forming HFZ, as well as continuing to vaporize HF(g)+HFZ(g) Azeotrope**

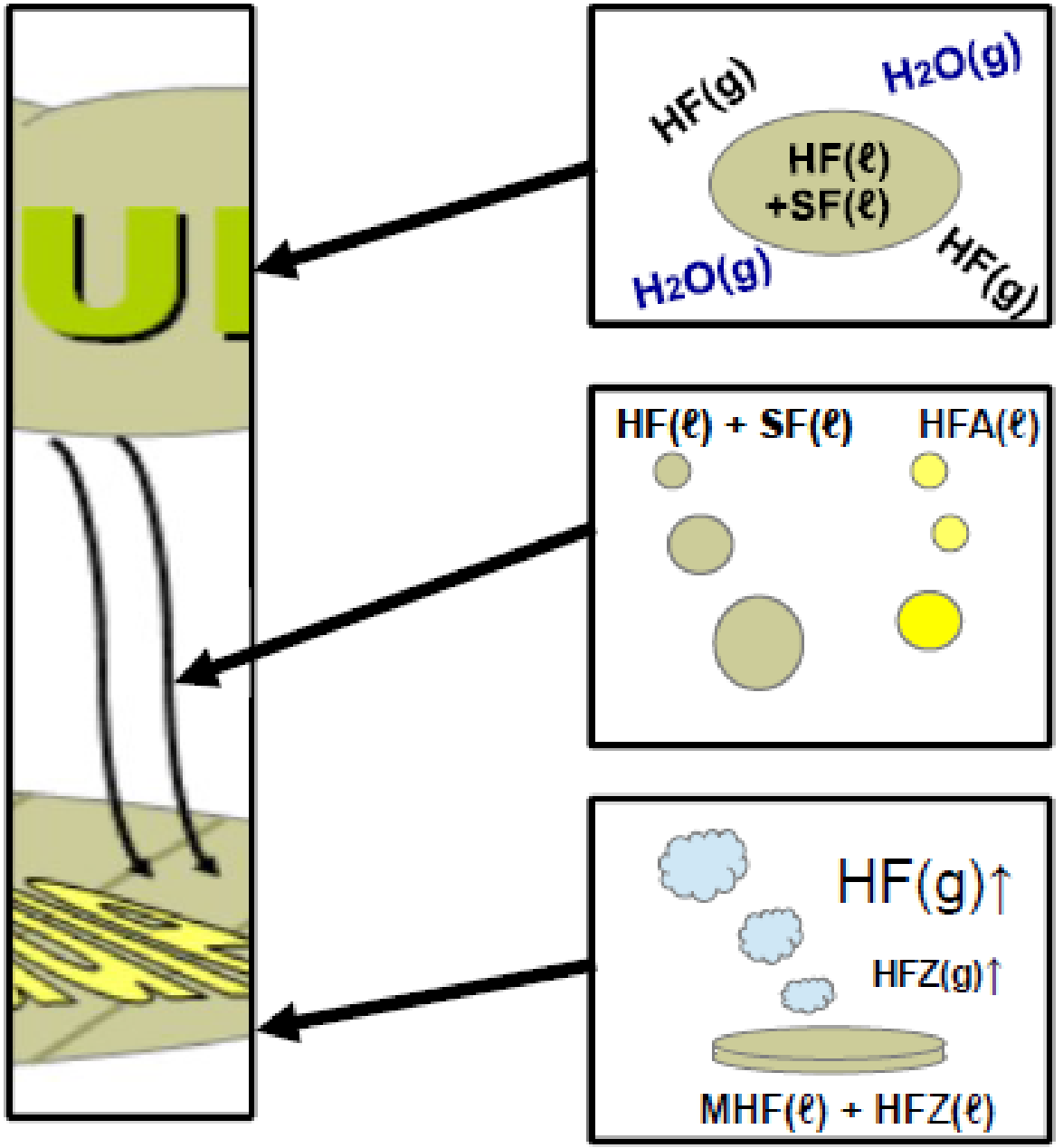
Why Model HF/MHF *Rainout*?

- A new detailed review of Patent and published literature on Modified Hydrofluoric Acid (MHF) is needed to evaluate:
  - Relative contributions for "HF *Rainout*" vs "Additive *Rainout*"
  - Potential for continuing HF(g) evolution from *Rainout Materials* due to vapor pressure effects
    - **Published literature often ignores vapor pressure effects and thereby assumes or concludes that *Rainout Materials* remain innocuous**
  - How adding H**2**O(ℓ) or H**2**O(g) to MHF alters the HF(ℓ)+SF(ℓ) ratio, similar to what HF(g) evolution from MHF does
- Modeling HF-Cloud from a Tank-Breach can also evaluate:
  - How Tank-Breach location affects material out-flow types and rates
  - What fraction of exiting material is [MHF + HFZ] Liquid vs HF(g)
  - Rate that [MHF + HFZ] droplets can evolve HF(g)
  - Rate [HF(g) + 2 ▪ H2O(g)]→HFZ(g) traps HF, lowering re-evaporation
  - How [MHF + HFZ] Liquid *Rainout* rate depends on droplet size
  - Rate that [MHF + HFZ] Liquid *Rainout* on-ground re-evolves HF(g)

Schematic for an HF Tank-Breach Event



Understand What's Happening in 1-*Slice* of the HF-Cloud



HFZ= (HF+2•H_2O)

- HF-Cloud

  Mainly MHF(ℓ) + HF(g) with H_2O(g) from ambient forming HFZ(g) and HFZ(ℓ), leaving higher SF(ℓ) content in the MHF.

- Rainout

  Mainly MHF droplets and air-formed HFA droplets (with spherical geometry). Large drops can create an on-ground *Toxic Puddle;* fine droplets remain in air.

- Re-evaporation, mostly of HF(g) from *Toxic Puddle*

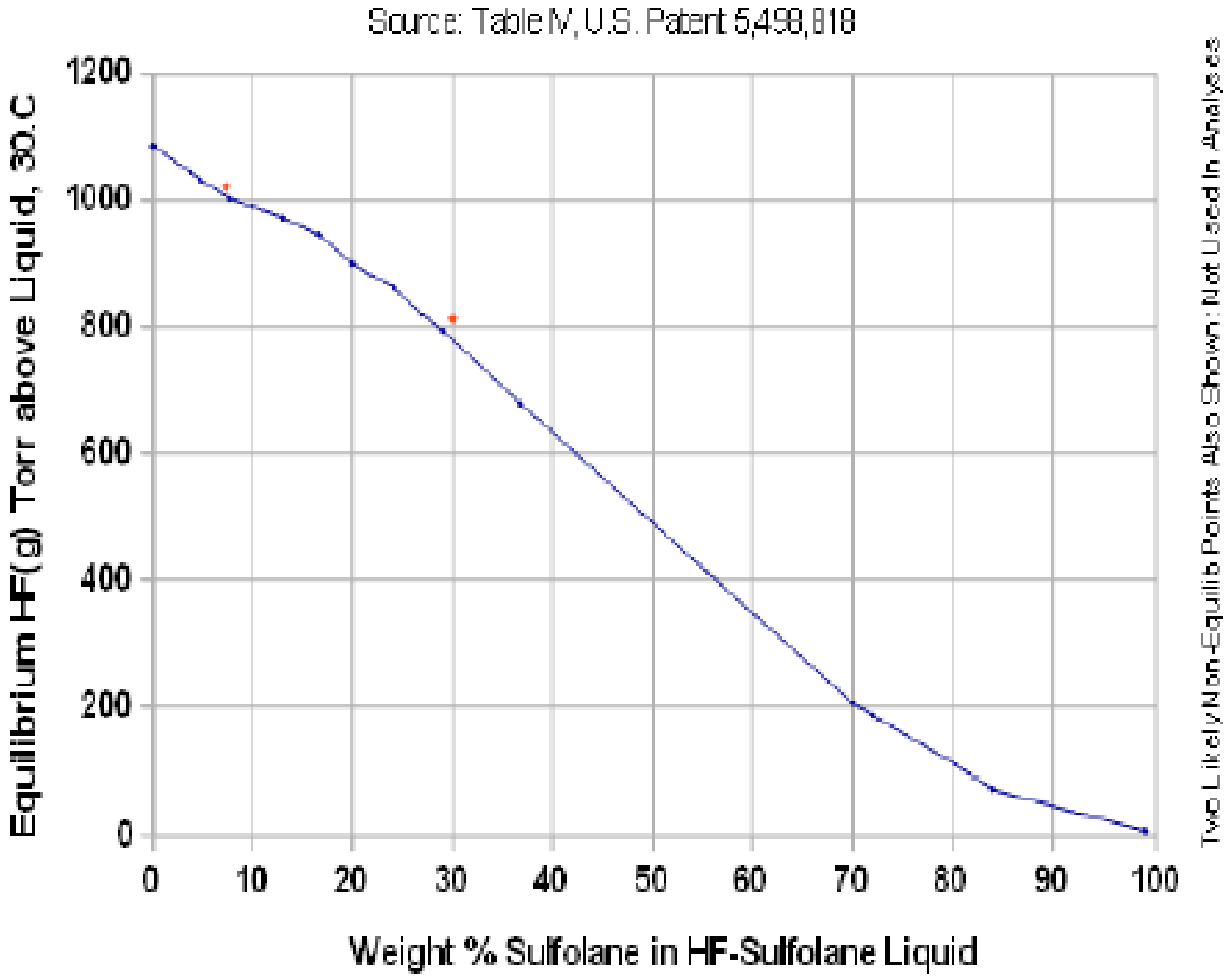
  MHF+HFZ in *Toxic Puddle* (with planar geometry) can vaporize HF(g)+HFZ(g), returning HF to the air.

Boundary Conditions for Modeling Slice of an HF-Cloud

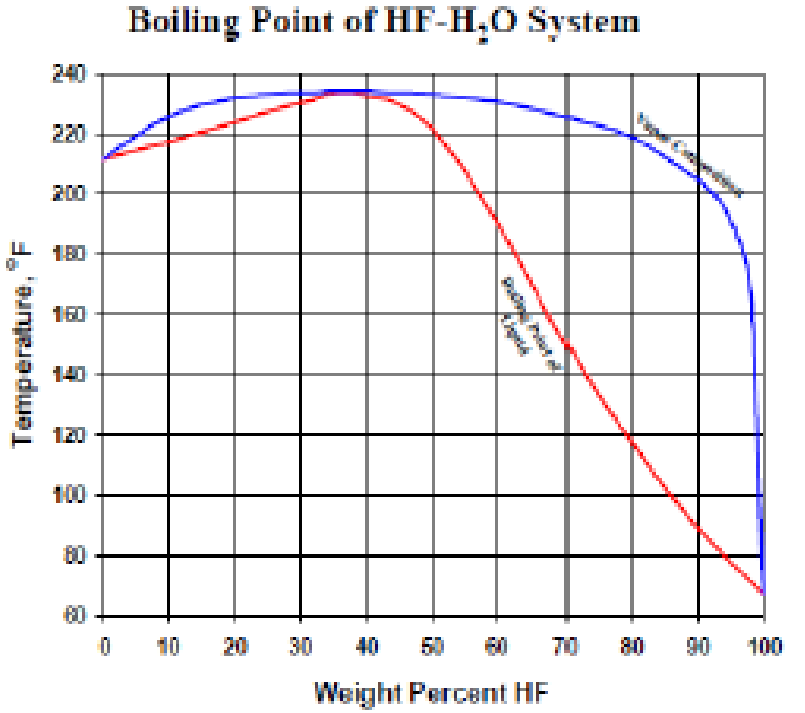
- Initial HF-Cloud conditions set by In-Tank MHF composition
  - **HF-Cloud contains MHF(ℓ) droplets that evolve HF(g), plus a small amount of HFZ(ℓ) that evolves HFZ(g)**
  - **HF(g) reacts with ambient H_2O(g) to form additional HFZ(g). It can continue to absorb H_2O(g), eventually forming HFA(ℓ) droplets**
  - **Large MHF(ℓ) drops fall quickly, creating an on-ground Toxic Puddle that can continue to evolve HF(g)**
  - **Fine-scale MHF(ℓ) droplets remain in air, while still evolving HF(g)**
  - **Rate ambient air diffuses into HF-cloud sets HFZ(g) & HFA(ℓ) growth**
- Rate of HF(g) evolution from liquids depends on geometry
  - **Spherical geometry is better for HF(g) evolution from MHF drops**
  - **Planar geometry is better for HF(g) vaporization from on-ground MHF**
  - **HF(g) from airborne droplets and HF(g) from on-ground MHF (*Rainout*) are both controlled by the same vapor-pressure physics**
- HF-Cloud *Rainout*, with vs without on-ground HF(g) vaporization, can be compared using a Model Parameter $\Lambda = \{0,1\}$ for 0% to 100% vaporization
- Several successive HF-Cloud Slice calculations can be concatenated together to estimate effects from an ongoing HF-Cloud Release

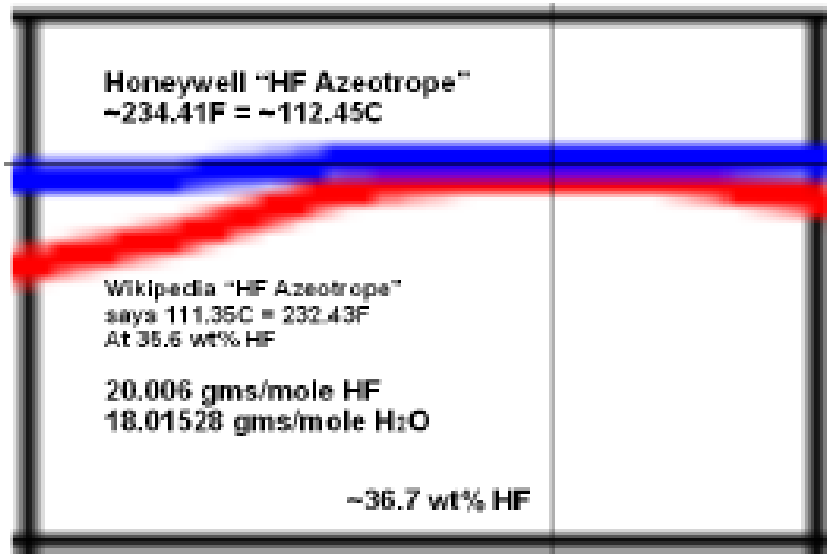
Key Calibrations Needed for an HF Tank-Breach Model

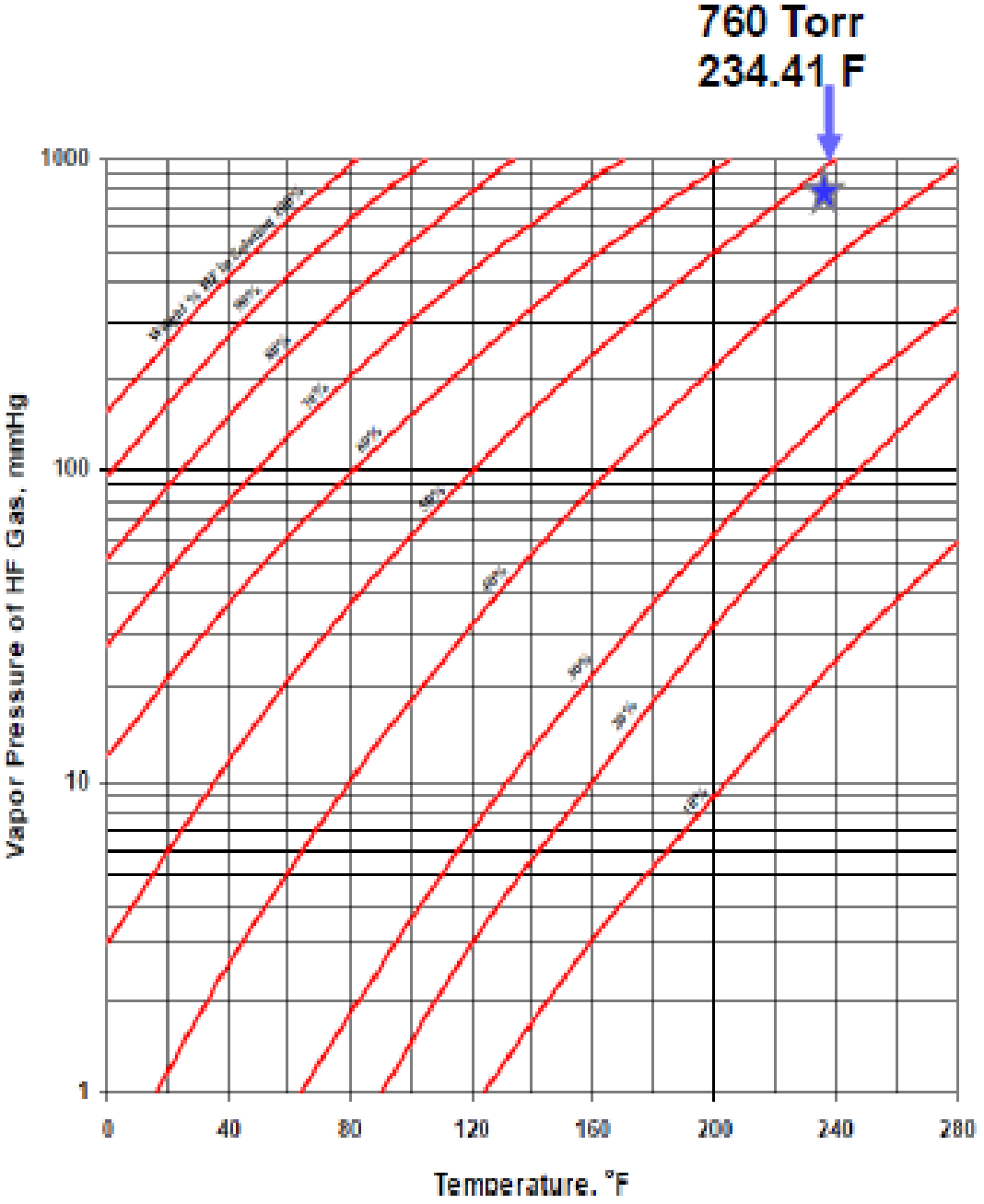
- Antoine Equations for MHF can be estimated by scaling the known known MHF Patent data vs composition at 30.C, with the known Hydrofluoric Acid data over all compositions and temperatures.



Use Known Hydrofluoric Acid (HFA=HF+H2O) Data







Charts from "Hydrofluoric Acid Properties" by Honeywell, Inc

Other Important Elements of an HF Tank-Breach Model

- Modeling rates of In-Tank materials loss also depends on:
  - Antoine Equations and vapor pressure data which are known for pure HF, H2O, Hydrofluoric Acid, and In-Tank liquid hydrocarbons (LHC)
  - Tank Geometry to convert from liquid volumes to in-tank liquid levels for a horizontal tank
  - Tank Breach Location
  - Volume % of In-Tank liquids vs gases
  - Liquid-to-gas conversion that compensates for exiting material
  - In-Tank vapor pressure changes due to HF(g) loss from MHF
- Modeling evolution of each ***Slice*** of the HF-Cloud is also needed as it exits from the Tank-Breach and propagates downwind
- Concatenating individual HF-Cloud ***Slice*** calculations together and allowing ***Slice-to-Slice*** interactions then would complete an initial model for the HF Tank-Breach and HF-Cloud evolution.

Potential Mitigation Technical Flaws **A**(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 *

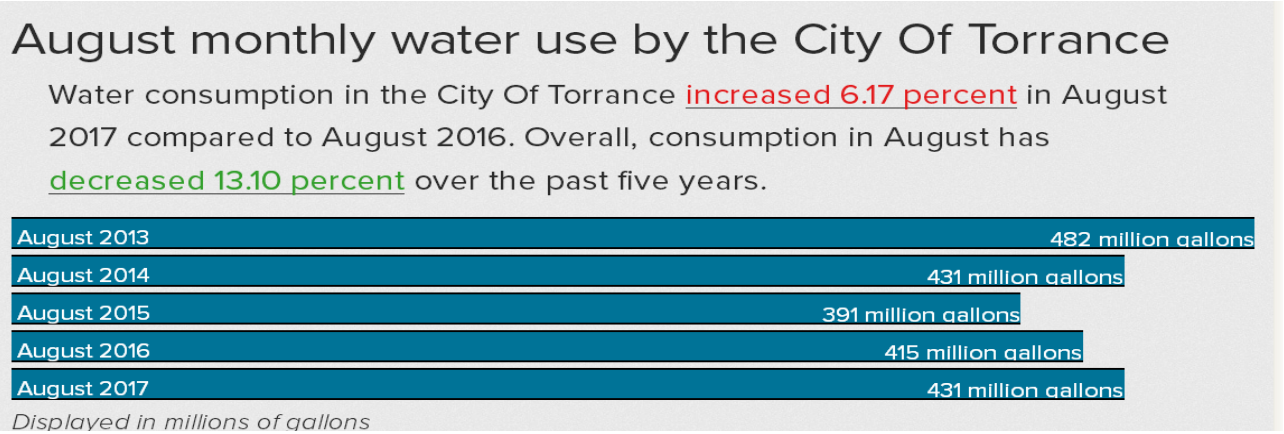
Absorption of HF may cause hypocalcemia due to HF's fixation of blood calcium. Hyperkalemia may occur if severe hypocalcemia appears. A person who has HF burns greater than four (4) square inches should be admitted immediately to an intensive care unit and carefully monitored for 24 to 48 hours. Anyone 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

Potential Mitigation Technical Flaws B(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 <=> 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 C(IV)

- "How much water is needed?"
  - A fire hydrant at 50 psig can source ~1200 GPM
  - 

- 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
618	60 to 1	37,100	10	371,000

100' x 100' x 5' LAKE !

gallons = 50,000 cu.ft.

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

Doc-11:

"2017-07-21_GEng_Initial-Model_
HF-Airborne-Release-and-Rainout-to-SCAQMD.pdf".

Modeling and Estimating Hydrogen Fluoride (HF) Airborne Release and Rainout Effects Associated with a Major HF Tank-Breach

Dr. Genghmun Eng, PhD Physics 1978
21 July 2017

5215 Lenore Street, Torrance, CA 90503
geng001@socal.rr.com, (310) 316-1187
35+ Years Experience as Space Industry Scientist
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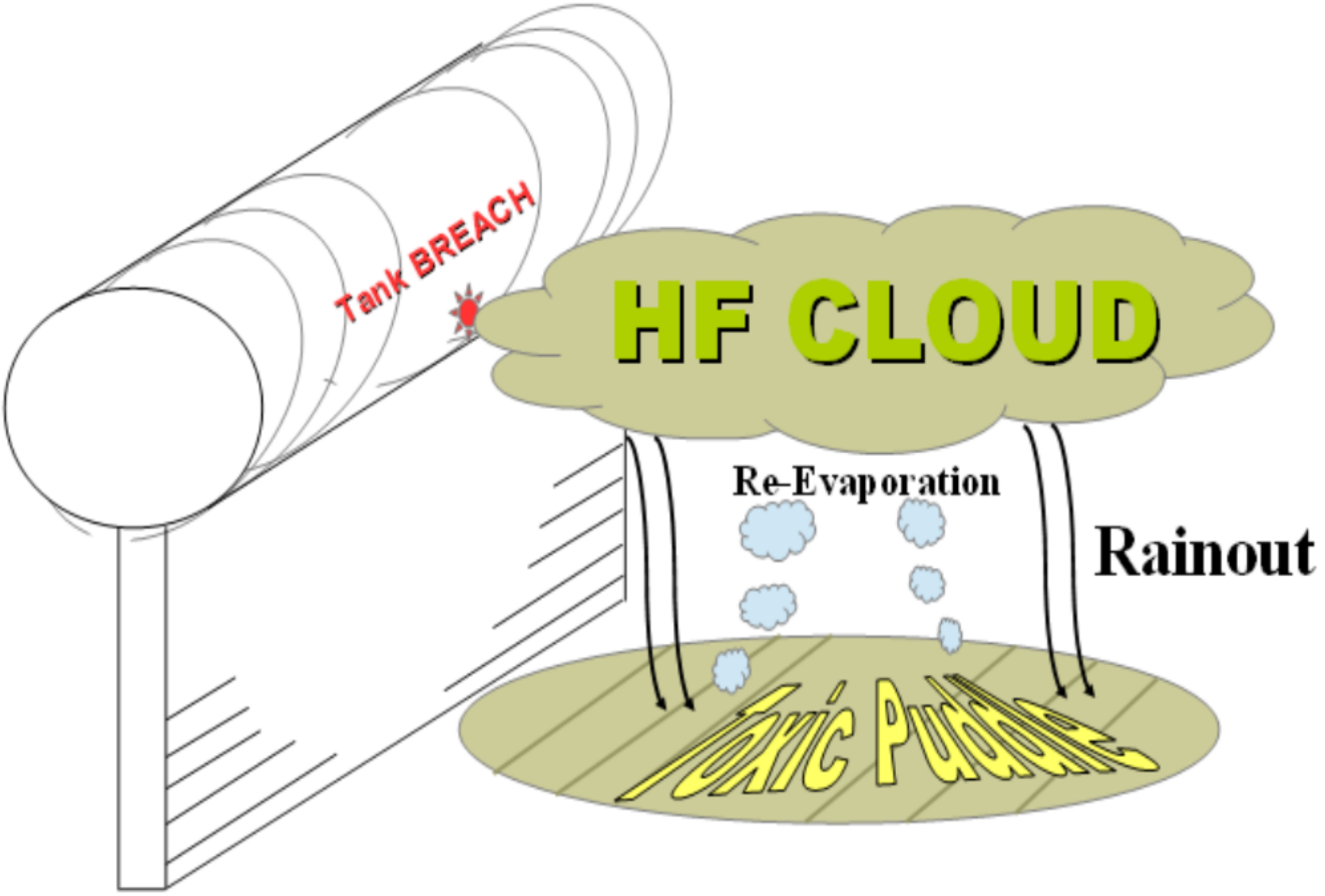
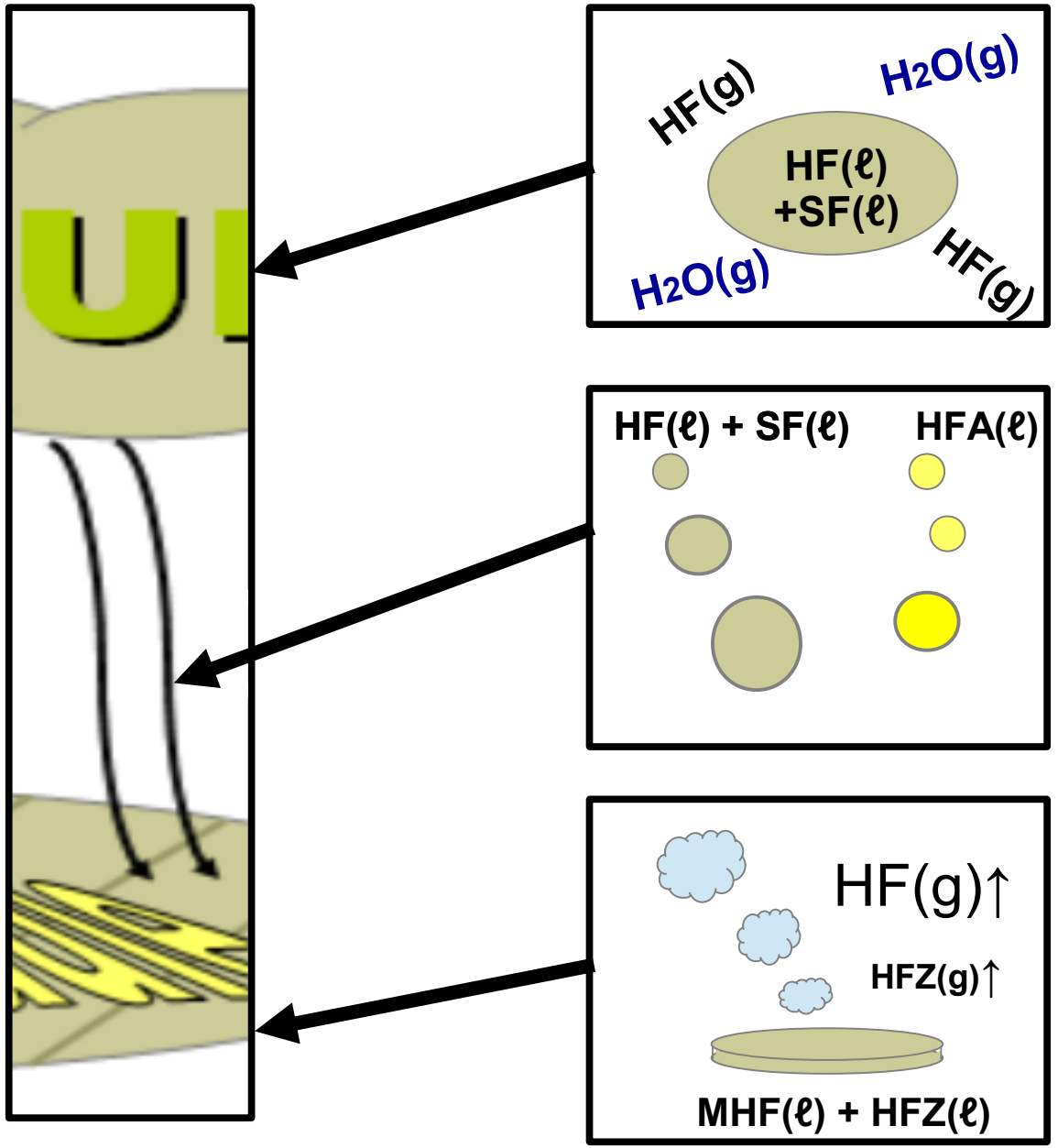
Schematic for an HF Tank-Breach Event



The Primary Goal of G. Eng's RFP P2017-06 Proposal:
Understand What's Happening in 1-*Slice* of the HF-Cloud



HFZ= (HF+2▪H_2O)

- ## HF-Cloud

  Mainly MHF(ℓ) + HF(g) with H_2O(g) from ambient forming HFZ(g) and HFZ(ℓ), leaving higher SF(ℓ) content in the MHF.

- ## Rainout

  Mainly MHF droplets and air-formed HFA droplets (with spherical geometry). Large drops can create an on-ground *Toxic Puddle;* fine droplets remain in air.

- ## Re-evaporation, mostly of HF(g) from *Toxic Puddle*

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Boundary Conditions for Modeling Slice of an HF-Cloud

- Initial HF-Cloud conditions set by In-Tank MHF composition
  - **HF-Cloud contains MHF(ℓ) droplets that evolve HF(g), plus a small amount of HFZ(ℓ) that evolves HFZ(g)**
  - **HF(g) reacts with ambient H_2O(g) to form additional HFZ(g). It can continue to absorb H_2O(g), eventually forming HFA(ℓ) droplets**
  - **Large MHF(ℓ) drops fall quickly, creating an on-ground Toxic Puddle that can continue to evolve HF(g)**
  - **Fine-scale MHF(ℓ) droplets remain in air, while still evolving HF(g)**
  - **Rate ambient air diffuses into HF-cloud sets HFZ(g) & HFA(ℓ) growth**
- Rate of HF(g) evolution from liquids depends on geometry
  - **Spherical geometry is better for HF(g) evolution from MHF drops**
  - **Planar geometry is better for HF(g) vaporization from on-ground MHF**
  - **HF(g) from airborne droplets and HF(g) from on-ground MHF (*Rainout*) are both controlled by the same vapor-pressure physics**
- HF-Cloud *Rainout*, with vs without on-ground HF(g) vaporization, can be compared using a Model Parameter $\Lambda = \{0,1\}$ for 0% to 100% vaporization
- Several successive HF-Cloud Slice calculations can be concatenated together to estimate effects from an ongoing HF-Cloud Release

Full Initial Model for an HF Tank-Breach Would Have 5 Stages

1) Developing Antoine-Equation Based Calibration Functions to model the Vapor Pressure of each In-Tank component:
   - Antoine Equations are needed to model MHF = HF(ℓ) + SF(ℓ) vapor pressure over a range of MHF compositions and temperatures
     - **These are NOT AVAILABLE, and likely never will be.**
     - **A key project effort is to synthesize an Antoine Equation for MHF that is consistent with the (limited) MHF Patent Disclosure Data**
   - Antoine Equations are also needed for pure HF, H_2O, Hydrofluoric Acid, and any In-Tank liquid hydrocarbon (LHC) overlayer atop MHF
     - **These are available or can be developed from published literature**
2) Tank-Geometry formulas are needed to convert from liquid volumes to in-tank liquid levels
   - Formula is trivial for a cylindrical tank standing vertically on-axis
   - Formulas for a horizontally placed cylindrical tank are more complicated to derive and implement

Full Initial Model for an HF Tank-Breach Would Have 5 Stages

3) Modeling rate of In-Tank materials loss, which depends on:
   - Tank-Breach location
   - Volume % of In-Tank liquids vs gases
   - Liquid-to-gas conversion that compensates for exiting material
   - In-Tank vapor pressure changes due to HF(g) loss from MHF

4) Modeling evolution of each ***Slice*** of the HF-Cloud as it exits from the Tank-Breach and propagates downwind

5) Concatenating and interacting the individual HF-Cloud Slice calculations together to form a complete initial model for the HF Tank-Breach and HF-Cloud evolution.

Comparison of G. Eng RFP P-2017-6 Proposal to the Above 5 Stages of a Full Initial Model for an HF Tank-Breach

RFP P2017-6 Project proposed by G. Eng requires completion of the above *Item (1)* and *Item (4)*. Non-project *Item (2)* and *Item (3)* would additionally determine what range of initial conditions best optimizes the HF-Cloud ***Slice*** calculations of *Item (4)*. Non-project *Item (5)* would complete a Full Initial Model for an HF Tank-Breach.

Progress as of 7/21/2017

- Completed this **Project Outline**, which identifies the 5 Stages needed for a Full Initial Model of HF Tank-Breach
- Work was begun on *Items (1)*, *(2)*, and *(3)* with the belief that *Item (1)* was a small "*Calibration Effort*", compared to *Item (4)*.
  - *Item (1)* turned out to be fairly complicated, due to potential inconsistencies found among several published literature sources.
- Fortran77 code development was also started, to provide an automated computation structure. It would allow *Item (4)* and *Item (5)* calculations to be done as new code subroutines.
  - Special code was also developed to evaluate the impact of different input values that can arise from the inconsistencies noted in *Item (1)*.
  - Initial results show a large range of input values for the inconsistent data resulted in only small changes to the *Item (3)* outputs
  - *Code Validation* of all numerical results-to-date is also being planned using detailed Case-Study computations, which are ongoing.

Doc-12:

“2019-01-07a_GEng_HF-Clouds_104F-TankBreach.pdf”

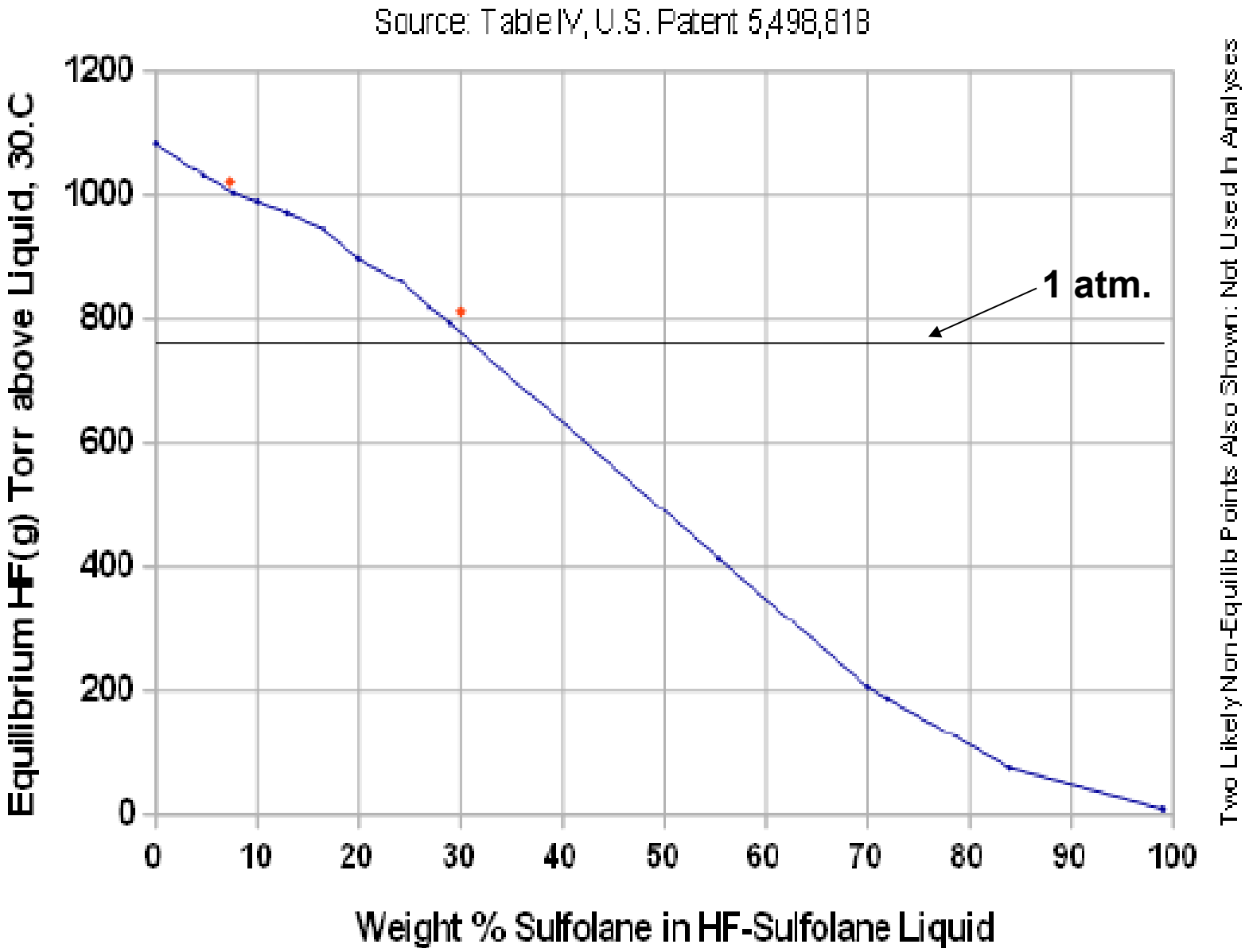
All [HF]-Mitigation Measures Should Only Be Temporary

Why All Paths Forward Need to Terminate in an HF/MHF Phase-Out

G. Eng

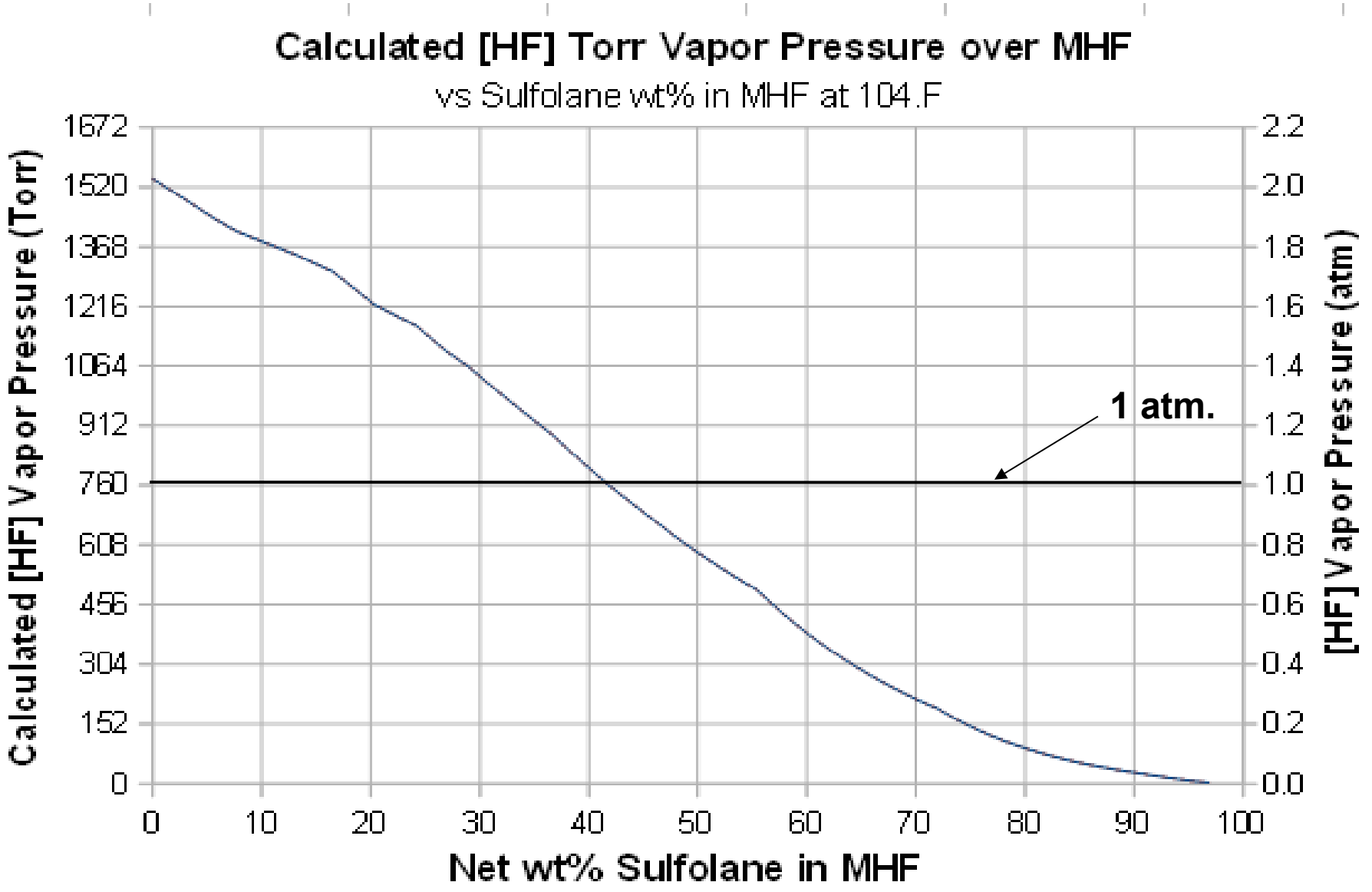
6 Jan. 2019

Vapor Pressure of HF-Sulfolane Known at ~30°C = 86ºF



- Original [HF]-Sulfolane Data Disclosed in U.S. Patent.

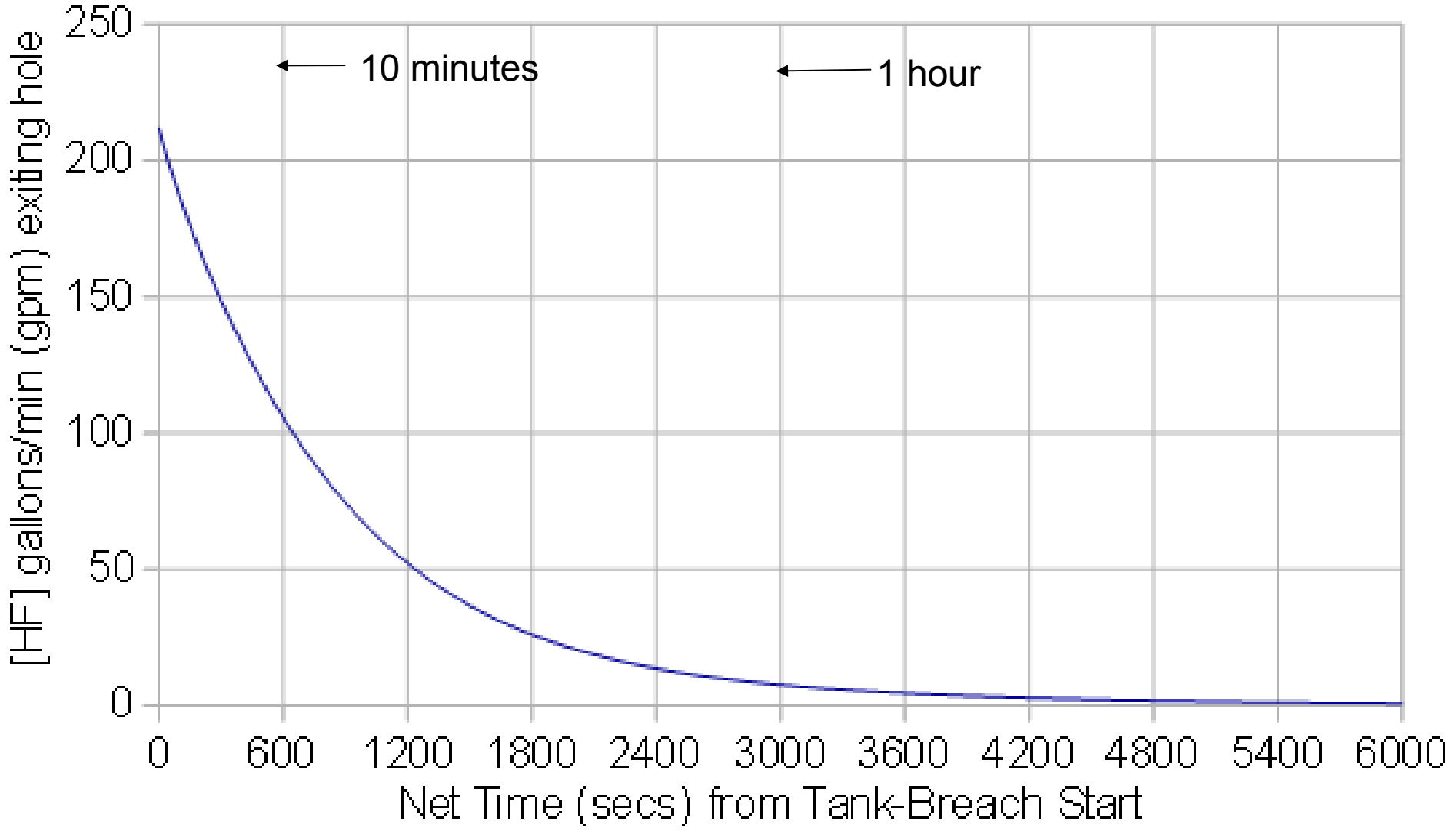
G. Eng HF Tank-Breach Program can now calculate expected [HF]-Sulfolane Vapor Pressures for all Temperatures and various In-Tank Conditions



- [HF]-Sulfolane results for Refinery normal 104ºF In-Tank Temperature.

Calculated HF-Cloud from 40 cm^2 Tank Breach at Bottom
Tank 96% full with the MHF that we were Initially Promised at 104ºF:

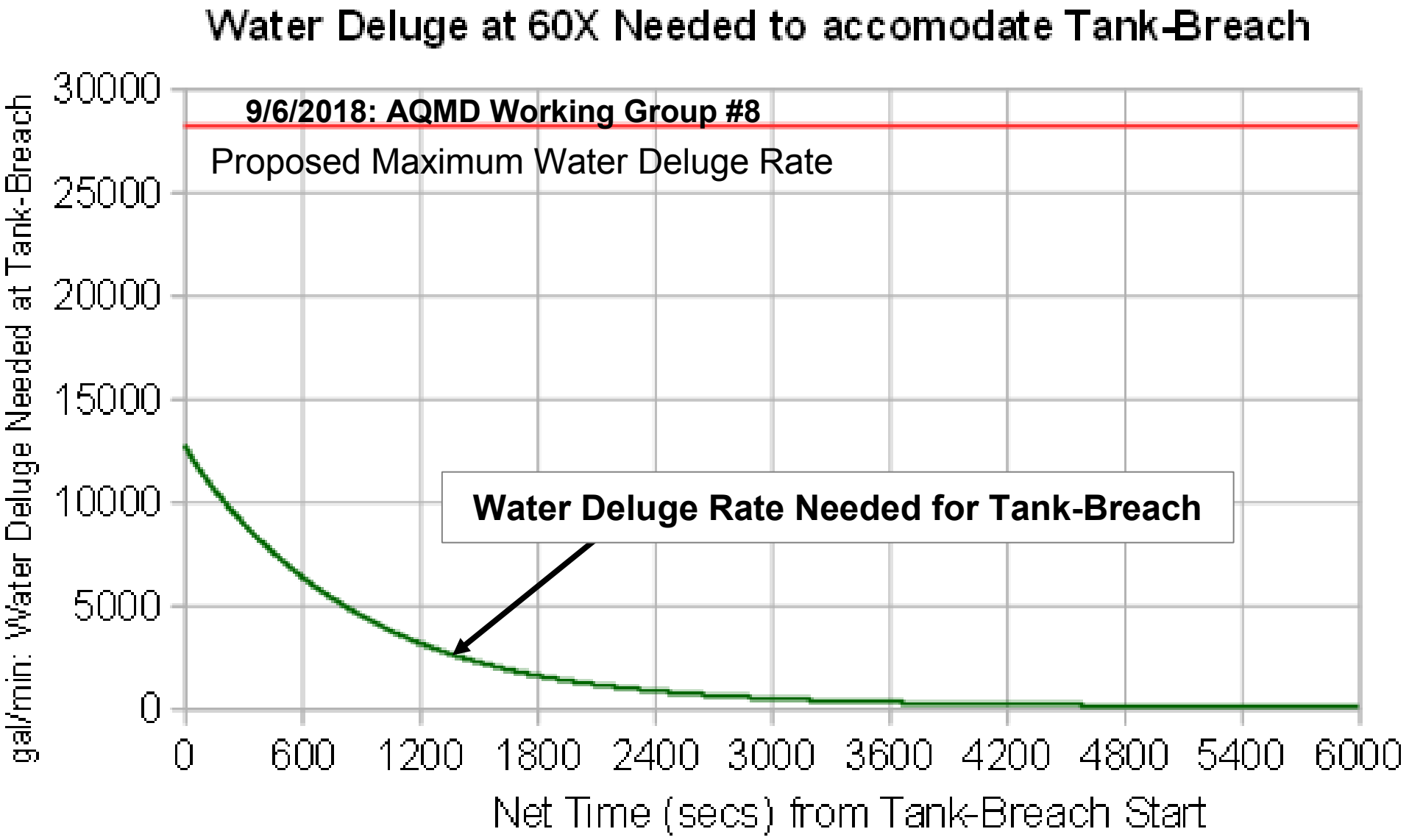
MHF= Anhydrous [HF] with 50 wt% Sulfolane



- Time to empty 50,000 lb [HF] Tank using Initially Promised MHF composition from a 2.8” Diameter Hole (= 40cm^2).

HF-Cloud from 40 cm^2 Tank Breach at Bottom (96% full with MHF)

104°F Tank Breach: Anhydrous [HF] with 50 wt% Sulfolane

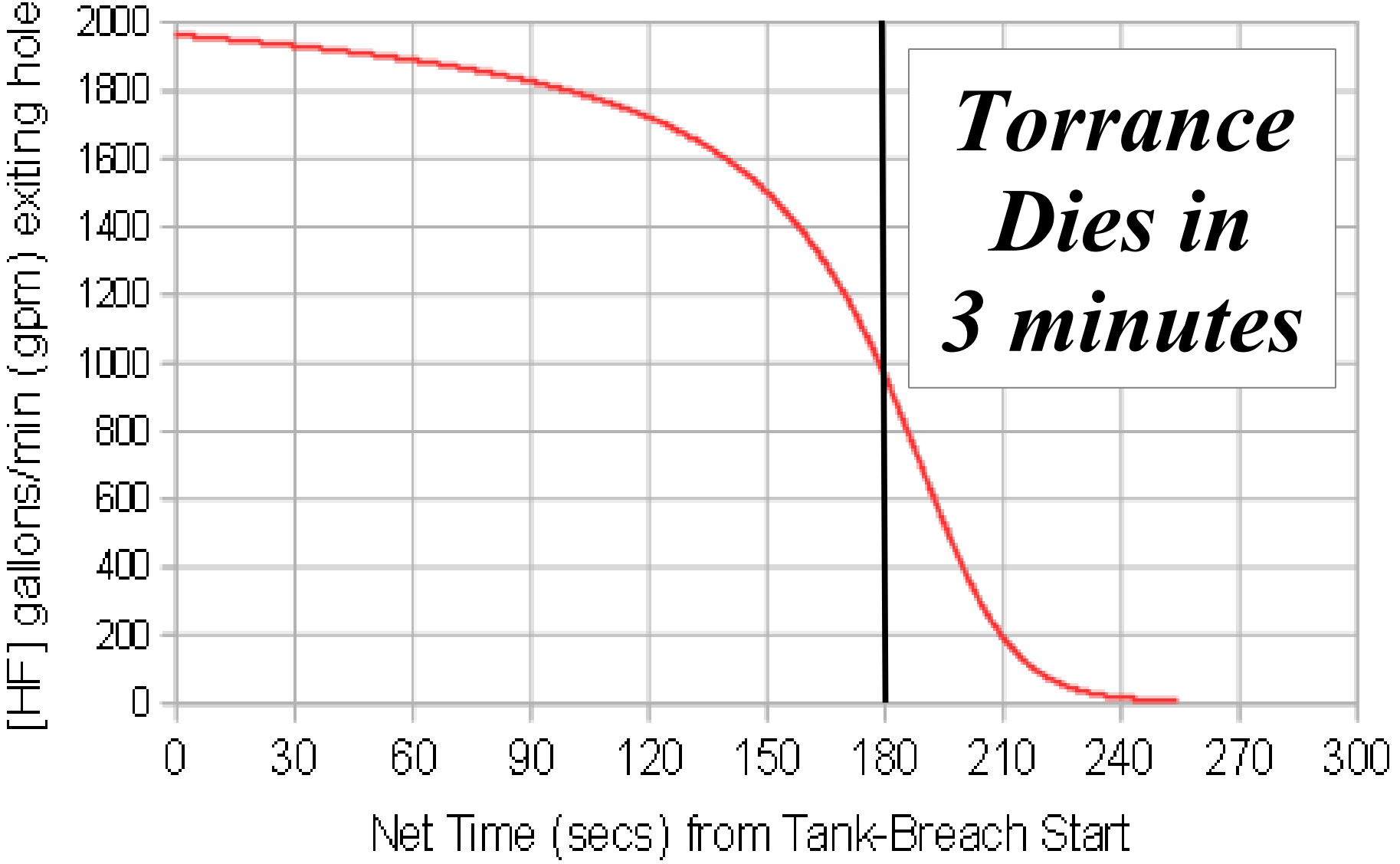


- AQMD Proposed Water Deluge with a Best-Possible Response could accommodate this size Tank-Breach

HF-Cloud from 40 cm^2 Tank Breach at Bottom (96% full with MHF)

104°F Tank Breach: Anhydrous [HF] with 6 wt% Sulfolane

plus 3 wt% Liquid Hydrocarbon overlayer of Isobutane

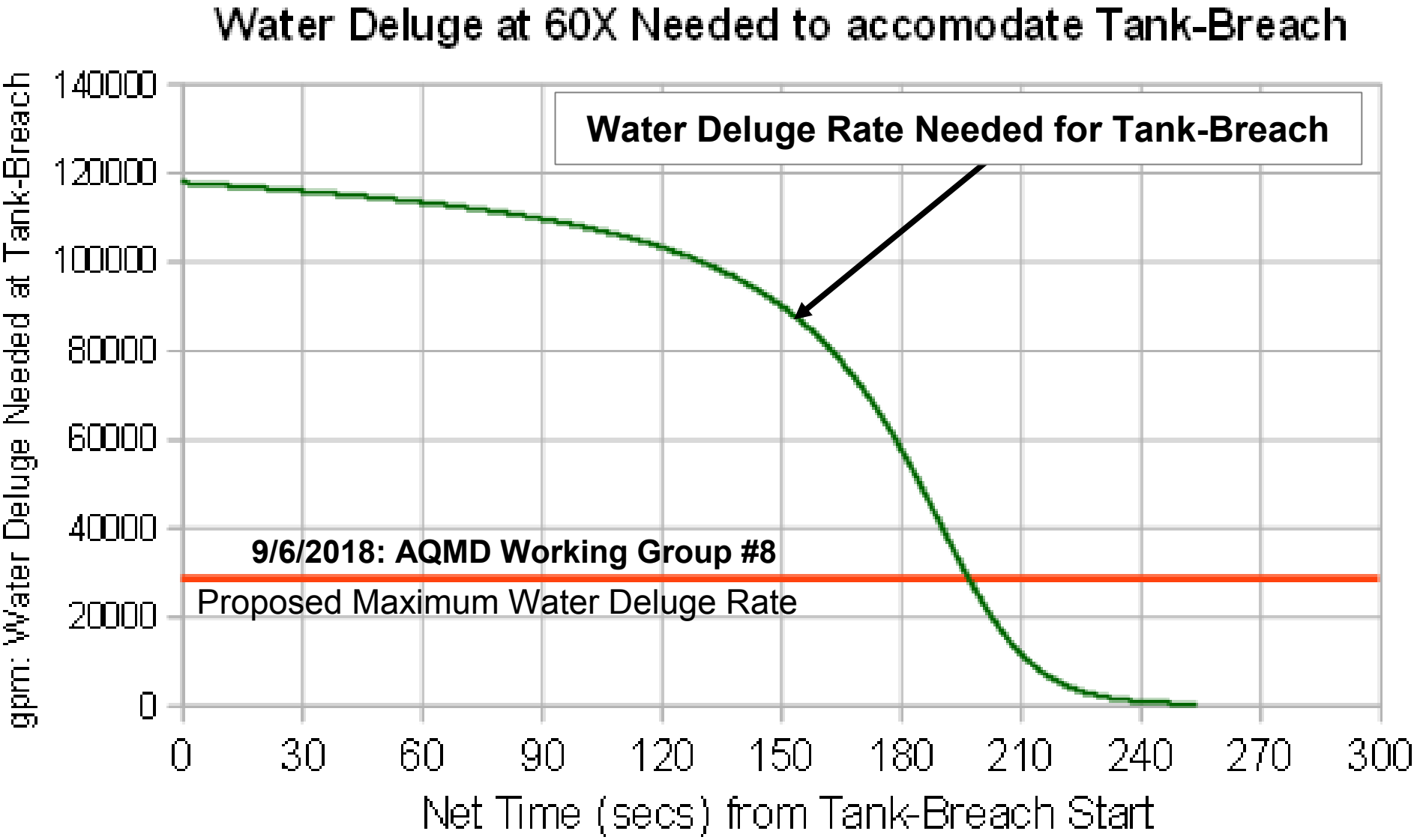


- **Time to empty 50,000 lb [HF] Tank given present In-Tank materials.**

HF-Cloud from 40 cm^2 Tank Breach at Bottom (96% full with MHF)

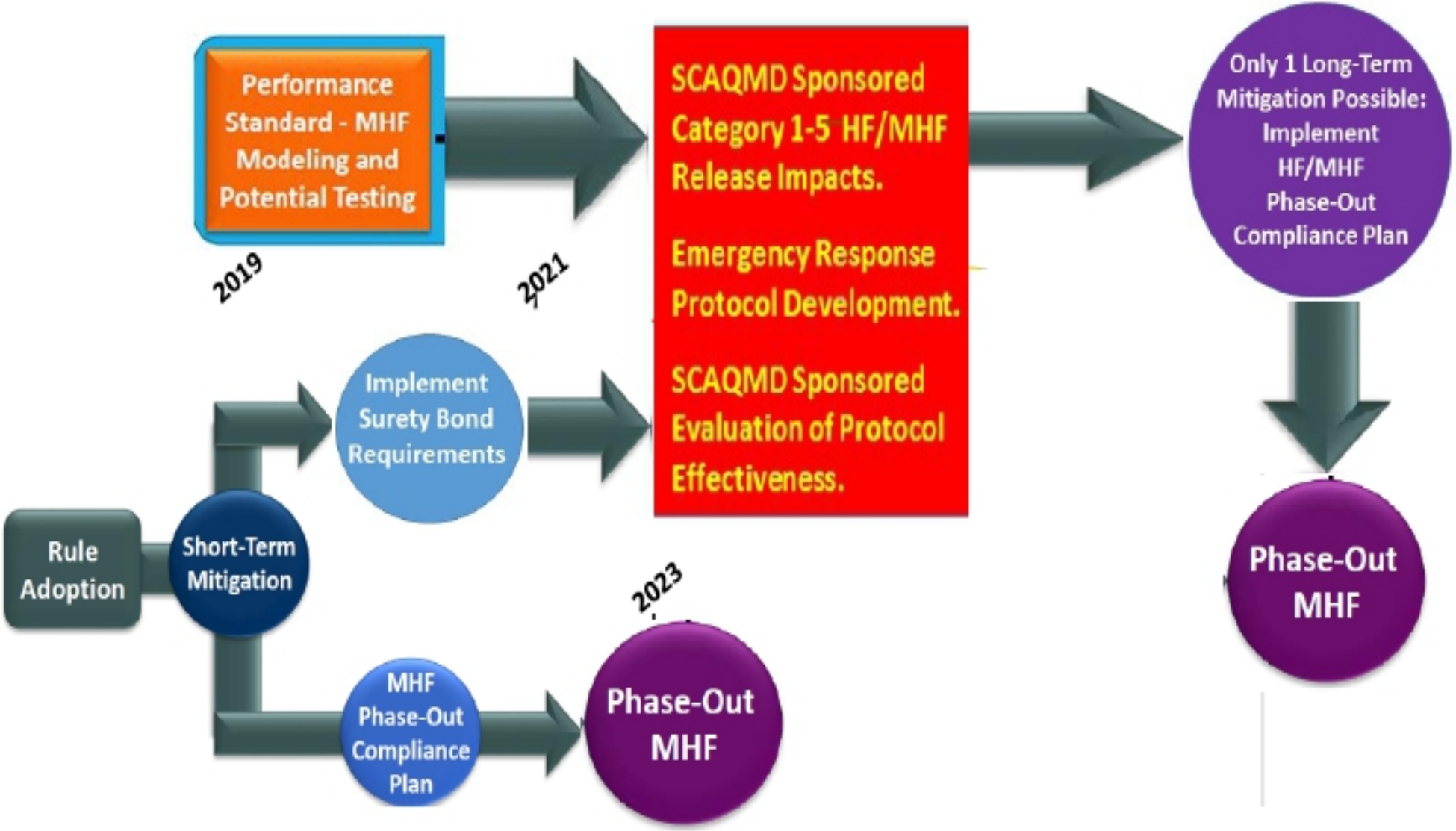
104°F Tank Breach: Anhydrous [HF] with 6 wt% Sulfolane

plus 3 wt% Liquid Hydrocarbon overlayer of Isobutane



- Water Deluge Systems cannot accommodate this Tank-Breach.

Community Needs this Revised AQMD General Approach



Backup Charts

Primary Mitigation

- Since Large-Scale HF and MHF releases will form a catastrophic deadly vapor cloud, indefinite Large-Scale HF and MHF use in high-density urban areas is inconsistent with the SCAQMD mission of protecting the Public Health and Safety
- The Primary SCAQMD Mitigation for this nearly unbounded risk needs to be either: (i) an immediate phase-out of HF and MHF use, or (ii) an eventual phase-out of HF and MHF use.
- Eventual phase-out of HF and MHF still presents an ongoing and continuing risk to the Public Health and Safety during the phase-out period.
- During this potentially many-year phase-out period, the SCAQMD needs to develop and require additional HF/MHF mitigation measures to protect the Public Health and Safety.

Mitigation Measure Requirements During Phase-Out Period

- **Require major HF/MHF users post a Surety Bond of at least $1 Billion Dollars from an independent insurer to cover acute and chronic health impacts on human persons due to HF/MHF releases.**
  - Surety Bond Requirement should increase with any offsite HF/MHF release.
- **Develop SCAQMD-sponsored evaluation of the economic impacts of HF/MHF releases for each of the following 5 impact scales:**
  - Category 5: 50,000 lbs or more HF/MHF release coupled with concurrent FEMA response disaster, such as large earthquake or terrorist attack.
  - Category 4: 10,000 lbs – 50,000 lbs HF/MHF release, with and without concurrent FEMA response disaster.
  - Category 3: 1,000 – 10,000 lbs HF/MHF release, with and without another FEMA response disaster.
  - Category 2: 100 lbs – 1,000 lbs HF/MHF release.
  - Category 1: Less than 100 lbs HF/MHF release.
- **Develop SCAQMD-sponsored Emergency-Response protocols for what Police, Firefighters, Hospitals, Schools, and the Public, each should do during each of the above Category releases.**
- **Perform SCAQMD-sponsored evaluation of likely effectiveness of these Emergency Response protocols for each of the above Category releases**
  - Evaluation should include independent estimates for the likely number of deaths, and likely number of long-term Public injuries.

Potential Mitigation Technical Flaws **A**(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 *

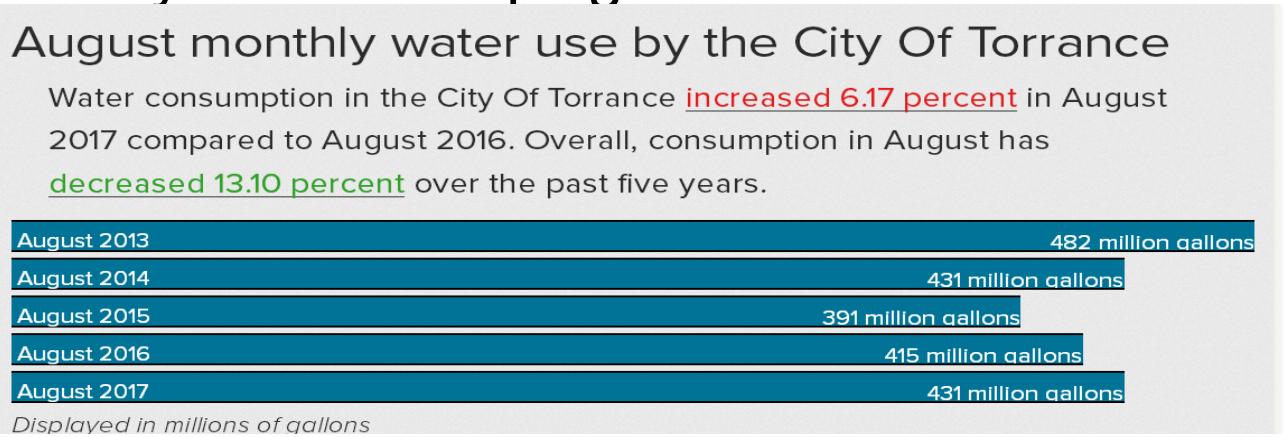
Absorption of HF may cause hypocalcemia due to HF's fixation of blood calcium. Hyperkalemia may occur if severe hypocalcemia appears. A person who has HF burns greater than four (4) square inches should be admitted immediately to an intensive care unit and carefully monitored for 24 to 48 hours. Anyone 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

Potential Mitigation Technical Flaws B(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 <=> 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 3 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 3 minutes.

Potential Mitigation Technical Flaws C(IV)

- "How much water is needed?"
  - A fire hydrant at 50 psig can source ~1200 GPM
  - 

- 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
618	60 to 1	37,100	10	371,000

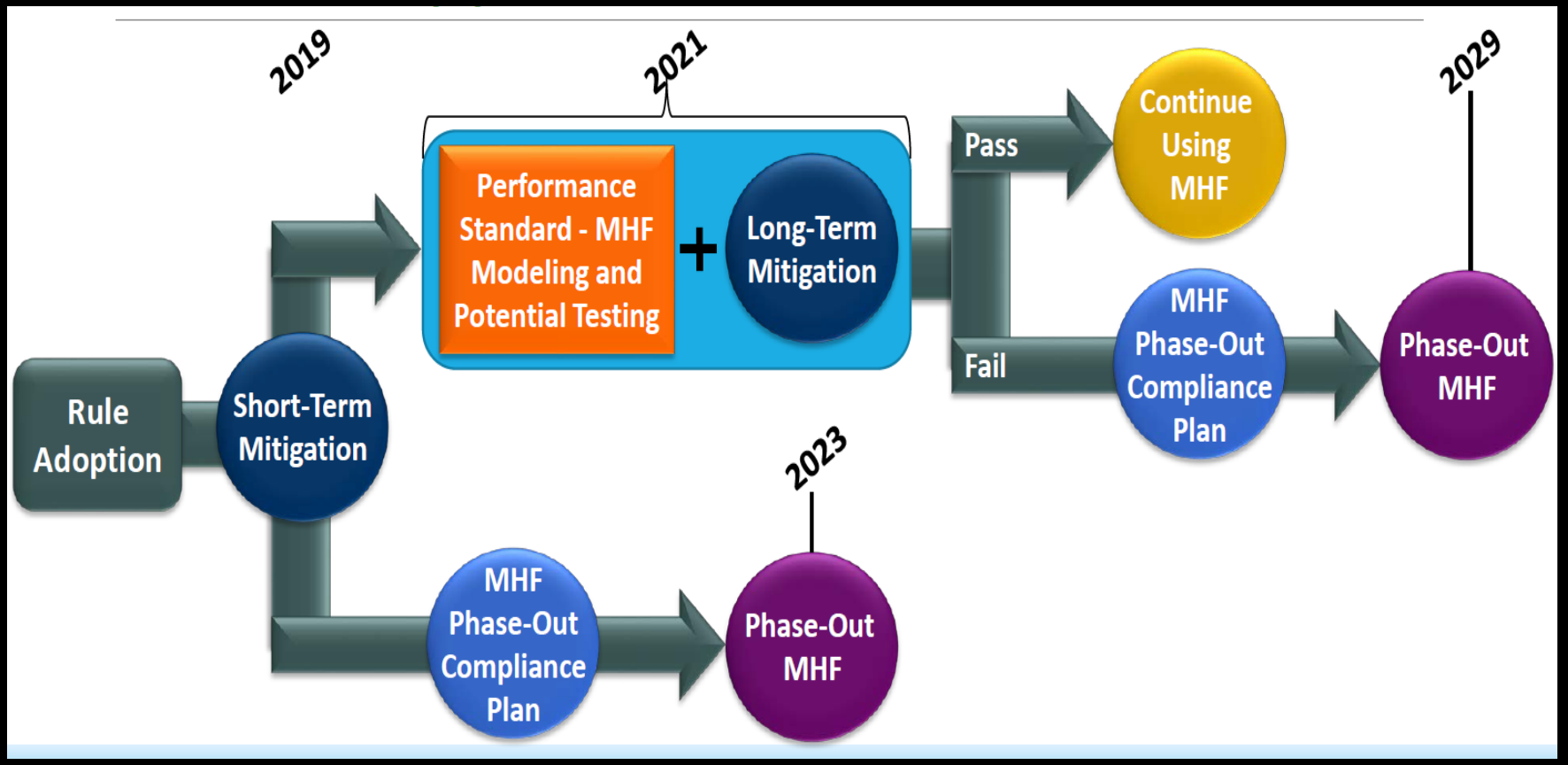
100' x 100' x 5' LAKE !

gallons = 50,000 cu.ft.

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

Back-Up Chart:

Original SCAQMD Proposed “General Approach”



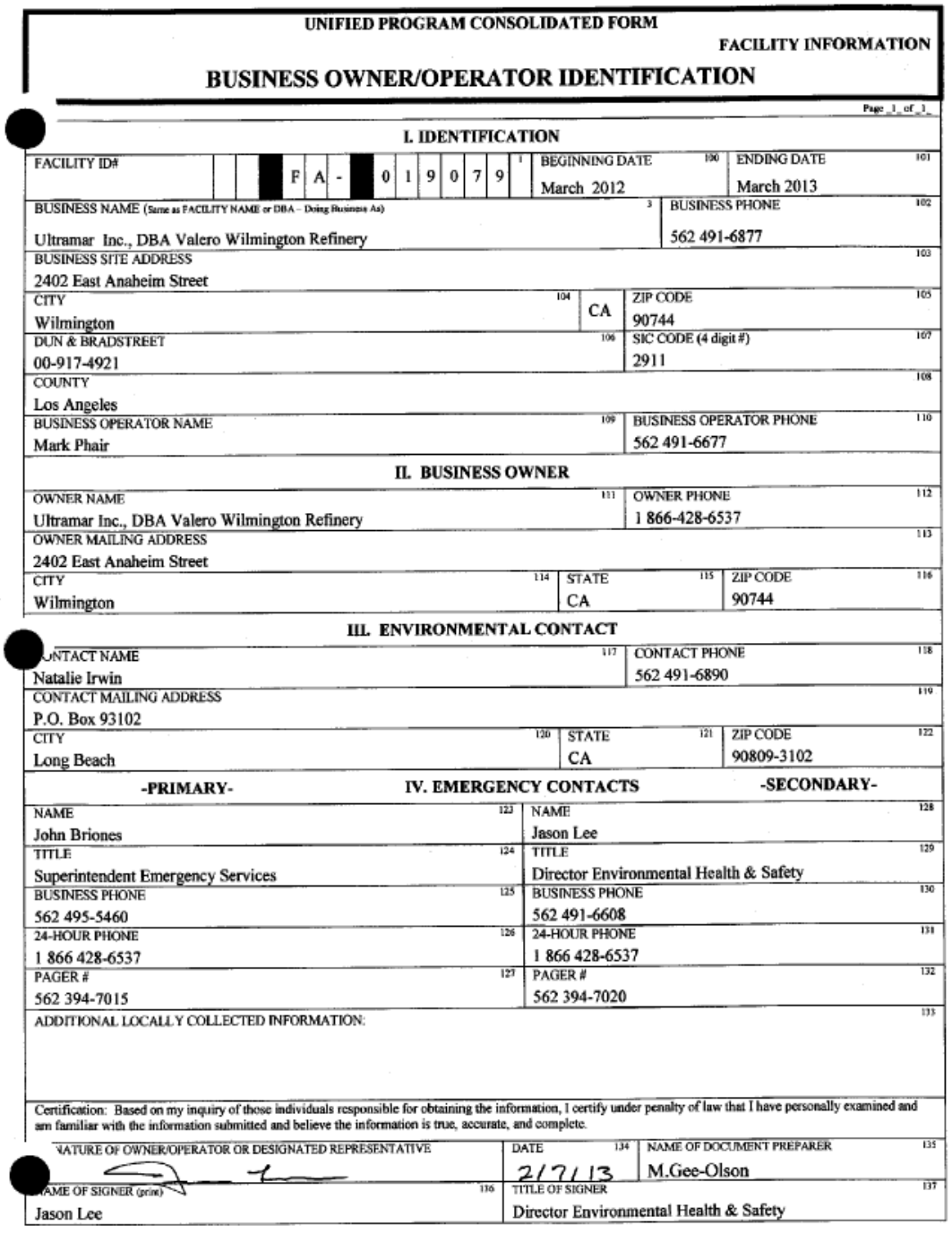
Doc-13:

LAFD-2022 (693-pages, 2022):
This "*LAFD-2022*" identifier is used to indicate the
693 page document release from the
Los Angeles Fire Department (LAFD) CUPA
(Certified Unified Public Agency), containing all the
Refinery – CUPA written communications in their records.
Citizen notes that this document release by the CUPA
overseeing the Refinery Facility was the result of a PRA
(Public Records Act) request by the Torrance Refinery
Action Alliance (TRAA)

THIS IS A LARGE
APPROXIMATELY 54.8 MB
SEPARATE FILE

Doc-14:

LAFD-2022a (10-pages, 2022).
Citizen extracted 10 pages from the
693-page "*LAFD-2022*"
highlighting various insufficiencies. Every insufficiency
highlight defects or flaws in the Permit Record, and
demonstrates a failure of the Permit Process.
As such this Citizen Petition prays that
the US EPA Administrator request and require
all such defects and flaws to be corrected,
prior to issuance of a *Final-Title-V.*



UNIFIED PROGRAM CONSOLIDATED FORM

FACILITY INFORMATION

BUSINESS OWNER/OPERATOR IDENTIFICATION

Page 1 of 1

I. IDENTIFICATION

FACILITY ID# FA - 0 1 9 0 7 9		BEGINNING DATE 100: March 2012	ENDING DATE 101: March 2013
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3: Ultramar Inc., DBA Valero Wilmington Refinery			BUSINESS PHONE 102: 562 491-6877
BUSINESS SITE ADDRESS 103: 2402 East Anaheim Street			
CITY 104: Wilmington	CA		ZIP CODE 105: 90744
DUN & BRADSTREET 106: 00-917-4921			SIC CODE (4 digit #) 107: 2911
COUNTY 108: Los Angeles			
BUSINESS OPERATOR NAME 109: Mark Phair			BUSINESS OPERATOR PHONE 110: 562 491-6677

II. BUSINESS OWNER

OWNER NAME 111: Ultramar Inc., DBA Valero Wilmington Refinery			OWNER PHONE 112: 1 866-428-6537
OWNER MAILING ADDRESS 113: 2402 East Anaheim Street			
CITY 114: Wilmington	STATE 115: CA		ZIP CODE 116: 90744

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117: Natalie Irwin			CONTACT PHONE 118: 562 491-6890
CONTACT MAILING ADDRESS 119: P.O. Box 93102			
CITY 120: Long Beach	STATE 121: CA		ZIP CODE 122: 90809-3102

IV. EMERGENCY CONTACTS

-PRIMARY-		-SECONDARY-	
NAME 123: John Briones		NAME 128: Jason Lee	
TITLE 124: Superintendent Emergency Services		TITLE 129: Director Environmental Health & Safety	
BUSINESS PHONE 125: 562 495-5460		BUSINESS PHONE 130: 562 491-6608	
24-HOUR PHONE 126: 1 866 428-6537		24-HOUR PHONE 131: 1 866 428-6537	
PAGER # 127: 562 394-7015		PAGER # 132: 562 394-7020	

ADDITIONAL LOCALLY COLLECTED INFORMATION: 133

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134: 2/7/13	NAME OF DOCUMENT PREPARER 135: M.Gee-Olson
NAME OF SIGNER (print) 136: Jason Lee	TITLE OF SIGNER 137: Director Environmental Health & Safety	

VALERO-ULTRAMAR CUPA DOCUMENT

{p. 310 of 693}

Ultramar, Inc.
DBA Valero Wilmington Refinery

CUPA Document
(Certified Unified Program Agency)

Ultramar, Inc.
Risk Management Program (RMP)
Is captured in their “ERM”
'Emergency Response Manual'

ULTRAMAR-VALERO CERTIFICATION OF FINANCIAL RESPONSIBILITY
GENERAL COMMERCIAL LIABILITY: LIMIT $1,000,000 PER OCCURRENCE {p. 567 of 693}

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY) 04/28/2017

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Aon Risk Services Southwest, Inc. Houston TX Office 5555 San Felipe Suite 1500 Houston TX 77056 USA	PHONE (A/C, No, Ext): (866) 283-7122	FAX (A/C, No): 800-363-0105
	E-MAIL ADDRESS:	

INSURED	INSURER(S) AFFORDING COVERAGE	NAIC #
Ultramar, Inc. One Valero Way San Antonio TX 78249 USA	INSURER A: ACE American Insurance Company	22667
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 570066277842 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. **Limits shown are as requested**

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY PRO-JECT LOC OTHER:			XSLG27865082 SIR applies per policy terms & conditions	05/01/2017	05/01/2018	EACH OCCURRENCE	$1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	
							MED EXP (Any one person)	
							PERSONAL & ADV INJURY	$1,000,000
							GENERAL AGGREGATE	$1,000,000
							PRODUCTS - COMP/OP AGG	$1,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY			ISA H09055290	05/01/2017	05/01/2018	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
							BODILY INJURY (Per person)	
							BODILY INJURY (Per accident)	
							PROPERTY DAMAGE (Per accident)	
A	UMBRELLA LIAB X OCCUR X EXCESS LIAB CLAIMS-MADE DED X RETENTION			XSLG27865082 SIR applies per policy terms & conditions	05/01/2017	05/01/2018	EACH OCCURRENCE	$2,000,000
							AGGREGATE	$2,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N N/A If yes, describe under DESCRIPTION OF OPERATIONS below			WLRC49113924	05/01/2017	05/01/2018	X PER STATUTE OTH-ER	
A				SCFC49113936	05/01/2017	05/01/2018	E.L. EACH ACCIDENT	$1,000,000
							E.L. DISEASE-EA EMPLOYEE	$1,000,000
							E.L. DISEASE-POLICY LIMIT	$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

SIR applies per terms and conditions of the policy.
Cancellation Provision shown herein is subject to shorter or longer time periods depending on the jurisdiction of, and reason for, the cancellation.

CERTIFICATE HOLDER

State of California
State of Water Resources Control Board
Attn: Division of Financial Assistance
PO Box 944212
Sacramento CA 94244-2120 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services Southwest Inc

Holder Identifier :

Certificate No : 570066277842

ACORD 25 (2016/03)

ULTRAMAR-VALERO CERTIFICATION OF FINANCIAL RESPONSIBILITY (but only) FOR UNDERGROUND STORAGE TANKS {p. 558 of 693}

State of California
State of Water Resources Control Board
Division of Financial Assistance
P.O. Box 944212
Sacramento, CA 94244-2120
(Instructions on reverse side)

For State Use Only

CERTIFICATION OF FINANCIAL RESPONSIBILITY

FOR UNDERGROUND STORAGE TANKS CONTAINING PETROLEUM

A. I am required to demonstrate Financial Responsibility in the required amounts as specified in California Code of Regulations (CCR), Title 23, Division 3, Chapter 18, Section 2807,

☐ 500,000 dollars per occurrence (non-marketers ≤ 10 mgal/mo) ☒ 1 million dollars annual aggregate (1-100 tanks)

or AND or

☒ 1 million dollars per occurrence (Petrol Marketers) ☐ 2 million dollars annual aggregate (>100 tanks)

B. Valero Wilmington Refinery (Name of Tank Owner or Operator) *hereby certifies that it is in compliance with the requirements of Section 2807, California Code of Regulations, Title 23, Division 3, Chapter 18, Article 3, Section 2807.*
The mechanisms used to demonstrate financial responsibility as required by Section 2807 are as follows:

C. Mechanism Type	Name and Address of Issuer	Mechanism Number	Coverage Amount	Coverage Period	Corrective Action	Third Party Comp

Note: This is a sample certification of a petroleum UST owner or operator using the State Cleanup Fund as the Financial responsibility mechanism, in conjunction with the state alternative mechanism "Letter from Chief Financial Officer." For additional information and requirements refer to Title 23, Division 3, Chapter 18, of the California Code of Regulations and Division 20, Chapter 6.75 of the California Health and Safety Code.
State Cleanup Fund does not apply for these (two) USTs.

Note: If you are using the State Fund as any part of your demonstration of financial responsibility, your execution and submission of this certification also certifies that you are in compliance and shall maintain compliance with all conditions for participation in the Fund. See instructions.

D. Facility Name	Facility Address
Facility Name	Facility Address
Facility Name	Facility Address
E. Signature of Tank Owner or Operator — Date	Name and Title of Tank Owner or Operator
Signature of Witness or Notary — Date	Name of Witness or Notary

CPR (Revised 12/07) FILE: Original - Local Agency Copies - Facility/Site(s)

VALERO WILMINGTON REFINERY

EMERGENCY RESPONSE MANUAL

TABLE OF CONTENTS

VALERO-ULTRAMAR EMERGENCY RESPONSE MANUAL {RMP Equivalent}

{pp. 316-510 of 693}

Ultramar, Inc.
Risk Management Program (RMP)
Is captured in their ERM
“Emergency Response Manual”
Which Includes their **ERP**
“Emergency Response Plan”

VALERO-WILMINGTON ERP (Emergency Response Plan), p. 339 of 693

"Category 4 Catastrophic Release"

Activation of emergency alarm

Management and emergency units required

Logistics Dispatcher to notify Los Angeles City Fire Department

Emergency Operations Center will be established.

Corporate Emergency Operations Center will be established.

Catastrophic release that will require internal or external evacuation, community or agency notification, emergency units, and major clean-up effort

Examples of Category 4 Incident are:

- Catastrophic H.F. Acid release **Corrosive Chemical**
- Catastrophic LPG release **Flammable**
- Catastrophic Pipeline rupture with spill **Corrosive or Flammable**
- Catastrophic Oil Spill at Marine Terminal **Flammable**

Representative Actions are listed in Tables 2.1 and 2.2.

{p. 342 of 693} Table 2.1: Flammable Liquid Vapor Release
{p. 343 of 693} Table 2.2: Corrosive Chemical Release

For a Category 4 Catastrophic H.F. Acid Release

CORROSIVE CHEMICAL RELEASE

UNIT OPERATORS:

1. Report emergency to Lead Process Technicians LPT. Activate Emergency Response Plan.

NOTE: Some corrosive chemicals are not compatible with water.

2. Check MSDS information and know the chemicals in your area.

3. Activate deluge systems if available and safe to do so without protective equipment.

4. Activate fixed monitors to control the release at its source if safe to do so without protective equipment.

5. Evacuate personnel from area.

6. Isolate equipment at a safe distance, if possible. If the area cannot be safely entered by using protective equipment that the operator has been fully trained in its use, then divert the release to a safe containment area or continue dilution of the release using monitor streams.

FD/ERT:

1. Position portable monitors for the most effective control of the release at its source.

2. Personnel **trained in HAZMAT response will don the appropriate protective clothing** and attempt to isolate the release. Activities will be restricted to the level of training received including patching/plugging barrels and drums, installing special kits, control and containment of leaks and spills, neutralization, decontamination, etc. The possibilities of other emergencies that may occur are too numerous to discuss in detail. This section was provided to show typical response to the incipient stage of an emergency.

TABLE 2.2

VALERO-WILMINGTON ERP (Emergency Response Plan), p. 352 of 693

No ERP for Category 4 Catastrophic HF 'Leaks Outside the Refinery'

2.5 HAZARDOUS MATERIAL LEAKS OUTSIDE THE REFINERY

Objectives

2.5.1 Identify the source and characterize the material.

2.5.2 Notify the appropriate local agencies.

2.5.3 Isolate the source and stop the leakage.

2.5.4 Contain the spill.

2.5.5 Clean-up the spill.

"Category 1 Minor"
Minor spill or leak of Five (5) gallons or less from a Valero owned and operated installation.

Leakage confined to land and not of sufficient quantity to cause a safety hazard or public concern.

"Category 2 Moderate"
Moderate leakage in or near a water way or any leakage of sufficient quantity to require more than a minor clean-up effort

Security will activate management call-out.

EOC members are required to report to the refinery anticipating EOC activation at discretion of the Incident Commander or Refinery Manager

Logistics Dispatcher to notify Los Angeles City Fire Department

"Category 3 Major"
Major Oil Spill or leak in or near a waterway has caused fire or injury or any leakage that has the potential to result in a serious hazard to environment or public.

Security to activate management call-out

Logistics Dispatcher notify Los Angeles City Fire Department

Emergency Operations Center will be established

Corporate Emergency Operations Center notified

NOTE: Appendix-H Located at the back of this ER Plan provides additional response instructions. You may also obtained additional detailed information in the Pipeline Contingency Plan and Marine Terminal Spill Response Manual.

APPENDIX H: HAZARDOUS MATERIALS DECONTAMINATION PLAN
pp. 485-487 of 693

VALERO-WILMINGTON ERP (Emergency Response Plan), p. 468-479 of 693

Appendix E: REFINERY FIRE RESPONSE PLAN

REFINERY

FIRE PREVENTION PLAN

1.0 GENERAL

1.1 This facility is engaged in the refining of crude oil to make a variety of petroleum products including gasoline. Flammable and combustible materials are therefore found throughout the refinery in either processing or storage areas or at loading racks where product is transferred to or from road vehicles. Areas where crude oil or intermediate or final products are present a special ignition hazard and are identified on Figure 1.1 the Refinery Process Area drawing. These areas are hereinafter referred to as "process areas". Other areas of the refinery are referred to as "non-process areas". Non-process areas include office and other buildings found with the non-process areas. Flammable and combustible materials may be found in non-process areas, but the hazard is generally less than that in process areas. Exceptions to this are as follows:

Warehouse - Flammable Gases

Laboratory - Flammable Gases, Liquids

These building areas are subject to similar controls to those for process areas. Conversely, controls may be relaxed in certain buildings within process areas where specifically posted:

1.2 This plan addresses process and non-process areas separately. All personnel not normally assigned to process areas should pay particular attention to restrictions on entry into process areas. All potential sources of ignition, including smoking materials, electrical devices and vehicles are prohibited unless specifically authorized under the refinery Hot Work Permit system or specifically exempted from permit requirements. The Safety Department shall be consulted if there is any doubt as to whether or not any item is a potential ignition source.

1.3 This Fire Prevention Plan is intended to meet the requirements of Section 3221 of the Cal-OSHA General Industrial Safety Orders. Because fire prevention is such an integral part of the design, operation and maintenance of the refinery, numerous programs and procedures exist to prevent fires. These programs and procedures are incorporated by reference herein.

{p. 468 of 693}

12 Page Refinery Fire Response Plan

VALERO-ULTRAMAR
NEEDS TO DEVELOP A SIMILARLY
COMPREHENSIVE
RESPONSE PLAN
For a Category 4
Catastrophic H.F. Acid Release

VALERO-ULTRAMAR
APPENDIX I, pp. 490-510
ARE FORMS FOR SITE SAFETY PLANS

PAGE 510 IS LAST PAGE OF
VALERO-ULTRAMAR ERP

City of LOS ANGELES
CALIFORNIA

LOS ANGELES
FIRE DEPARTMENT
200 NORTH MAIN STREET
LOS ANGELES, CA 90012
(213) 978-3680

Hazardous Materials System
BP-8: Computer Listing of Inventory Submitted
Inspection Responsibility: VIU

Business No : FA0019079
First In : 038
Block # :

Printed on: 7/28/2011

Business Name	: VALERO WILMINGTON REFINERY	**Business Address:**	2402 E ANAHEIM ST,	**Next Inspection Date:**	06/15/2011
Business Owner	: ULTRAMAR INC A VALERO COMPANY		WILMINGTON, CA 90744	**SIC Code**	: 2911
On-Site Manager	: JASON LEE	**Phone #**	: (562) 491-6608	**# of Employees**	: 440
Emergency Contact	: JOHN BRIONES	**Phone #**	: (562) 495-5460 Ext:	**Sq. Ft. of Facility**	: N/A
Alt Emergency Contact	: JASON LEE	**Phone #**	: (562) 491-6608 Ext:	**Permit Date**	: 12/14/2010

p. 236

LOCATION: PROCESS AREA 16 — **NFPA-704: N/A**

Chemical Name	*HM Type*	*Max Quantity on Hand*	*State*	*Fed Haz Catg.*
ALKYLATE	PURE	**408.00 OTHERS**	LIQUID	
Hazard Class:		*Storage Type:* ABOVEGROUND TANK		
Ingredients	*Max %*	*CAS #*		
ALKYLATE (C7-C12)		64741646		

p. 260

Chemical Name	*HM Type*	*Max Quantity on Hand*	*State*	*Fed Haz Catg.*
BUTANE MIXED	PURE	**1,257.00 OTHERS**	LIQUID	
Hazard Class:		*Storage Type:* OTHER		
Ingredients	*Max %*	*CAS #*		
N-BUTANE		106978		
ISOBUTANE		75285		

Chemical Name	*HM Type*	*Max Quantity on Hand*	*State*	*Fed Haz Catg.*
CAUSTIC POTASH WALNUT	PURE	**40,000.00 POUNDS**	SOLID	
Hazard Class:		*Storage Type:* STEEL DRUM		
Ingredients	*Max %*	*CAS #*		
POTASSIUM HYDROXIDE	90.00	1310583		
WATER		7732185		

Chemical Name	*HM Type*	*Max Quantity on Hand*	*State*	*Fed Haz Catg.*
HYDROGEN FLUORIDE, ANHYDROUS	PURE	**POUNDS**	GAS	
Hazard Class:		*Storage Type:* OTHER		
Ingredients	*Max %*	*CAS #*		
HYDROGEN FLUORIDE	100.00	7664393		

p. 261

Chemical Name	*HM Type*	*Max Quantity on Hand*	*State*	*Fed Haz Catg.*
IPC 6677C ADDITIVE SC-1043	PURE	**240.00 GALLONS**	LIQUID	
Hazard Class:		*Storage Type:* ABOVEGROUND TANK		
Ingredients	*Max %*	*CAS #*		
ACRYLAMIDE				
TRADE SECRET-HAZARDOUS				

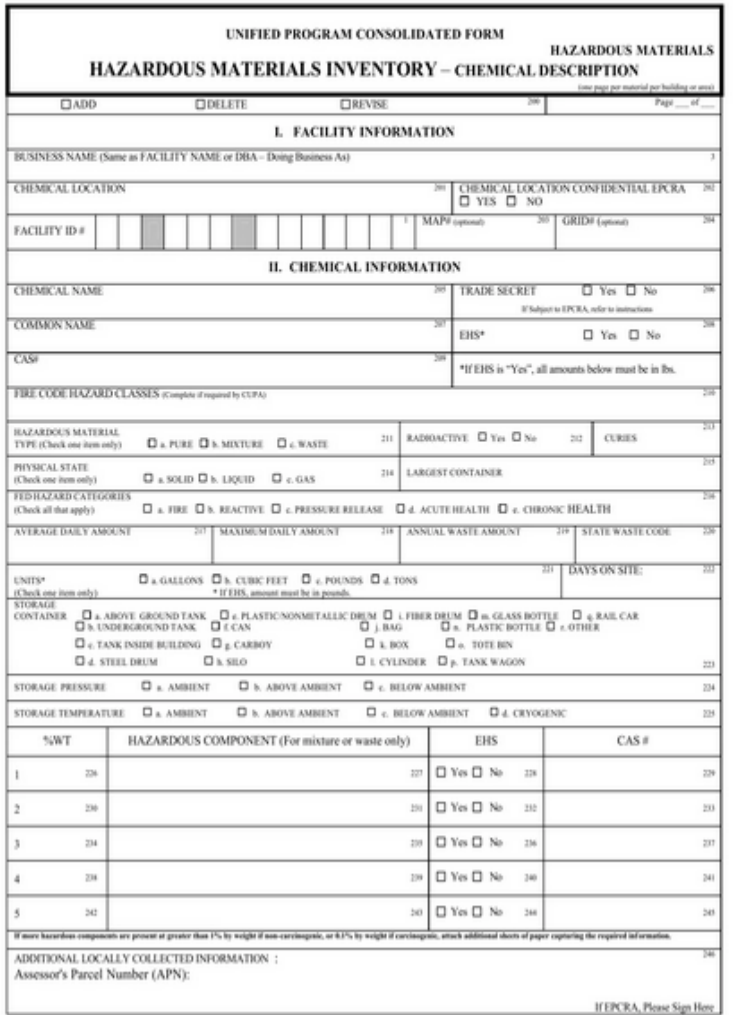
Chemical Name	*HM Type*	*Max Quantity on Hand*	*State*	*Fed Haz Catg.*
IPC 9315 CM ADDITIVE SC-221	PURE	**1,000.00 GALLONS**	LIQUID	
Hazard Class:		*Storage Type:* ABOVEGROUND TANK		
Ingredients	*Max %*	*CAS #*		
SODIUM HYDROXIDE				

From the LAFD CUPA: 5 Pages Ultramar Chemical Storage Inventory, pp. 515-521 of 693

Los Angeles City Fire Department Certified Unified Program Agency
CHEMICAL DESCRIPTION (OES 2731) CD+
California Hazardous Materials Inventory Reporting From - Chemical Description Page
DATE: #Name? Page 1 of 288

ONLY 7 PAGES OF 286 PAGES OF **OES-2731** RESPONSE INCLUDED

pp. 1-4, p. 176, p. 274-275



UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3

CHEMICAL LOCATION 201 | CHEMICAL LOCATION CONFIDENTIAL EPCRA 202 ☐ YES ☐ NO

FACILITY ID # | MAP# (optional) 203 | GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205 | TRADE SECRET ☐ Yes ☐ No 206 If Subject to EPCRA, refer to instructions

COMMON NAME 207 | EHS* ☐ Yes ☐ No 208

CAS# 209 | *If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211 | RADIOACTIVE ☐ Yes ☐ No 212 | CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☐ b. LIQUID ☐ c. GAS 214 | LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217 | MAXIMUM DAILY AMOUNT 218 | ANNUAL WASTE AMOUNT 219 | STATE WASTE CODE 220

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221 | DAYS ON SITE: 222

* If EHS, amount must be in pounds.

STORAGE CONTAINER ☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION : 246

Assessor's Parcel Number (APN):

If EPCRA, Please Sign Here

Doc-15:

Facility ID 800026
Title-V 'Facility Permit to Operate (Draft)'
{"Draft-Title-V"} 1381 pages.

THIS IS A LARGE
APPROXIMATELY 733.4 MB
SEPARATE FILE

Doc-16:

Facility ID 800026 Title-V
'Facility Permit to Operate (Version #149 of 5-28-2024)'
from the US EPA Region 9
{"EPA Permit"}
1369 pages.

THIS IS A LARGE
APPROXIMATELY 727.9 MB
SEPARATE FILE

Doc-17:

2024-05-05
“GEng_HF-Alkylation_is-part-of-Catalytic -Reforming.pdf".

Is the Valero-Ultramar HF-Alkylation Unit Part of: 'Catalytic Reforming' ? YES!

Its operation then needs to be brought into compliance with requirements in: 40CFR 63 Subpart UUU

Created 5/5/2024

For Submission to the US-EPA and SCAQMD by:
Genghmun Eng, 5215 Lenore St., Torrance, CA 90503
as part of the needed changes to the
Draft Ultramar-Valero 2024 Title-V Permit,
during this special US-EPA Extended Review Period
4/5/2024 – 5/19/2024

Is "HF alkylation" part of "catalytic reforming"? YES!

About 3,610 results (0.37 seconds)

Dutton Institute
https://www.e-education.psu.edu › fsc432 › content › uo...

UOP HF Alkylation Process | FSC 432: Petroleum Refining

UOP **HF Alkylation** Process. Print. UOP **HF** ... Chemistry of **Catalytic Reforming** · **Catalytic** ... This courseware module is offered as **part** of the Repository of ...

Dutton Institute
https://www.e-education.psu.edu › fsc432 › content › alk...

Alkylation | FSC 432: Petroleum Refining - Dutton Institute

... **catalytic reforming**. Alkylate does not contain ... Early commercial units used H2SO4, but more recently, **HF alkylation** has been used more commonly in petroleum ...

AQMD (.gov)
http://www.aqmd.gov › ceqa › ultramar-valero PDF

The Alkylation Unit uses concentrated hydrofluoric acid (HF ...

distillation, delayed coking, **catalytic reforming**, hydrotreating, fluid catalytic cracking, alkylation, sulfur recovery, and auxiliary systems. Under the ...

LinkedIn · Dr. Marcio Wagner da Silva, MBA
160+ reactions · 3 years ago

Naphtha Alkylation Units and Process Safety – Alternative ...

... **Catalytic Reforming** Unit. However, due to ... A **part** of hydrofluoric acid ... Over the last decades, the refiners have opted to the **HF alkylation** ...

Springer
https://link.springer.com › ...

Alkylation in Petroleum Processing

Alkylation reactions are catalyzed by liquid and solid acids. **HF alkylation** and sulfuric acid alkylation are the most widely practiced commercial motor fuel ...

LinkedIn · Dr. Marcio Wagner da Silva, MBA
30+ reactions · 2 years ago

New Naphtha Alkylation Technologies – Balancing ...

... **Catalytic Reforming** Unit. However, due the ... A **part** of hydrofluoric acid ... Over the last decades, the refiners have opted to the **HF alkylation** ...

§ 63.1579 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act (CAA), in 40 CFR 63.2, the General Provisions of this part (§§ 63.1 through 63.15), and in this section as listed. If the same term is defined in subpart A of this part and in this section, it shall have the meaning given in this section for purposes of this subpart.

Boiler means any enclosed combustion device that extracts useful energy in the form of steam and is not an incinerator.

Catalytic cracking unit means a refinery process unit in which petroleum derivatives are continuously charged; hydrocarbon molecules in the presence of a catalyst suspended in a fluidized bed are fractured into smaller molecules, or react with a contact material suspended in a fluidized bed to improve feedstock

quality for additional processing; and the catalyst or contact material is continuously regenerated by burning off coke and other deposits. The unit includes, but is not limited to, the riser, reactor, regenerator, air blowers, spent catalyst or contact material stripper, catalyst or contact material recovery equipment, and regenerator equipment for controlling air pollutant emissions and equipment used for heat recovery.

Catalytic cracking unit catalyst regenerator means one or more regenerators (multiple regenerators) which comprise that portion of the catalytic cracking unit in which coke burn-off and catalyst or contact material regeneration occurs and includes the regenerator combustion air blower(s).

Catalytic reforming unit means a refinery process unit that reforms or changes the chemical structure of naphtha into higher octane aromatics through the use of a metal catalyst and chemical reactions that include dehydrogenation, isomerization, and hydrogenolysis. The catalytic reforming unit includes the reactor, regenerator (if separate), separators, catalyst isolation and transport vessels (e.g., lock and lift hoppers), recirculation equipment, scrubbers, and other ancillary equipment.

Continuous regeneration reforming means a catalytic reforming process characterized by continuous flow of catalyst material through a reactor where it mixes with feedstock, and a portion of the catalyst is continuously removed and sent to a special regenerator where it is regenerated and continuously recycled back to the reactor.

40CFR_Part-63_Subpart-UUU

{including: *"Continuous Regeneration Reforming"*}

- Many provisions in Subpart-UUU apply to Inorganic HAP (Hazardous Air Pollutants)
  - Many Inorganic HAP provisions are "HCl" (Hydrogen Chloride) specific.
  - Several other Inorganic HAP provisions are generic to all Inorganic HAP, which included HF, MHF, and other Alkylation Unit processes and hardware.
- Paragraph 63.1579 {Work Practice Standard} and Table 44 {Applicability of NESHAP General Provisions to Subpart UUU}
  - Tabulates large list of 40CFR_Part-63_Subpart-A {Part-63 General Provisions} that are integrated into Subpart-UUU, where the owner/operator shall "meet each requirement .. that applies."

40CFR 63 Subpart UUU

{*"Continuous Regeneration Reforming*" applies to the entire Alkylation Unit}

40CFR 63.1567: Inorganic HAP (Hazardous Air Pollutants) from Catalytic Reforming Units

- 40CFR 63.1567(a)(1): "Meet each emission limitation in Table 22 to this subpart that applies to you. If you operate a catalytic reforming unit in which different reactors in the catalytic reforming unit are regenerated in separate regeneration systems, these emission limitations apply to each separate regeneration system." *{The next sentence and following 40CFR 63.1567(a)(1)(i) and 40CFR63.1567(a)(1)(ii) are additional emission limitations [that] apply to emissions from catalytic reforming unit process vents that are associated with the coke burn-off and catalyst rejuvenation operations during coke burn-off and catalyst regeneration}.*
- 40CFR 63.1567(a)(3): "Prepare an operation, maintenance, and monitoring plan according to the requirements of 63.1574(f) and operate at all times according to the procedures in the plan."
- 40CFR 63.1574(f): "As required by this subpart, you must prepare and implement an operation, maintenance, and monitoring plan for each control system and **Continuous Monitoring System** (CMS) for each affected source. The purpose of this plan is to detail the operation, maintenance, and monitoring procedures you will follow."

40CFR 63 Subpart UUU

{*"Continuous Regeneration Reforming*" applies to the entire Alkylation Unit}

Table 22 to Subpart UUU of Part 63—Inorganic HAP Emission Limits for Catalytic Reforming Units

As stated in § 63.1567(a)(1), you shall meet each emission limitation in the following table that applies to you.

For . . .	You shall meet this emission limit for each applicable catalytic reforming unit process vent during coke burn-off and catalyst rejuvenation . . .
1. Each existing semi-regenerative catalytic reforming unit	Reduce uncontrolled emissions of hydrogen chloride (HCl) by 92 percent by weight or to a concentration of 30 ppmv (dry basis), corrected to 3 percent oxygen.
2. Each existing cyclic or continuous catalytic reforming unit	Reduce uncontrolled emissions of HCl by 97 percent by weight or to a concentration of 10 ppmv (dry basis), corrected to 3 percent oxygen.
3. Each new semi-regenerative, cyclic, or continuous catalytic reforming unit	Reduce uncontrolled emissions of HCl by 97 percent by weight or to a concentration of 10 ppmv (dry basis), corrected to 3 percent oxygen.

[70 FR 6955, Feb. 9, 2005, as amended at 80 FR 75306, Dec. 1, 2015]

40CFR 63 Subpart UUU

{*"Continuous Regeneration Reforming*" applies to the entire Alkylation Unit}

40CFR 63.1567: Inorganic HAP (Hazardous Air Pollutants) from Catalytic Reforming Units

- The primary Alkylation Unit Catalyst is MHF ('Modified Hydrofluoric Acid'), primarily composed of Anhydrous Hydrogen Fluoride (AHF) and Sulfolane, along with other proprietary ingredients, in which chlorides, and specifically HCl can be present as an intentional or unintentional minority ingredient.
- Honeywell SDS which ships out "90% Modified Hydrofluoric Acid" in tanker trucks, identifies it as 90% anhydrous HF and 10% Tetrahydrothiophene 1,1-dioxide {Trade Name: Sulfolane}.
- Table 22 requires that all parts of the Alkylation Unit and its subunits maintain HCl concentration at or below 10 ppmv (≤0.001%). Since the Alkylation Unit aims to use the MHF catalyst to achieve Continuous Regeneration Reforming of butanes into octane, various Alkylation sub-units need to have a Continuous Monitoring System (CMS) that measures and validates compliance with the Table 22 requirements.
- Compliance with 40CFR 63.1574(f) also mandates a CMS to validate that all subunits of the Alkylation System maintains an HCl concentration at or below 10 ppmv (≤0.001%).
- Most of the Alkylation System uses Monel(R) for its structural and pipeline elements. Monel(R) is known to be susceptible to chloride stress-corrosion cracking even at low concentrations of chloride with either water or oxygen from the air being integrated into the fluid stream, because that combination attacks the normal Monel(R) surface passivation layer.

40CFR 63 Subpart UUU

{*"Continuous Regeneration Reforming"* applies to the entire Alkylation Unit}

https://link.springer.com/article/10.1361/15477020421764

Stress-corrosion cracking of a monel 400 tube

Peer Reviewed Articles | Published: December 2004
Volume 4, pages 44–50, (2004) Cite this article

Journal of Failure Analysis and Prevention

Aims and scope →

Submit manuscript →

A. I. Katsamas, G. N. Haidemenopoulos, A. D. Zervaki & I. Melas

Abstract

A bent Ni–Cu Monel 400 alloy tube, which operated as part of a pipeline in a petrochemical distillery installation, failed by through-thickness cracking. The pipeline was used to carry a stream of gaseous hydrocarbons containing hydrochloric acid (HCl) into a reaction tower. The tower provided a caustic solution (NaOH) to remove HCl from the stream, before the latter was directed to a burner. Metallographic examination showed that the cracks were intergranular and were frequently branched. Although nominal chemical composition of the component was found within the specified range, electron dispersive analysis by X-ray (EDXA) indicated significant segregation of sulfur and chlorine on grain boundaries. Failure was attributed to hypochlorous-acid (HClO)-induced stress-corrosion cracking (SCC). The HClO was formed by the reaction of HCl with atmospheric O_2, and the oxygen entered the tube during shutdowns/startups of the installation. Residual stresses, originating from the in situ bend forming of the tube during assembly of the line, provided a driving force for crack growth, and the segregation of sulfur on grain boundaries enhanced the susceptibility of the material to cracking.

Appendix: Valero-Ultramar March 2010 Emergency Response Plan (ERP) offers virtually no guidance for a HF/MHF Category-4 Catastrophe

VALERO

ERP

VALERO WILMINGTON REFINERY

EMERGENCY RESPONSE PLAN

PART 2
EMERGENCY CLASSIFICATIONS AND REPRESENTATIVE ACTIONS

2.2 ENERGY RELEASE

"Category 4 Catastrophic Release"

Activation of emergency alarm

Management and emergency units required

Logistics Dispatcher to notify Los Angeles City Fire Department

Emergency Operations Center will be established.

Corporate Emergency Operations Center will be established.

Catastrophic release that will require internal or external evacuation, community or agency notification, emergency units, and major clean-up effort

Examples of Category 4 Incident are:
- Catastrophic H.F. Acid release
- Catastrophic LPG release
- Catastrophic Pipeline rupture with spill
- Catastrophic Oil Spill at Marine Terminal

Representative Actions are listed in Tables 2.1 and 2.2.

Table 2.1

REPRESENTATIVE ACTIONS ACCORDING TO EMERGENCY CLASSIFICATION

ENERGY RELEASE

FLAMMABLE LIQUID/VAPOR RELEASE

ENERGY RELEASE

CORROSIVE CHEMICAL RELEASE

UNIT OPERATORS:

1. Report emergency to Lead Process Technicians LPT. Activate Emergency Response Plan.

NOTE: Some corrosive chemicals are not compatible with water.

2. Check MSDS information and know the chemicals in your area.
3. Activate deluge systems if available and safe to do so without protective equipment.
4. Activate fixed monitors to control the release at its source if safe to do so without protective equipment.
5. Evacuate personnel from area.
6. Isolate equipment at a safe distance, if possible. If the area cannot be safely entered by using protective equipment that the operator has been fully trained in its use, then divert the release to a safe containment area or continue dilution of the release using monitor streams.

FD/ERT:

1. Position portable monitors for the most effective control of the release at its source.
2. Personnel **trained in HAZMAT** ~~response will don the appropriate protective~~ **clothing** and attempt to isolate the release. Activities will be restricted to the level of training received including patching/plugging barrels and drums, installing special kits, control and containment of leaks and spills, neutralization, decontamination, etc. The possibilities of other emergencies that may occur are too numerous to discuss in detail. This section was provided to show typical response to the incipient stage of an emergency.

Table 2.2

REPRESENTATIVE ACTIONS ACCORDING TO EMERGENCY CLASSIFICATION

Source: Valero-Ultramar ERP as disclosed in *LAFD_2022* {pp. 318, 334, 336, 340, 343 & 344 of 693}

Doc-18:

SCAQMD Detailed Responses to
Citizen and TRAA President Mr. Steve Goldsmith
with respect to their objections and concerns
regarding the Draft-Title-V.
SCAQMD noted their decision was that
no *EPA Permit* changes were being made
in spite of Citizen and TRAA
objections and concerns (19 pp).

	Comment	South Coast AQMD Staff Response
A-1	**NOTE 1:** Refinery Aging Infrastructure poses a substantial Public Health and Safety hazard, both to communities surrounding the Refinery, and to workers and visiting personnel within the Refinery fenceline. As such each Title-V Permit renewal needs to include requirement that enhanced Public Health and Safety measures be instituted at the Refinery, and to have those enhancements performed and reported on an ongoing basis, and in a timely manner: [1A.1] On a publicly available Refinery web-site; and [1A.2] To the CalEPA and SCAQMD. The Refinery enhancements that are performed and reported should include: [1B.1] The Refinery Risk Factor (RRF) that is identified; [1B.2] An inventory of the Refinery Infrastructure Assets (RIA) that are associated with identified RRF; and [1B.3] A Refinery Risk Reduction Plan (RRRP) for RRF mitigation; and [1B.4] Net Refinery Risk Reduction (RRR) achieved to date on each identified RRF.	South Coast AQMD is the regional agency with responsibility over air emissions from stationary sources with limited authority over mobile sources. This comment requests for the addition of items which are beyond the scope of the Title V Permit Renewal. Any requirements and references to the Refinery Risk Factor (RRF), Refinery Infrastructure Assets (RIA), Refinery Risk Reduction Plan (RRRP), and Net Refinery Risk Reduction (RRR) are outside the jurisdiction of the South Coast AQMD. This public notice was for the renewal of the Ultramar Refinery's existing Title V permit. The purpose of the Title V Renewal is to update any applicable air quality rules and regulations on the Title V permit since the last Renewal and assure that the facility is complying with the most current applicable air quality rules and regulations. Also, note that the purpose of the Title V permit is to standardize air quality permits and the permitting process for major sources of emissions across the country. The Title V permit identifies all the air quality requirements that apply to a facility in one document. These air quality requirements are known as "applicable requirements" and can come from South Coast AQMD, state, or federal regulations. Each Title V permit issued by the South Coast AQMD is required to include the permit content listed in South Coast AQMD Rule 3004. South Coast AQMD Rule 3004(a)(1) specifies the permit list the "Emissions limitations and those operational requirements that assure compliance with all regulatory requirements at the time of permit issuance." Therefore, Title V allows the South Coast AQMD to add new monitoring, recordkeeping, or reporting requirements, so as to determine whether the facility is complying with applicable air quality emission limitations and requirements. Title V, however, is not intended to go beyond applicable air quality rules and regulations. The Title V permit cannot include requirements outside of South Coast AQMD, state, or federal air quality regulations.

	Comment	South Coast AQMD Staff Response
		In addition, Ultramar has a risk management program to address multiple regulations related to safety and process safety, including but not limited to Risk Management Plan (RMP: US EPA & CalARP) and OSHA Process Safety Management (PSM regulations: CalOSHA 5189.1 & OSHA 1910.119). Therefore, the requested requirements are beyond the scope of Title V permit and cannot be included in a Title V permit.
A-2	**NOTE 2:** Components of the RRRP should include an evaluation of options, including (2A.1) Repair, (2A.2) Replacement with an upgraded or new component, (2A.3) Replacement using an alternative item or technology, and (2A.4) Removing the RRF hardware.	This comment is beyond the scope of the Title V Permit Renewal. See Response to Comment A-1.
A-3	**NOTE 3:** Once critical component of aging Refinery infrastructure are Above-Ground Refinery Pipelines (AG-RP). This component consistently been demonstrated to be a Refinery 'weak-link' that has been associated with the root-cause of many nationwide Refinery disasters, both large and small, often occurring with the injury or loss of human life. Therefore AG-RP should be considered as a statutory RRF. Therefore, [3A.1] An RIA should be compiled for all AG-RP with a diameter of 1-inch or larger, that are in-service for transporting Refinery fluids; and [3A.2] An RRRP should be developed for each AG-RP, including emergency procedures for small, medium, and large-scale AG-RP breaches.	This comment is beyond the scope of the Title V Permit Renewal. See Response to Comment A-1.
A-4	**NOTE 4:** Each AG-RP RRRP should include: [4A.1] A schedule for enhanced AG-RP inspection for identification of pipeline wall thinning, [4A.2] Mandatory AG-RP inspection points at [4A.2i] Each elbow joint, and [4A.2ii] At 6" to 1' prior to the elbow joint; where the direction of Refinery fluid flow in the AG-RP is from the [4A.2ii] inspection point to the [4A.2i] inspection point.	This the comment is beyond the scope of the Title V Permit Renewal. See Response to Comment A-1. The refinery implements a leak detection and repair (LDAR) program for fugitive components. LDAR identifies leaky equipment so emissions can be reduced through repairs. Components subject to LDAR are monitored at specific regular intervals to determine whether or not it is leaking. Any leaking component shall be repaired or replaced within a specified timeframe. The LDAR program is required by New Source Performance Standards (NSPS), National Emission

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		Standards for Hazardous Air Pollutants (NESHAP), and local rules such as South Coast AQMD Rule 1173. The program requirements are included in the Title V permit.
A-5	NOTE 5: Another critical component of aging Refinery infrastructure are all the RIA associated with the Refinery Alkylation Unit ('Alky'). The Alky contains at various points: (a) Pressurized and liquified Anhydrous Hydrogen Fluoride (A-HF), (b) Gaseous or liquid Hydrogen Fluoride (HF), (c) Hydrofluoric Acid (HFA), (d) Modified Hydrofluoric Acid (MHF), (e) Gaseous or liquid Butane (Bu) including nButane and Isobutane, among (f) Other Chemicals. HFA is HF associated with water (H2O) on a molecular scale. MHF is HF with additives, predominately Sulfolane (Su), to reduce its HF vapor pressure. MHF is usually delivered to the refinery with composition ~90wt% HF, ~10wt% Sulfolane. The Refinery uses a closed-loop pressurized fluid circulation system, with Settler Tanks that contain predominately MHF pressurized liquid with an gaseous HF-Bu overlayer. Parts of the Alky unit have a gaseous (HF; Bu) layer above a concentrated Su-liquid as a method for Su-recovery. Thus the Settler Tanks, AG-RP leading to and from the Settler Tanks, AG-RP associated with Alky operation, and the Alky unit itself may all have HF concentrations much higher than the delivered MHF. Because any large-scale Refinery HF/MHF release presents an the extreme Public Health and Safety hazard, the Alky AG-RP, and the Alky unit itself should be considered as a statutory RRFs, requiring the development of a much more comprehensive RRRP, as compared to AG-RP associated with the FCCU.	This comment is beyond the scope of the Title V Permit Renewal. See Response to Comment A-1. The refinery has a comprehensive Risk Management Plan (RMP) to reduce and prevent accidental chemical releases as required under Section 112(r) of the Clean Air Act (CAA). This RMP is updated and revised every 5 years with the US EPA. Facility Condition F24.1 on Ultramar's Title V Permit requires the facility to comply with the accidental release prevention requirements of Section 112(r).
A-6	NOTE-A: The AQMD Released Version (1381 pages) purports to be a complete Public Document available for Public Comment. However, pages 1297-1300 list only the following: "APPENDIX B: Modeling Files" "Electronic Files Submitted via the South Coast AQMD Portal" "This page intentionally left blank." As such, those "Electronic Files" need to be made publicly available, and a new the 30-day Public Comment period for that material should be created and properly noticed. Since Citizen cannot foretell how that new information impacts the already disclosed 1381	It is common practice that is followed in agency reports, and by no means it is intended to hide information. The Appendix B: Modeling Files were submitted electronically for the purposes of a Voluntary Risk Reduction Plan (VRPP) to comply with South Coast Rule 1402 - Control of Toxic Air Contaminants from Existing Sources, which implements the state-wide AB2588 Air Toxic Hot Spots program. The modeling files are voluminous in size and some files require specific software in order to read the files. The file may also contain

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	page document, the entire combination of those "Electronic Files" and the present 1381 page document also needs to be part of this additional Public Comment and Public Review period.	confidential business information. Due to these reasons, modeling files cannot and have not been included in the Title V permit. The Public Notice for the Title V Renewal clearly indicated that South Coast AQMD staff should be contacted for additional supporting documents: "For more information or to review additional supporting documents, please contact Mr. Bhaskar Chandan at (909) 396-3902 or by email at BChandan@aqmd.gov." No requests for any additional documents were made during the public notice period. In addition, anyone interested in reviewing the modeling files can submit a Public Records request at this link: https://www.aqmd.gov/nav/online-services/public-records. Therefore, the public was given the opportunity to review electronic files during the public comment period. Rule 1402 implements various aspects of AB 2588 and includes public notification and risk reduction requirements for facilities that are above set thresholds. Rule 1402 includes a provision to allow facilities to participate in what is called the Voluntary Risk Reduction Program. The Voluntary Risk Reduction Program is an alternative to complying with the traditional AB 2588, and Rule 1402 provides qualifying facilities an opportunity to reduce health risks below the Notification Risk Level with a Modified Public Notification approach. The Modified Public Notification is placed on the South Coast AQMD's website in the AB 2588 Annual Report in lieu of traditional Public Notification. This Program achieves risk reductions both sooner and beyond what is required in the traditional Rule 1402 process as it focuses on implementation of risk reduction measures immediately. Under Rule 1402, facilities that meet the eligibility requirements and elect to participate in the Voluntary Risk Reduction Program must submit a VRRP. The VRRP identifies the risk reduction measures that a facility will implement to achieve risk reductions below the Voluntary Risk Threshold. Refer to the "SCAQMD Guidelines for Participating in the

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		Rule 1402 Voluntary Risk reduction program" for the more details on the implementation of the VRRP https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-vrrp-guidelines-201809.pdf. The VRRP is not meant for accidental releases of any pollutant/chemicals. Accidental releases of pollutant/chemicals are regulated by other agencies. Please note that Rule 1402 is not a SIP approved rule and therefore is implemented locally under the South Coast AQMD and State regulations, and these requirements are not federally enforceable. This Title V renewal permit merely incorporates the approved VRRP (that was issued separately outside of the Title V permit) into Section I of the Title V permit which contains all the plans issued to this facility by South Coast AQMD. Therefore, a new 30 day Public Comment period is unwarranted.
A-7	NOTE-B: Appendix A, Tables 11-12, "Maximum Exposed Residential [Table 11] / Worker [Table 12] Cancer Risk Summary After Implementation of Risk Reduction Measures" contains two categories of tabulated entries under the column heading "Sum of RISK_SUM". One category are non-zero numerical values which range from 4.52E-06 to 3.44E-12. The other is 0.00E+00. There is NO ZERO RISK chemical. These tables need to be re-done with Valero's numerical values publicly disclosed.	"SUM of RISK_SUM" column is meant to reflect cancer risk. These tables are reproduced from output using software developed by California Air Resources Board (CARB), named Hotspots Analysis and Reporting Program (HARP). Some toxic air contaminants do not have approved cancer risk assessment health values, including some shown in Tables 11 and 12 of the VRRP. Thus, the resulting output from HARP correctly displays cancer risk to be 00E+00 for those toxic air contaminants without approved cancer risk health values.
A-8	NOTE-C: Appx. A, Table 12, Page A-86 lists: "Sum of RISK_SUM" PAHs-w/ 0.00E+00 PAHs-w/o 4.62E-10 A naive observer might believe "w/" means "with", and "w/o" means "without". With or without What? This needs to be fixed and clarified, with the results made available for Public Comment, further supporting the necessity of the above Note-A and Note-B being implemented, so that a more complete document can be made available for Public Comment & Public Review.	The description for these toxic air contaminants shown in this table are provided in the HARP software. CARB provides descriptions on use of certain toxic air contaminants, and the use of these two descriptors were intended for ease of reporting for facilities since polycyclic aromatic hydrocarbons (PAH) are comprised of multiple congeners. "PAH w/" is the HARP abbreviation for reporting of PAH groupings that are treated with the benzo(a)pyrene cancer risk value and "PAH w/o" is intended to report PAH groupings with no associated approved health values. See Note L in the following document provided by CARB

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		(https://ww2.arb.ca.gov/sites/default/files/classic/toxics/healthval/contable10062023.pdf). See the response to Comment A-6 on why a new public comment and public review are unwarranted.
A-9	**NOTE-D:** Appx. A, Table 12, Page A-86 lists a DieselExhaustPM value under "Sum of RISK_SUM", which likely does not take into account the fact that a lot of PM-2.5 down to PM-0.1 and smaller form known substrates for PAH accumulation. As part of the Title-V operating permit, collection of PM and Black Carbon need to be routinely collected and properly analyzed for their PAH content, with those results made Publicly available.	Per AB 2588 program requirements, emissions of diesel engine exhaust particulate matter, including all toxic air contaminant constituents, are reported solely as 'diesel particulate matter (DPM)'. DPM is a complex mixture of gases and fine particulate, including those in the sub-micron range. DPM as a whole has been evaluated for health values, with resulting health values used for health risk assessments. For further details, see OEHHA Guidelines Appendix D. (https://oehha.ca.gov/media/downloads/crnr/2015gmappendicesaf.pdf) and CARB's report on diesel exhaust (https://ww2.arb.ca.gov/sites/default/files/classic/toxics/dieseltac/de-fnds.htm). Therefore, there is no need for the Title V permit to require the routine collection and analysis of PAH content in DPM.
A-10	**NOTE-E:** Appx. A, Table 9, Page A-80, and Table 14, Pages A-90 and A-91 all list 0.00E+00 values for HF, SULFUR DIOXIDE, and NITROGEN OXIDE under "Sum of RISK_SUM". These are likely an improper, unacceptable, and incorrect values. This is another reason why "Appendix B: Modeling Files" needs to subject to Public Disclosure and Public Review, as in the above Note-A. To the best of Citizen's present knowledge: (E-1) Acute HF exposure is a known risk during HF/MHF transfer from Tankers into the facility. (E-2) Spent catalyst dust is routinely collected and shipped off-site for proper hazardous waste disposal. Workers involved in this activity wear hazmat suits, and the dust is quarantined in hazardous waste bags. Fresh catalyst dust, just removed from the FCCU is known to have volatile contaminants on the catalyst dust particles. These should count as 'Fugitive Emissions', which need to be put under proper US-EPA and AQMD monitoring and inventory, as they are likely a source of SOx and NOx.	These tables are reproduced from output from HARP software. The tables show listing of all toxic air contaminants and resulting acute hazard index impact at each target organ system. Some toxic air contaminants do not have approved acute health values, including some shown in Tables 9 and 14. These tables do not show the total hazard index but instead show the contribution of each toxic air contaminant to the hazard index for each affected target organ. A toxic air contaminant may have independent effects on certain target organs only; in other words, not all toxic air contaminants affect all target organs (see Table 2 from Appendix L of the OEHHA Guidelines for additional information - https://oehha.ca.gov/media/downloads/crnr/2015gmappendiceslm.pdf). Tables 9 and 14 display the correct results.
A-11	**NOTE-F:** The Ultramar Voluntary Risk Reduction Plan totally ignores any possibility or need for Risk Reduction associated with the potential for large-scale HF/MHF releases, and the potential for AboveGround Refinery	This comment is beyond the scope of the VRRP and Title V Permit Renewal. See the objective of Title V and VRRP in the Response to Comments A-1 and A-6, respectively.

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	Pipeline (AG-RP) aging, breakage, or leakage. Ongoing enhanced AG-RP inspection, monitoring, evaluation, with schedules for repair and replacement need to be made part of this document for how to OPERATE a Refinery in a manner that is more protective of the Public Health and Safety. The SCAQMD and CalEPA need to set standards and mandates for this AG-RP Risk Reduction, as part of the Title-V operating permit, instead of relying on 'Voluntary Risk Reduction Plans', which ignore statutory risks including such as aging AG-RP effects.	The accidental release of HF/MHF is not regulated under South Coast AQMD rules and regulations and therefore the Title V permit does not include any requirements for accidental release of HF/MHF. The standards and mandates for AG-RP risk reduction are beyond the jurisdiction of the South Coast AQMD. AB 2588 only requires facilities to evaluate "routine and predictable" emissions. Large scale accidental releases of HF/MHF are outside of the scope of AB 2588 as they do not occur routinely nor predictably.
A-12	**NOTE-G:** The Ultramar Risk Reduction Plans need to include timelines for worst-case scenarios, due to Earthquakes, Terrorist Attacks, Cyber-attacks, and Accidents.	This comment is beyond the scope of the VRRP and Title V Permit Renewal. The accidental release of HF/MHF is not regulated under South Coast AQMD rules and regulations and therefore the Title V permit does not include any requirements for accidental release of HF/MHF. See the objective of the VRRP in the Response to Comment A-6. Also see responses to Comments A-1 and A-17. As noted above, Ultramar has a risk management program to address multiple regulations related to safety and process safety, including but not limited to a Risk Management Plan (RMP) as required under Section 112(r) of the Clean Air Act (CAA). This RMP is updated and revised every 5 years with the US EPA.
A-13	**NOTE-H**: Pages 975-976 disclose 39 Floating Roof Tanks on site. Two of them, constructed in 1981- 1982 time frame, hold 'Alkylate' product. Since 'Alkylate' is produced using anhydrous HF/MHF as a catalyst, the 'Alkylate' product may contain residual HF/MHF traces. Much of this could evaporate as 'fugitive emissions', thus continuous sensitive HF monitoring is needed for these tanks, especially since HF corrodes metals differently than normal acids, which is why Monel(R) is generally used in Alkylation Unit piping, instead of less expensive steels. The present Permit makes no distinction between how these tanks are monitored, compared to the other 37, which is a potential additional HF/MHF usage risk that needs special attention, where attendant details need to be added to this permit.	This comment is beyond the scope of the Title V Permit Renewal. This list of storage tanks on pages 975-976 were submitted for purposes of demonstrating compliance with South Coast AQMD Rule 463. See response to Comment A-1.

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A-14	NOTE-I: What processes are used to monitor the different corrosion rates of Alkylation piping, storage tanks, flanges, etc., as different from FCCU piping, storage tanks, flanges, etc., as even a small amount of HF/MHF impurity can significantly affect the hardware. Ignoring that difference is one of the root causes associated with the Valero Memphis HF accident and release in the AM of 12/3/2012. All these processes and process differences need to be put into the permit as part of OPERATING an HF Refinery, instead of just having predominantly a list of the hardware that is used on site.	This comment is beyond the scope of the Title V Permit Renewal. See response to Comment A-1.
A-15	NOTE-J: All the Alkylation Unit tanks, storage vessels, piping, their materials, and their inspection schedule needs to be clearly and separately disclosed and inventoried, plus the modeling reasons why those inspections have been deemed sufficient, given the HF interaction with materials has properties that are very different from the FCCU hardware. The present Title-V permit is either silent or obscure as to this potentially critical hardware safety hazard.	This comment is beyond the scope of the Title V Permit Renewal. See response to Comment A-1.
A-16	NOTE-K: What is the model Valero Ultramar uses to PREDICT wall thinning of pipes and erosion of seals with time, and how do those models differ between the FCCU hardware and the Alkylation hardware? What criteria does Valero Ultramar use for this, that they believe is 'safe enough'? How is the transition handled between these two material types, being Monel-Centric vs Non-Monel. These are all Public Health and Safety issues associated with the OPERATION of an HF Refinery, which needs to be made part of the Title-V permit, and made available for Public Comment and Review, in order for the Public to better assist both the SCAQMD and the US-EPA in identifying and controlling the risks of aging Refineries.	This comment is beyond the scope of the Title V Permit Renewal. See response to Comment A-1. Ultramar has a risk management program to address multiple regulations related to safety and process safety, including but not limited to RMP (EPA & CalARP) and OSHA PSM regulations (CalOSHA 5189.1 & OSHA 1910.119). Ultramar also has an inspection and maintenance program related to the reliability of equipment that addresses multiple regulations including but not limited to California Code of Regulations, Title 8, Subchapter 15: Petroleum Safety Orders - Refining, Transportation and Handling. The program also follows engineering codes which ensure the safety and reliability of equipment which address some of the noted concerns including but not limited to: • API-570: Piping Inspection Code: In-service Inspection, Rating, Repair, and Alteration of Piping Systems

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		• API-751: Safe Operation of Hydrofluoric Acid Alkylation Units • ASME B31.1: Power Piping • ASME B31.3: Process Piping • ASME B31.4: Pipeline Transportation Systems for Liquids and Slurries As indicated in response to Comment A-1, the above regulations are beyond the jurisdiction of the South Coast AQMD, and therefore are not included in the Title V permit.
A-17	**NOTE-L:** What happens in an HF/MHF disaster? What should happen during a large-scale emergency involving HF/MHF hardware. What are the plans and controls, emergency procedures, staff training, and how much practice in simulated emergency response are actually done? Plans are needed for small HF/MHF releases, medium-size HF/MHF releases, large-scale HF/MHF releases, extreme HF/MHF releases, and huge-earthquake or terrorist or cyber-attack mediated releases. The details for each of these categories needs to be specified in the Title-V permit, including Refinery plans for coordination with Police, Fire, and other Public Agencies, again as part of refinery OPERATION.	This comment is beyond the scope of the Title V Permit Renewal. See response to Comment A-1. HF/MHF is regulated as a toxic air contaminant in South Coast AQMD Rule 1401, 40 CFR Part 355, Appendix A, 40 CFR 372, 40 CFR 1910.119, and OSHA PEL. Although accidental/emergency release of HF/MHF is currently not regulated by South Coast AQMD regulations, the South Coast AQMD accepted the safety enhancements (such as perimeter HF sensors, automation of the water curtain system, additional point source detectors) set forth in the Ultramar Proffer Letter https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1410/1410-comment-letters/valero-proffer-letter-8-30-19.pdf?sfvrsn=6. Additionally, fenceline HF monitoring is included in Rule 1180 Fenceline Monitoring and Notification System. Accidental releases and notification are under the authority and jurisdiction of other agencies and are outside the scope of the Title V Permit. As noted under previous responses, the refinery has a comprehensive Risk Management Plan to reduce and prevent accidental chemical releases.
A-18	**NOTE-M:** In the present 1381-page proposed Title-V permit, pages 1022-1151, or 130 pages, almost 10% of total Title-V Permit text, are devoted to Valero Ultramar Rule 1118 Flare Minimization Plans, which is updated yearly. Much of this enhanced scrutiny arises due to major unplanned SOx releases associated with unplanned flaring events. So when something bad happens, the SQMD 'closes the barn door after the horses already	South Coast AQMD staff disagrees with the comment that the Rule 1118 Flare Minimization Plan is updated yearly with the premise the South Coast AQMD 'closes the barn door after the horses already escaped'. South Coast AQMD Rule 1118 requires refineries to monitor and record data for flaring operations, and to control and minimize flaring and flare related emissions. Flaring occurs at the refinery due

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	escaped'. The Public Health and Safety hazard of the SCAWMD acting in a significant manner only after a serious accident is a philosophy that cannot be afforded to the potential for HF/MHF releases during a Refinery accident. Therefore enhanced yearly scrutiny and reporting, both to the Public, the SCAQMD, and the US-EPA needs to be done, with those processes and procedures made part of this Title-V Permit, which will govern for the next 5 years.	to essential operational needs, unforeseeable (emergency), or planned events (such as shutdowns, startups, turnarounds or maintenance activities). Note Ultramar's flare gas recovery system and flares are not designed to mitigate any accidental release of HF/HMF. A refinery is required to meet its annual SOx flaring performance target based on their year 2004 crude processing capacity. Only if the refinery does not meet the annual performance target are they required to submit a Flare Minimization Plan (FMP) in accordance with Rule 1118. The submittal of FMP is not a yearly requirement, as claimed by the comment. The purpose of the FMP is to address the issues that caused the performance target exceedance (i.e., the type of flaring that led to the exceedance) and put into place prevention measures, corrective actions, policies, and procedures to minimize or eliminate, to the extent feasible and safe, this type of flaring to occur in the future. In the case of Ultramar, a Flare Minimization Plan was submitted in 2016, 2020, and 2021 since the last Title V Renewal. Before the FMP is approved, the South Coast AQMD releases the FMP and our evaluation for a 60-day public comment and to U.S. EPA for a 45-day review period. The appropriate time to comment on the FMP was during the 60-day public comment period. The comment also notes that 10% of the total Title V permit text is devoted to the FMP. In addition to identifying the issues that caused the performance target exceedance, prevention measures, corrective actions, policies, and procedures to minimize or eliminate the same type of flaring in the future, the FMP must also include all the information required in Rule 1118(d)(1) such as a complete description and technical specifications for each flare and associated equipment at the refinery. Since a refinery can only have a single active FMP, all the previously approved FMPs are appended to the latest FMP. This causes the FMP to consist of 130 pages which contains all the previous three (Years 2016, 2020, and 2021) FMPs.

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A-19	**NOTE-N:** Much progress has been made since 2015 in the development of new technology safer replacements for HF/MHF use, such as Ionic Liquid Catalysis. A yearly review of why Valero Ultramar has not yet begun on a conversion plan away from HF/MHF Alkylation needs to be mandated by the Title-V Permit, with those results made Public yearly, with Public Comments being allowed. It should be part of a continuing "HF/MHF Risk Minimization Plan", with what actions and progress were achieved, with that information also being made Public, with Public Comments allowed.	South Coast AQMD staff continues to track technologies mentioned in the comments for large commercial-scale use. During the development of Proposed Rule 1410 in 2017 through 2019, the Governing Board directed staff to pursue enhanced safety measures in lieu of phase out of MHF. This comment is beyond the scope of the Title V Permit Renewal. See response to Comment A-1. Any mandate in a Title V permit must have a basis (rule, regulation, memorandum of understanding) in accordance with South Coast AQMD Rule 3004. There is currently no regulatory mandate for a "HF/MHF Risk Minimization Plan" Thus, such a plan cannot be mandated under the Title V permitting program.
A-20	**NOTE-O:** Regarding control of PM emissions in the proposed Title-V permit, pp.284-291: Historically PM emissions were only controlled to the PM-10. The present proposed Title-V permit suggests to continue to do what they have previously done, as 'good enough' for the Public Health and Safety. Like the HF/MHF concerns, science and technology keep advancing, including a improved and better understanding of the increasing amount hazard to the Public Health and Safety that both PM emissions and continued HF/MHF use create.	The source test conditions listed on pp. 284-291 of the Draft Title V Permit are for purposes of demonstrating compliance with the PM10 limits in such rules as South Coast AQMD Rules 404, 405, 407, 409, 475, 476, and 1105.1. The South Coast AQMD is aware of the hazards of PM10 emissions, and therefore, periodic source test are required as noted by the conditions listed on pp. 284-291. This comment regarding the use of HF/MHF is beyond the scope of the Title V Permit Renewal. See Response to Comments A-1 and A-19. As noted above, the purpose of the Title V Renewal is to update any applicable air quality rules and regulations on the Title V permit since the last Renewal and assure that the facility is complying with the most current applicable air quality rules and regulations. This is what South Coast AQMD staff has done in the proposed Title V Permit Renewal.
A-21	**NOTE-P:** As a concrete historical example of the Note-O concerns, the 'rainout' models used by virtually all Refineries prior to the 1987 Nevada Desert Koopman HF-Release Test assumed that nearly 100% of the released HF would fall harmlessly to the ground as 'rainout', whereas 0% 'rainout' actually occurred. Instead, an ongoing ground-hugging toxic cloud	This comment is beyond the scope of the Title V Permit Renewal. See Response to Comment A-1.

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	formed, which traveled for miles, which could have killed virtually all humans in its path. Meanwhile the HF/MHF unit was built and installed way before this test, on the theory that the HF/MHF risk to human life was minimal, even under a worstcase scenario where all the HF/MHF emptied out from its original Refinery use area, because of this theoretical 'rainout'.	
A-22	**NOTE-Q:** The time is now for the new Title-V Permit this facility to add in SCAQMD and US-EPA controls of PM-2.5. Time also for the new Title-V Permit to require mandatory steps to be taken to phase out MH/MHF usage. A good suggestion for this enhanced Valero effort would be to mandate, over this next 5-year permit period, that Valero Ultramar build, test, and operate a parallel small-scale to medium-scale Ionic-Liquid or equivalent new technology Alkylation process, in preparation for an eventual transition to this type of safer alternative. These steps need to be explicitly added as conditions in the Title-V permit, for continued operation of this Title-V Refinery.	The comment regarding phase out of HF/MHF is beyond the scope of the Title V Permit Renewal. See Response to Comments A-1 and A-19. PM2.5 is already regulated under South Coast AQMD Rule 1325. PM10 is a nonattainment pollutant under state standards and is regulated under Regulation XIII. PM2.5 is a subset of PM10 and major source emission increases in PM2.5 are regulated as PM10 under Rule 1303. Even if a facility does not trigger NSR for PM2.5 under Rule 1325, NSR can be triggered based on PM10 emissions. BACT and offsets for PM10 will apply well before any threshold for PM2.5 under Rule 1325 are reached (PM10 net emissions increase is 1.0 lb/day; PM2.5 net emissions increase is 55 lbs/day (10 tons/year).
A-23	**NOTE-AA:** Citizen has become aware of the AQMD Closure of 25 Sept. 2023 and the official extension of the Public Comment Deadline until Close-of-Business (COB) today, 26 Sept. 2023: allowing for additional **Public Notes and Comments to the Public Record.**	As a courtesy, South Coast AQMD staff agreed to accept the public comments until Tuesday, September 26, 2023.
A-24	**NOTE-BB:** As noted by Citizen previously as part of 'NOTE-M of 9/25/2023, in the present 1381-page proposed Title-V permit, pages 1022-1151, or 130 pages, almost 10% of total Title-V Permit text, are devoted to 'Valero Ultramar Rule 1118 Flare Minimization Plans', which is updated yearly, as part of their 'Voluntary Risk Reduction Plans' In addition other efforts have been approved by the SCAQMD as part of 'Voluntary Risk Reduction Plans', pages 1171-1189. Thus, development and public disclosure of proper and complete 'Risk Reduction Plans' are or should be an integral part of the Title-V Permitting:	The Valero Ultramar Rule 1118 Flare Minimization Plan is not updated yearly. The Flare Minimization Plan is made available for public review before approval. See response to Comment A-18. In addition, the Voluntary Risk Reduction Plan is submitted for the purposes of South Coast AQMD Rule 1402 and not part of Rule 1118. The Voluntary Risk Reduction Plan has a modified public notification and is placed on South Coast AQMD's website in the AB 2588 Annual Report in lieu of traditional Public Notification. See response to Comment A-6. Therefore, any development and public disclosure of any other 'Risk Reduction Plans' has been conducted pursuant to the requirements in

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		those rules and is separate from the Title V permitting process and cannot be included in the Title V permit.
A-25	NOTE-CC: Citizen is aware of an extensive Analyses by TRAA (Torrance Refinery Action Alliance) of the available Public Record as associated with an HF/MHF disaster at a Valero sister HF/MHF plant in Memphis Tennessee, on 3 December 2012, where Mechanic Dan Tittle, age 50, was killed by an blast to the face of HF/MHF ~918°F (492°C), dying an agonizing HF death; and where Millwright Charlie Hull, standing nearby, also suffered HF/MHF injuries. The TRAA Analyses are appended here at the end of these Notes and Comments. Similar things, or worse, could happen at Valero Ultramar Wilmington. This event shows that operating an HF/MHF Refinery, is not just a matter of equipment inventory and routine maintenance. Instead, it shows that Management Processes, Management Perspective, and the Refinery Safety Culture, or lack of a sufficient Refinery Safety Culture, the 'Human Element', are critical to how a Refinery actually operates on a daily basis. **This is why a specific 'HF/MHF Risk Reduction Plan', whether Voluntary, or Mandatory, needs to be an integral part of this Title-V Permit.** The 3 December 2012 tragedy shows that Valero's history is against them. As such, Citizen demands that the SCAQMD and/or the US-EPA levy upon Valero Ultramar a Mandatory requirement that they develop an ongoing HF/MHF Risk Reduction Plan, with extensive yearly review by both the SCAQMD and US-EPA, similar to what is already present in the proposed Title-V Permit as part of their 'Valero Ultramar Rule 1118 Flare Minimization Plans', and their other 'Voluntary Risk Reduction Plans'.	This comment is beyond the scope of the Title V program or Title V Permit Renewal. See Response to Comments A-1, A-5, A-6, and A-11. The refinery has a comprehensive Risk Management Plan to reduce and prevent accidental chemical releases. Any mandate to include a 'HF/MHF Risk Reduction Plan' in a Title V permit must have a regulatory basis. There is no mandate for the development of a "HF/MHF Risk Minimization Plan". Refer to the response to the comments A-6 and A-18 for the purpose of the Rule 1118 Flare Minimization Plans and Voluntary Risk Reduction Plans, respectively.
A-26	NOTE-DD: ATTACHMENTS: "200512_TRAA-ANalysis_Valero-Memphis-HF-Release_PEER-FOIA-Docs.pdf" "200512a_TRAA-Analysis_Valero-Memphis-HF-Incident-of-12-03-2012.pdf" "200512c_TRAA-Backup-Info_Valero-Memphis-HF-Incident-of-12-03-2012.pdf"	The attachments were received and no responses are necessary.

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B-1	TRAA recognizes the important value of the jobs and revenue provided to the community through the continued operation of the Ultramar Valero Wilmington Refinery. We also recognize the inherent dangers of refineries and the impact of air pollutants on the well-being of workers and residents, especially residents in communities that already experience a high Environmental Justice Burden. This is especially true of the Wilmington Community as cited in the 2017 letter from the then AG Xavier Becerra, which highlighted their EJ ratings of over 95%. In that attached letter, he cited the special danger of HF/MHF and recognized "maximum safety" requires the conversion from HH/MHF to a vastly safer alternative.	As part of the Proffer Letter accepted by the South Coast AQMD Governing Board in September 2019, South Coast AQMD staff have worked with Ultramar to install safety enhancements such as more detection sensors and automated water systems with the purpose to reduce potential impacts in case of a release of HF. As of February 2022, Ultramar has completed all the voluntary MHF alkylation unit safety enhancements and met all the commitments and obligations under the Proffer Letter . The quarterly reports and annual refinery committee report generated to provide the background and status of the proffer commitments can be found here: http://www.aqmd.gov/home/research/documents-reports/hf-at-refineries. These enhanced safety measures were implemented under the Proffer Letter, not under a regulatory or permitting requirement. The South Coast AQMD is aware of then AG Xavier Becerra's 2018 letter submitted during the rule making of proposed Rule 1410. Staff's work on former Proposed Rule 1410, including documentation, studies, and presentations, can be found here: http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1410. In this letter, the California Department of Justice recommended the South Coast continue its attention to the hazard posed by refinery usage of HF during the rule making process. The California Department of Justice's letter, however, did not require conversion from HF/MHF. Again, the Title V permit and SOB for the Title V Renewal can only require the inclusion of applicable air quality regulations that have been adopted, not the rules that have not been adopted. Also see response to Comment A-1.
B-2	We raise our concerns with the continued use of modified HF an acute air pollutant capable of causing mass causalities in a brief time and the threat it poses for workers and residents in the front line communities surrounding a facility which is now ranked at the top of U.S. population density. Every day 4000 ILWU workers receive their assignments at their center less than 6000 feet from the Ultramar facility.	All permitted equipment subject to South Coast AQMD Rule 1401 has been evaluated to comply with Rule 1401 requirements and the facility also is in the AB2588 program. Health risks including cancer and non-cancer chronic and acute risks were and are evaluated. HF is listed as an air toxic with non-cancer effects and those health risks were evaluated at the time of permitting or through AB2588. This Title V

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		permit renewal does not propose any new modifications to permitted equipment and no further evaluation of health risk was necessary. Also see responses to Comments A-5 and A-11.
B-3	We call for conditions to be placed on the refinery that will require them to convert from MHF/HF to a vastly safer alternative commercially proven technology during the current Title V permit process.	This comment is beyond the scope of the Title V Permit Renewal. See Response to Comment A-1. There is no regulatory basis for requiring this refinery to convert to alternative alkylation method, and therefore the South Coast AQMD does not have the authority to require the facility to convert to an alternative alkylation method under the Title V permitting program.
B-4	Additional concerns: The SOB & Permit's Executive Summary begins with a "Facility Description" in which it states: "This is an existing facility applying for a Title V permit renewal. The facility is a petroleum refinery located in Wilmington, California, where crude oil is processed into various petroleum products such as LPG, kerosene, diesel, naphtha and gas oil. In addition to crude and vacuum distillation units, coking, hydrogen plant and hydrotreating, the facility operates other distillation and separation processes, nurnerous combustion units such as heaters and boilers, refinery flares, and wastewater treatment systems. Also, the facility uses fixed roof tanks, internal floating roof storage tanks, external floating roof storage tanks, and pressurized storage tanks to store crude oil, intermediate and finished products." Public readers seeing this summary description might not even be aware that Valero Ultramar produces HF Alkylation. Why is this hidden?	South Coast AQMD staff disagrees with the comment that the HF description is hidden in the SOB. The opening paragraph of the Facility Description provides a brief general summary of the refinery's operation. Under the major refinery operations description of the Alkylation Unit further below, the SOB clearly states "Ultramar uses a modified HF (hydrofluoric acid) alkylation process" in Section 2, Page 2. The accidental release of HF/MHF is not regulated under South Coast AQMD rules and regulations and therefore the Title V permit does not include any requirements for accidental release of HF/MHF. The purpose of Statement of Basis (SOB) is to provide regulatory basis for the Title V permit, and in absence of any requirements in the Title V permit, the SOB does not need to include any discussion on HF/MHF. Despite this, the South Coast AQMD has clearly identified the use of HF/MHF and described in detail the Proffer Letter (which are also outside the scope of the Title V permit) in the SOB Section 7, Page 68. The SOB specifically discusses the MHF safety enhancements as well as Ultramar's commitments and obligations under the Proffer Letter. Section 7 of the SOB addresses extensively the enhanced monitoring system installed at the MHF Alkylation Unit at Ultramar to proactively detect any potential unplanned releases of MHF as well as the

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		implementation of enhanced safety measures to further mitigate any potential impact of a release. The proposed Title V draft permit renewal contains all applicable regulations and enforceable permit conditions to ensure compliance with these regulations are met consistently. Issues that are beyond regulatory requirements are beyond the scope of the Title V permit and its SOB. See response to Comment A-1.
B-5	Because HF is such an exceptional chemical (number 1 on the EPA list of Chemical Risk needing prioritized enforcement, it is prioritized because it can cause mass casualties. (see attached EPA memo).Thus it should be featured prominently in such an application.	In this U.S. EPA memo, the Office of Enforcement and Compliance Assurance (OECA) addresses noncompliance at facilities using hydrogen fluoride. The memo notes the OECA will use all available enforcement tools to address violations of risk management requirements, including holding entities criminally responsible. Therefore, this is a U.S. EPA OECA initiative and not a regulatory requirement, and thus there is no basis to included it in the Title V permit. See response to Comment A-1. See response to Comment B-4. Discussion on MHF is covered in Section 7 of the SOB, with more detailed information provided in the weblinks. The voluntary enhanced safety measures implemented by Ultramar as part of the Proffer Letter, as approved by the South Coast AQMD Governing Board, help mitigate risks from potential leak of MHF from the alkylation unit.
B-6	In particular, this application should address the recommendations of the US Chemical Safety Board as stated in their report on the Philadelphia PES "near miss", the Wisconsin Husky "near miss" and the Torrance Exxon proffer"near miss". 1. https://www.csb.gov/videos/the-danger-of-popcorn-polymer-incident-at-the-tpc-group-chemical-plant/ 2. https://www.csb.gov/husky-energy-superior-refinery-explosion-and-fire/ 3. https://www.csb.gov/exxonmobil-torrance-refinery-explosion-/	This comment is beyond the scope of the Title V Permit Renewal application. Also see responses to Comments A-1, B-1, and B-4.

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	Each of these reports on investigations conclude with specific recommendations directly related to HF, that were not adequately addressed in this application. We urge the AQMD/EPA to examine these videos and the specific recommendations of the CSB and apply them to this application.	
B-7	We believe the refinery would be more sustainable with a conversion away from Modified Hydrogen Fluoride (HF) to a vastly safer commercially proven alternative chemical in the production of alkylation. This would increase efficiency, reduce costs and liability for them, protect against future potential mass casualties lawsuits and bring peace of mind to the community.	This comment is beyond the scope of the Title V Permit Renewal. South Coast AQMD staff continues to track all existing and developing alternatives to using modified HF catalyst Alkylation. As explained in response to Comments A-1, B-1 and B-4, these comments under B-7 are beyond the scope of the Title V permit.
B-8	We believe the draft application for the Title 5 permit by Ultrama Valero fails to meet the objective of Title 5 which is to establish "Legally-enforceable documents designed to improve compliance by clarifying what facilities (sources) must do to control air pollution." In addition, the Statement of Basis Analysis (SOB) ignores the threat to the workers and residents of the frontline communities which contain low income and people of color who are already environmentally burdened. The SOB also disregards the critical workforces of industry, including national security facilities such as aero-space, military and port worker.	This comment is beyond the scope of the Title V Permit Renewal, as explained in response to Comments A-1, B-1, and B-4. The Title V permitting process addresses all applicable air quality rules and regulations the facility is subject to.
B-9	We see no mention of: 1. The security threat of "intentional acts" as referred to in the Feb 1, 2019 presentation by District staff and the attached letter from national security experts. 2. There are commercially proven vastly safer alternatives.	This comment is beyond the scope of the Title V Permit Renewal. The Title V permitting process addresses all applicable air quality rules and regulations the facility is subject to. Also see responses to Comments A-1, B-1, and B-4.
B-10	The application also fails to address the added Environmental Justice burdens placed on the communities to the east of the facilities.	The Title V permitting process addresses all applicable rules and regulations the facility is subject to. Also see responses to Comments A-1, B-1, and B-4. This public notice was for a Title V Permit Renewal, and there are no new permits or modifications to existing permits which would cause any emissions increase or environmental burden on the community.

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		The public notice was published in the local newspaper in both English (*The Daily Breeze*) and Spanish (*La Opinión)*. In addition, the entire Title V Renewal evaluation (Statement of Basis), public notice, and draft proposed permit were available in the public library (Los Angeles Public Library in the city of Wilmington) for review during the public comment period.
B-11	III. Nor does it address increased risk from intentional acts by bad actors and from growing knowledge base of threats related to natural disasters, specifically informed by newly discovered information on earthquake faults near by, unpredictable climate change events. All of which could impact the ability of the facility to control the release of pollution (HF) – the objective of Title 5 permits.	This comment is beyond the scope of the Title V Permit Renewal. The accidental release of HF/MHF is not regulated under South Coast AQMD rules and regulations and therefore the Title V permit does not include any requirements for accidental release of HF/MHF. Also see responses to Comments A-1, A-5, A-11, B-1, and B-4.
B-12	IV. There is no mention of the results of the Hierarchy of Technical Control Analysis required under CALARP that was to be submitted by October 2022 within this current Title 5 approval process.	This comment is beyond the scope of the Title V Permit Renewal. The Hierarchy of Technical Control Analysis required under CalARP is not a South Coast AQMD requirement or Title V requirement. The California Environmental Protection Agency (CalEPA) oversees the implementation of the CalARP program at the state level, while Certified Unified Program Agencies (CUPAs) such as the Los Angeles City Fire Department implement the CalARP program at the local level. Also see responses to Comments A-1, B-1, and B-4.
B-13	V. "The measures include enhanced monitoring, improved responses to a hydrogen fluoride release, such as a water curtain, and physical barriers to protect the hydrofluoric acid storage tanks from projectiles, such as those resulting from the explosions at the Torrance and Husky refineries." **Those mitigation measures, however, fall low in the safer technology hierarchy specified in the Proposed Rule. 87 Fed. Reg. at 53,575.** Even if they provide some additional safety, none of the measures would qualify as inherently safer technology or design, most could not even be described as passive safeguards. They would at best be considered active safeguards and more likely procedural safeguards, **at the bottom of the safety hierarchy**" - Submittal by 21 AGs".	This comment is beyond the scope of the Title V Permit Renewal. As noted above, Ultramar has completed all the voluntary MHF alkylation unit safety enhancements and met all the commitments and obligations under the 2019 Proffer Letter as of February 2022. The Proffer Letter is found here: https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1410/1410-comment-letters/valero-proffer-letter-8-30-19.pdf?sfvrsn=6. These enhanced safety measures included enhanced monitoring, improved responses to HF releases such as an automated water curtain system, and physical barriers to protect structures such as an acid settler debris grid. The quarterly reports and annual refinery committee report

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		generated to provide the background and status of the proffer commitments can be found here: http://www.aqmd.gov/home/research/documents-reports/hf-at-refinerieshttp://www.aqmd.gov/home/research/documents-reports/hf-at-refineries.
B-14	Many voices have spoken to the EPA calling for the elimination or conversion from MHF/HF. These voices included the aforementioned submittal by 21 Attorney Generals as well as, National Security Experts including two retired military generals, 31 Congress members, multiple large environmental organizations and local resident organizations. These voices call for an assessment of Safer Technology Alternatives Assessment (STAA) (the US EPA name for HHCA) and for the implementation of "commercially proven" safer technologies.	This comment is beyond the scope of the Title V Permit Renewal. Also see responses to Comments A-1, B-1, and B-4.
B-15	**SCAQMD typically upholds a higher standard than the US EPA – it should do so in this Title 5 process.**	South Coast AQMD is a regional air quality agency with authority to regulate air quality within its jurisdictional areas, in addition to being delegated authority to implement the federal Title V program. As discussed previously, this Title V Permit Renewal complies with all applicable air quality rules and regulations at the local, state, and federal levels. Also see responses to Comments A-1, B-1, and B-4.
B-16	**Part II: We recommend the following required action be completed before approval of this Title 5 Permit** I. Publication of the Hierarchy of Technical Control Analysis (HCA) for review by the public and by AQMD staff on behalf of the CUPA. Approval of the HCA due for submission October 30th, 2022 to the CUPA should be a condition of Title 5 permit. II. Based on that approved HCA, Ultrama/Valero should be required to submit a plan to eliminate MHF/HF through substitution of a safer alternative chemical within the next permit period. III. Distribution by information on the dangers of MHF and the availability of safer alternative technology to communities surrounding TORC within 6.2 miles (RMP "end point").	This comment is beyond the scope of the Title V Permit Renewal. Also see responses to Comments A-1, B-1, B-4, and B-12. A comment on distribution of information on MHF and availability of safer technology to communities surrounding TORC is not relevant to this Title V Permit Renewal since the operation at Ultramar refinery is not related to TORC. The Ultramar refinery is more than 6.2 miles from TORC facility.