Selena Kyle (246069)
skyle@nrdc.org
(312) 651-7906
Natural Resources Defense Council
20 N. Wacker Drive
Suite 1600
Chicago, IL 60606

Margaret Hsieh (287839)
mhsieh@nrdc.org
(415) 875-6135
Natural Resources Defense Council
111 Sutter Street
21st Floor
San Francisco, CA 94104

Vivian H.W. Wang (*pro hac vice*)
vwang@nrdc.org
(212) 727-4477
Natural Resources Defense Council
40 W. 20th Street
New York, NY 10011

Counsel for Plaintiffs

Shana Lazerow (195491)
slazerow@cbecal.org
(323) 826-9771
Communities for a Better Environment
113 E. Anaheim Street
Wilmington, CA 90744

Counsel for Communities for a Better Environment

Lawrence L. Hafetz (143326)
lhafetz@cleanair.org
(347) 276-4350
Clean Air Council
1617 JFK Boulevard
Suite 1130
Philadelphia, PA 19103

Counsel for Clean Air Council

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

CLEAN AIR COUNCIL; COMMUNITIES FOR A BETTER ENVIRONMENT; and NATURAL RESOURCES DEFENSE COUNCIL, INC.,

Plaintiffs,

v.

U.S. ENVIRONMENTAL PROTECTION AGENCY;

Case No. 8:25-CV-1473-MWF (DFMx)

AMENDED COMPLAINT

ACTION SEEKING STATEWIDE OR NATIONWIDE RELIEF

LEE ZELDIN, in his official capacity as Administrator; and NANCY BECK, in her official capacity as Principal Deputy Assistant Administrator for the Office of Chemical Safety and Pollution Prevention,

Defendants.

JURISDICTION

1. This case arises under Sections 21 and 6 of the Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2620, 2605. In February 2025, Plaintiffs submitted a petition to the U.S. Environmental Protection Agency (EPA) under TSCA Section 21(a), asking EPA to issue a Section 6(a) regulation eliminating the unreasonable risks that refineries' use of hydrogen fluoride (HF) poses to public health and the environment. EPA denied the petition on May 12, 2025. This Court has jurisdiction under Section 21(b), *id.* § 2620(b)(4)(A), which empowers Plaintiffs to sue within 60 days of the denial; and under the general federal-question statute, 28 U.S.C. § 1331. This Court considers the petition in a de novo proceeding and may order EPA to initiate the action requested by Petitioners/Plaintiffs under TSCA, 15 U.S.C. § 2620(b)(4)(B). The Court may also award Plaintiffs declaratory relief under the Declaratory Judgment Act, 28 U.S.C. §§ 2201–2202.

INTRODUCTION

2. HF is an extremely corrosive and reactive chemical that readily penetrates and destroys skin and tissue. It is so acutely toxic that exposing just 1% of skin to liquid HF—about a hand's worth—can be a death sentence. Inhalation can also be fatal. The risks of serious injury and death are heightened by the difficulty of diagnosing and treating symptoms of HF exposure.

3. At least 40 oil refineries across the United States use HF to boost fuel octane. When liquid HF held in a tank or pipe escapes into open air above its boiling point of 67.1° Fahrenheit (F), it tends to form a dense, ground-hugging, spreading cloud. Refineries use, store, and transport significant volumes of HF, often in ambient temperatures above HF's boiling point. This means that HF-using refineries and the associated HF transit routes present a continuous threat of exposure to dangerous HF clouds for refinery workers and other people who live, work, or otherwise spend time in neighboring communities. Refiners' own reports to EPA confirm that the risk from HF releases includes causing toxic clouds to

spread into neighboring communities, including in densely populated areas. According to its operator, a release from a refinery in Torrance, California, for example, risks causing a toxic cloud to spread more than 6.2 miles from the refinery. About 840,000 people live within that distance. A release from a refinery in Trainer, Philadelphia, risks causing a toxic cloud to spread 17 miles. About 1.9 million people live within that danger zone. A release from a refinery in Lemont, Illinois, southwest of Chicago, risks causing a toxic cloud to spread 22 miles. More than 3.3 million people live within that distance.

4. Although EPA's reporting requirements focus on scenarios in which a refinery releases all of the HF in its single largest containing vessel or pipe, even substantially smaller releases have the potential to cause toxic clouds large enough to harm people living and working near HF-using refineries.

5. The movement of HF to refineries extends these dangers. On information and belief, just one U.S. plant—Honeywell's in Geismar, Louisiana—still makes HF for refinery use. Trains and trucks carry HF thousands of miles across our country, jeopardizing people along the way.

6. Because HF is hazardous to all life, a refinery-related release threatens crops, livestock, wildlife, and natural areas. HF's corrosive effects on nearby buildings and vehicles complicates emergency response, shelter, and escape.

7. Refinery-related HF releases have already harmed people and the environment in the United States. In 1987, a crane dropped a large piece of equipment on an HF tank at the refinery in Texas City. Tens of thousands of pounds of HF escaped, and the cloud drifted past the refinery's fenceline into a neighboring residential area. More than 1,000 people sought treatment; 95 were admitted to the hospital.

8. Refinery-related HF releases and so-called "near-miss" events (in which an HF release was narrowly averted) have occurred repeatedly over the three-plus decades since the Texas City disaster, despite the adoption of new

regulatory regimes under the federal Clean Air Act and other laws. For example:

9. In 2015, a large pollution-control device at the Torrance refinery exploded. A 40-ton piece of debris from the explosion landed on scaffolding surrounding an HF tank in the nearby alkylation unit, coming within a few feet of the tank itself. Approximately 9,200 neighboring residents had to shelter in place.

10. In 2018, a large explosion at a refinery in Superior, Wisconsin, punctured a storage tank, causing a fire and nearly causing an HF release from a nearby tank holding 50,000 pounds of an HF mixture. According to the Chemical Safety Board, it was pure luck that those fragments did not puncture the HF storage tank, which was closer to the explosion than the tank that was ruptured. More than 2,500 people were evacuated, and the city of Duluth, Minnesota, issued a shelter-in-place order.

11. In 2019, at the former Philadelphia Energy Solutions refinery, a fifty-year-old pipe ruptured, releasing approximately 5,200 pounds of HF and causing explosions that hurled wreckage across the Schuylkill River. The explosions severed communications links to water pumps intended to help suppress an HF cloud, seriously delaying their activation; the refinery's backup power supply system also failed. The incident injured five refinery workers and a first responder, and the refinery was so badly damaged it never reopened.

12. In 2023, a reboiler at Honeywell's Geismar, Louisiana, HF manufacturing plant exploded under normal operating conditions, releasing 800 pounds of HF and requiring a complex-wide shelter-in-place order and the temporary closure of nearby highways. Although the Geismar manufacturing plant is not a refinery, this incident underscores the risks posed by facilities that hold large amounts of HF onsite—as HF-using refineries do.

13. Because refineries must regularly replenish their HF supplies to keep their alkylation units running, the release risks associated with refinery HF use extend well beyond refinery boundaries—including to road and rail corridors used

to move HF to refineries.

14. HF has escaped from tanker trucks, and HF railcars have derailed and released HF. For example, in 2009, a truck carrying sixteen tons of hydrofluoric acid (HF mixed with water) overturned in rural Wind Gap, Pennsylvania, and developed a drip leak. First responders evacuated 5,000 people from more than 900 households within a mile of the site. It took about nine hours to stop the HF release. In 1997, HF was released from a railcar in Memphis, Tennessee, prompting the evacuation of 150 residents who lived around the railyard. In 2012, a train carrying HF tank cars, along with cars holding other chemicals, derailed south of Louisville, Kentucky. The derailment resulted in the breach of two tank cars carrying other volatile chemicals. Fearing an HF release, authorities issued shelter-in-place orders and conducted a mandatory evacuation of surrounding homes.

15. Aging infrastructure and climate change are increasing the risk of refinery-related HF releases by the day. Our country's refineries are aging, making them more prone to equipment failure. So are many of the road, rail, and utility systems that refineries rely on to source HF. Refineries and HF transit routes are ever more vulnerable to extreme weather, endangering people who live or work near them.

16. Through TSCA, Congress gave EPA the power and responsibility to put an end to the most serious chemical threats. Plaintiffs respectfully ask this Court to declare that current refinery use of HF—including the storage and use of HF at refineries, and the movement of HF to refineries by truck and railcar—presents unreasonable risks of injury to health and the environment, and to order EPA to eliminate those risks through prompt rulemaking, as TSCA requires.

PARTIES

Plaintiffs

17. Plaintiff Clean Air Council (the "Council") is a nonprofit environmental health organization headquartered in Philadelphia, Pennsylvania. The Council has been working to protect everyone's right to a clean and healthy environment for over 50 years. The organization has members throughout Pennsylvania and the mid-Atlantic region who support its mission. The Council contacted the Chemical Safety Board requesting an investigation immediately after a 2019 HF release from the former Philadelphia Energy Solutions refinery and has advocated to reduce toxic pollution from the HF-using refinery in Trainer, Pennsylvania. The Council helped organize concerned residents near the Trainer refinery to form Marcus Hook Area Neighbors for Public Health, which seeks to reduce the public health injuries from the Trainer refinery and other facilities.

18. The Council's members have health, aesthetic, and recreational interests in reducing and eliminating the risks of a harmful HF release from nearby refineries, as well as from trucks and trains delivering HF to refineries.

19. For example, Council member Pamela Verdi lives less than a half mile from the Trainer refinery, well within the potential impact zone of an HF release. She is worried about her safety and is also concerned about the risk to her family. In nice weather, Ms. Verdi sometimes keeps her windows open for ventilation, and in hot weather, she uses a window air conditioning unit. Given her proximity to the Trainer refinery, toxic HF could enter her home before she has time to close the windows or turn off the air conditioner. The impact of an HF release would deprive her of some of her most important personal relationships. For example, she believes that her 77-year-old mother, who lives right behind her, and whom Ms. Verdi would need to help if an evacuation order issued, "would never be able to withstand" an HF exposure. Ms. Verdi's daughter and five grandchildren, the youngest of whom is approximately a year old, live across the street from the

refinery and thus are at even greater risk. Ms. Verdi babysits her grandchildren at their house up to three to four times per week, placing her at great risk of HF exposure from even a relatively small release. In the event of an evacuation order, her burden and response time would be increased because she would need to help her mother, daughter, and grandchildren evacuate. Ms. Verdi is also concerned about the property damage that corrosive HF could cause to the brick architecture of her home and to the local parks that she and her family enjoy for their recreational value.

20. Council member Elizabeth Robinson has lived about a mile from the Trainer refinery for most of her life. She is aware that an HF release would harm her, and that her age, emphysema, and serious chronic sinus condition augment her risk of harm from such a release. Ms. Robinson keeps her windows open in the spring and summer for ventilation, which risks HF entering her home before she is aware of an HF release. Ms. Robinson's adult son lives with her, and she would like to see the risks from HF reduced for him and his future family. Their health risks are magnified by the recent closure of local hospitals, which means that the nearest hospital that could treat victims of HF exposure is 20 minutes away when there is no traffic. An HF release requiring an evacuation would create financial burdens and stress because her son would miss work and she would need to quickly find a place to board three family pets, which would be difficult and expensive.

21. Plaintiff Communities for a Better Environment (CBE) works to fight toxic pollution and to build a resilient, just, renewable future envisioned by the environmental-justice communities where CBE organizes. CBE is headquartered in Huntington Park, California, and has offices across the state, including in Wilmington. CBE works with the pollution-burdened communities of Richmond, East Oakland, Southeast Los Angeles, and Wilmington to support the communities' self-empowerment around environmental decision-making. CBE believes that people have a right to breathe clean air and drink clean water in the environments

where they live, work, go to school, play, and pray, regardless of race, sexual orientation, age, culture, ability, nationality, or income. CBE has advocated for state and local actions to eliminate the use of HF at the Torrance and Wilmington refineries.

22. CBE's members have health, aesthetic, and recreational interests in reducing and eliminating the risks posed by a harmful HF release from nearby refineries, and from trucks and trains delivering HF to refineries.

23. For example, CBE member Emilza Guzman lives about 2 miles from the Wilmington refinery. Living within the refinery's proximity, Guzman feels uneasy and unsafe due to the ever-present danger posed by HF. Guzman is concerned about personal harm from an HF release from the Wilmington refinery. Based on the lack of warnings to the public immediately following past refinery incidents, including fires, Guzman believes it is likely that the family, with whom Guzman lives, would not hear about an HF release in time to take protective measures. Evacuation would be difficult because Guzman's uncle, who lives nearby, has mobility issues following a stroke and would need Guzman's assistance. Guzman attends Los Angeles Harbor College, which is only 2.4 miles from the refinery and would similarly be affected by any evacuation.

24. CBE member Irma Lara-Venegas lives on the east side of Wilmington, less than a mile from the Valero Wilmington Refinery. She drives past the refinery when giving rides to friends or going to restaurants. Ms. Lara-Venegas worries about harm to her health from an HF release from the refinery. Her concerns are amplified because of her age and pre-existing health conditions. She is also aware that it would be difficult to avoid exposure following an HF release—even when she closes her windows at home, fine dust and dirt get inside, meaning that toxic HF would also get inside. Ms. Lara-Venegas is also concerned about the difficulty and cost of evacuating in response to a release; because her only relatives in the

state live in the same community and would also need to evacuate, Ms. Lara-Venegas would not be able to shelter with them.

25. Plaintiff Natural Resources Defense Council (NRDC) is a national organization with offices across the country, including in Southern California and Chicago. NRDC uses science, policy, law, and people power to protect public health, confront the climate crisis, and safeguard nature. NRDC has long advocated for more stringent regulations of toxic chemicals, including under TSCA. For example, NRDC collaborated with partners to challenge EPA's inadequate evaluation of the risks presented by the chemical methylene chloride—prompting more protective regulation.

26. NRDC has members who live and work near HF-using refineries in densely populated areas, including metropolitan Los Angeles, Chicago, and Philadelphia, and along transportation corridors that serve those refineries. Some of those members worry that they will be injured or killed by a toxic HF cloud following a refinery- or transportation-related release. An HF release would also harm ecological resources, impairing NRDC members' aesthetic and recreational interests.

27. For example, NRDC member Steve Goldsmith lives in Palos Verdes Estates, California, about five miles from the 700-acre Torrance refinery. Because Palos Verdes is a small town without many businesses, Mr. Goldsmith spends a lot of time in Torrance. He regularly shops, goes to doctor's appointments, plays tennis outdoors, and meets friends in Torrance, often within a mile of the refinery. Crenshaw Boulevard, one of the main roads in Torrance, passes through the refinery complex. During the 2015 explosion that nearly ruptured an HF tank, Mr. Goldsmith was playing tennis about a mile away. Industrial ash fell on him and his car. The refinery did not sound any warning sirens that day. If the HF tank had been damaged, Mr. Goldsmith believes that he and his family and friends nearby would not have known to evacuate. The refinery is a "ticking time bomb," and he fears

that he and his wife risk serious injury or death from an HF release. An HF release would also cause ecological harm to the Madrona Marsh nature preserve, located about 1.35 miles from the refinery, where Mr. Goldsmith enjoys observing birds and other wildlife.

28. NRDC member Mary Pope lives in Torrance, California, about two miles from the Torrance refinery, and knows that HF is used there. After she moved to her current home in 2016, she learned from a neighbor that ash and debris had fallen in her yard from the 2015 refinery explosion. Because Ms. Pope lives within the "danger zone" of an HF release, she fears for her safety. Her house was built in 1959 and still has the original windows, which are not airtight and would not protect her from a toxic HF cloud. When she is not at home, Ms. Pope's errands and activities are also often in the danger zone of the refinery; she cannot count on a safe place to shelter if she is walking outside or in her car. Ms. Pope's fear is compounded by the proximity of her local hospitals to the refinery. The two Torrance hospitals nearest to Ms. Pope are closer to the refinery than her house is. The next closest hospitals are in Long Beach and Los Angeles, but the freeway to get there runs right next to the refinery. An HF release resulting in an evacuation order would be costly and difficult. Ms. Pope would likely be unable to stay with her daughter, whose home is also about two miles from the refinery and thus also in the evacuation zone. Ms. Pope and her family would likely have to find housing in the Los Angeles area, which is expensive. If she and her husband were not at home at the time of an HF release, they would not have access to daily medications that they need.

29. NRDC member Vanessa Poster lives in Redondo Beach, California, about three miles from the Torrance refinery. Ms. Poster and her family drive into or through Torrance many times each week for doctor's appointments, when commuting to or from work, or when visiting friends for lunch and other social activities. Ms. Poster is deeply worried that an HF release will occur, and that there

will not be enough time to evacuate because the limited roads out of the city would be quickly jammed. She and her family would have to shelter in place, but the only room with all interior walls is a bathroom that fits only two people standing upright. Even if they could evacuate safely, it would be disruptive and costly. Evacuation would result in lost income because Ms. Poster would not be able to bring everything she needs to continue working. She and her family own rental property in the area and also risk losing rental income from an evacuation that displaces their tenants. Additional costs of evacuation would include temporary housing and dining out.

30. NRDC member Christopher Houseman lives with his wife in a house that is just over a half-mile from the Torrance refinery. From the end of his street, he can see the refinery towers, and the wind from the refinery usually blows east toward his house. He and his family live in constant fear of the refinery because of its use of HF. Mr. Houseman's home was built in 1950, and like most houses built in the mild Southern California climate, it is not airtight. Mr. Houseman worries that being at home when a refinery explosion occurs, or when there is a release from a truck carrying or unloading HF at the refinery, would be a "life or death matter." Evacuation, if possible, would be "one of the better outcomes," but being forced out of his home would mean incurring expenses for meals, travel, and housing.

31. Members of Plaintiffs, including those named above, are injured by current refinery use of HF. EPA regulations eliminating or reducing the unreasonable risks current refinery use presents to public health and the environment would benefit Plaintiffs' members.

Defendants

32. Defendant Environmental Protection Agency (EPA) is the federal agency Congress charged with administering TSCA.

33. Defendant Lee Zeldin, sued in his official capacity, is EPA's Administrator and one of the officials to whom Plaintiffs addressed their February 11, 2025, petition.

34. Defendant Nancy Beck, sued in her official capacity, is EPA's Principal Deputy Administrator for the Office of Chemical Safety and Pollution Prevention, which directs EPA's TSCA work. Defendant Beck signed EPA's May 12, 2025, letter denying Plaintiffs' February 11, 2025, petition.

VENUE

35. Venue is proper in this Court under 28 U.S.C. § 1391(e) because Plaintiff CBE resides in Huntington Park, within this judicial district. Venue is also proper because a substantial part of the events and omissions giving rise to Plaintiffs' claims have occurred in this district, which is home to two HF-using refineries (Torrance and Wilmington).

BACKGROUND

I. Congress empowered citizens to compel EPA to eliminate unreasonable risks posed by toxic chemicals

36. In enacting TSCA, Congress declared that "[t]he time has passed where human health and the environment [are] protected only after serious injury has occurred." S. Rep. No. 94-698, at 6 (1976). TSCA established "a comprehensive program to anticipate and forestall injury to health and the environment from activities involving toxic chemical substances." *Env't Def. Fund v. Reilly*, 909 F.2d 1497, 1498 (D.C. Cir. 1990) (citation modified). "[T]o protect against lax administration," S. Rep. No. 94-698, at 13, Congress included "unusually powerful procedures for citizens to force EPA's hand." *Trumpeter Swan Soc'y v. EPA*, 774 F.3d 1037, 1039 (D.C. Cir. 2014).

37. Section 21 of TSCA empowers "[a]ny person" to petition EPA, through its Administrator, "to initiate a proceeding for the issuance" of a regulation

under "section 2605" of TSCA. 15 U.S.C. § 2620(a). Section 2605, codified at 15 U.S.C. § 2605(a), is also known as Section 6(a). *Id.* § 2605(a).

38. Section 6(a) provides that if "the manufacture, processing, distribution in commerce, use, or disposal of a chemical substance or mixture . . . presents an unreasonable risk of injury to health or the environment," EPA "shall" eliminate that unreasonable risk through regulation. *Id.* § 2605(a).

39. Risk is a function of hazard and exposure. EPA's Office of Chemical Safety and Pollution Prevention defines "hazard" as a chemical's potential to "cause an increase in the incidence of specific adverse health or environmental effects." Office of Chem. Safety and Pollution Prevention, EPA, 740-R17-001, Guidance to Assist Interested Persons in Developing and Submitting Draft Risk Evaluations Under the Toxic Substances Control Act 18 (2017). Exposure describes potential human or environmental contact with a chemical.

40. If EPA fails to grant or deny a section 21 petition within 90 days, petitioners may sue in federal district court "to compel [EPA] to initiate a rulemaking proceeding as requested in the petition." 15 U.S.C. § 2620(b)(4)(A).

41. "[P]etitioner[s] shall be provided an opportunity to have [their section 21] petition considered by the court in a de novo proceeding." *Id.* § 2620(b)(4)(B).

42. In the case of a petition to initiate a Section 6(a) rulemaking, if petitioners "demonstrate[] to the satisfaction of the court by a preponderance of the evidence" that a chemical (under the relevant "conditions of use") "presents an unreasonable risk of injury to health or the environment," "the court shall order [EPA] to initiate the action requested by the petitioner." *Id.* § 2620(b)(4)(B).

43. In deciding whether a chemical "presents an unreasonable risk," the court must consider risk to "potentially exposed or susceptible subpopulation[s]." *Id.* § 2620(b)(4)(B)(ii). Potentially exposed or susceptible subpopulations include infants, children, and the elderly. *Id.* § 2602(12). The court may not consider "costs or other nonrisk factors." *Id.* § 2620(b)(4)(B)(ii).

II. Current refinery use of hydrogen fluoride is extremely dangerous to health and the environment

44. Hydrogen fluoride consists of one hydrogen (H) atom bonded to one fluorine (F) atom. When hydrogen fluoride mixes with water—including in the air, and in people's eyes, mouths, throats, and lungs—it forms hydrofluoric acid.

A. Hydrogen fluoride is extremely dangerous to people

45. HF, including in the form of hydrofluoric acid, is extremely dangerous to people. It burns skin, corrodes tissue, damages organs, and disrupts critical biological processes such as muscle contraction and nerve signaling. Inhaling HF, or having it touch the skin or eyes, can cause serious, permanent injury or death.

46. The Occupational Safety and Health Administration (OSHA) categorizes HF as a "toxic and reactive highly hazardous chemical[]" that presents "a potential for a catastrophic event at or above the threshold quantity [of 1,000 pounds]." 29 C.F.R. § 1910.119 app. A (1992). EPA's emergency-planning regulations classify HF as an "extremely hazardous" substance. 40 C.F.R. pt. 355, app. A (2008). The Chemical Safety Board has identified HF as one of the most hazardous chemicals covered by EPA's Risk Management Program (RMP).

47. The severity of harm from HF exposure varies with the amount and concentration of HF, exposure time, and other factors. Exposure to even small amounts at low concentrations can disable or kill, particularly because symptoms may take hours or days to appear, thereby preventing timely diagnosis and treatment.

48. Young children, older adults, and people with preexisting heart or lung conditions are particularly susceptible to harm from HF exposure.

1. HF destroys human tissue

49. When HF touches moisture in skin or other tissue, it forms hydrofluoric acid. In this chemical process, HF partially dissociates into hydrogen ions (H+) and fluoride ions (F-). Hydrogen ions and fluoride ions both damage skin

and underlying tissue, although they do so in different ways. Hydrogen ions create an acid environment that destroys proteins, which are essential to core cell functions like metabolism. Exposure to concentrated HF (greater than 50%) results in immediate, intensely painful burns, blisters, and lesions. More diluted HF causes more limited skin damage (but can still be deadly, *see infra* ¶¶ 58-60).

50. Fluoride ions readily penetrate skin, and they do so even more easily when skin is already damaged by acidity from hydrogen ions. They then spread through the body. Fluoride ions attack cell membranes, causing cells to liquefy and die. They also destroy cells by binding to calcium and magnesium ions, making them unavailable for crucial cell functions. The resulting tissue destruction can lead to organ damage, permanent disability, or death. In addition, fluoride ions corrode bone by binding to, and stripping away, calcium and magnesium ions.

51. When HF is inhaled at low concentrations, it causes respiratory tract irritation. At higher concentrations, HF damages tissues in the nasal cavity, mouth, and throat. The throat swells and constricts, and a tracheotomy (cutting a hole in the neck to access the windpipe) may be needed to prevent suffocation. As HF continues to move into the lower airway, the bronchial tubes connecting the windpipe to the lungs constrict. This may cause the lungs to collapse. Tissue damage leads to accumulation of blood and cellular fluid in the lungs, which can lead to respiratory failure and death.

52. HF also harms the eyes. Even at low concentrations, it diffuses in the cornea (the transparent, outer layer of the eye) within minutes, causing burns and, if left untreated, blindness. At higher exposures, HF also penetrates the eyeball and leads to cell death in the optic nerve (which transmits visual signals from the eye to the brain).

2. HF disrupts critical organ systems by binding with chemicals that regulate vital biological functions

53. In addition to being highly corrosive, HF is a systemic toxicant; once it enters one part of the body, HF is carried to other parts of the body via blood and lymph vessels.

54. Indeed, fatal HF exposures most commonly arise from systemic toxicity. HF's fluoride ion binds strongly with calcium and magnesium, electrolytes that regulate essential biological processes including heartbeat, muscle contraction, and nervous system signaling.

55. As HF spreads through the body, blood levels of calcium and magnesium drop while levels of potassium rise and acid builds up in the blood and tissues. These disruptions to the tightly regulated balance of chemicals in the body can interfere with the normal functioning of the cardiovascular system, leading to arrythmia (irregular heart rhythms), seizures, and death through cardiac arrest.

56. HF can affect other organ systems as well. People exposed to HF have reported nausea, vomiting, and gastrointestinal distress. As fluoride ions cause potassium to flow out of cells, changes to nerve endings may cause extreme pain.

57. Contact with just a small amount of concentrated HF can cause fatal systemic effects. Exposing as little as 1% of one's skin to liquid HF—about a hand's worth—can be deadly.

58. Even contact with low concentrations of HF can be fatal if prompt action is not taken to remove and neutralize HF to prevent substantial absorption by organ systems.

3. HF's hazards to health are compounded by the challenges of diagnosing exposure and treating victims

59. Given HF's extreme hazards, timely diagnosis and treatment are critical. However, symptoms of HF exposure are sometimes not immediately

observable. This is especially true for low-concentration exposures, and it is true for some exposures that later prove fatal. After inhalation of HF, respiratory symptoms may take 12 to 36 hours to develop. Visible effects of skin exposure may also take 12 to 36 hours to manifest.

60. Delay in the onset of symptoms can mislead both victims and medical professionals. That delay creates the risk of victims not seeking prompt treatment. It can also prevent first responders and other medical personnel from recognizing HF exposure quickly enough to provide effective treatment. When failure to identify HF exposure hinders or prevents proper decontamination, it increases the risk of secondary exposures, such as through contact with contaminated clothing. Even when HF exposure is correctly identified, treatment is sometimes not fast enough to save life or prevent permanent damage to tissue and organs.

61. People who survive HF exposure can suffer long-term and irreversible physical harm. Some survivors of inhalation injury develop chronic lung disease. Some burns caused by exposure to concentrated HF result in persistent pain, scarring, or permanent tissue death. Eye exposure sometimes causes prolonged or irreversible visual defects, including permanent blindness, or even destruction of the eye.

4. HF is particularly hazardous to children, people over 65, and people with preexisting heart or lung conditions

62. Children, including infants, are more susceptible than adults to HF's hazards. Children breathe at a higher rate owing to their small size, rapid growth, fast metabolism, and elevated activity level; they also have a larger lung surface area relative to their body size. Thus, when comparing children and adults inhaling the same HF-contaminated air over the same time, children are exposed to a significantly higher "dose" of HF. Children also have smaller airway diameters, which makes them more likely to suffocate as HF causes their airways to constrict.

In addition, because of their relatively larger surface-area-to-body-weight ratio, children are far more vulnerable to HF's hazards through skin exposure.

63. People over 65 are also more vulnerable to HF's hazards compared to younger adults. As people age, changes occur in their heart and blood vessels that increase their risk of cardiovascular disease. Their lung function and capacity also decline. These changes make elderly people more susceptible to heart failure, respiratory distress, and other heart- and lung-related harms caused by HF. In addition, people over 65 are less likely to respond well to treatment for HF exposure, including cardiovascular interventions that risk disrupting heart rhythms.

64. Preexisting heart and lung conditions likewise make people more susceptible to the hazards that HF poses to those organ systems. A study of people exposed to the 1987 Texas City refinery HF release found that those with preexisting pulmonary conditions, and those who smoked two or more packs of cigarettes per day, experienced more severe symptoms both immediately following the release and two years later. The National Research Council also found that individuals with asthma may have more severe responses to HF exposure.

B. Current refinery use of HF threatens the health of millions

65. HF is commonly transported to and stored at refineries as a pressurized liquid. When liquid HF stored under pressure is released above its normal boiling point of 67.1° F, it will form a ground-hugging, spreading cloud. Ambient temperatures at many of the United States' HF-using refinery sites, and along roads and rail lines used to deliver HF to refineries, regularly exceed 67.1° F. For example, more than 39% of the temperature measurements recorded at the U.S. government-managed weather station in Torrance, California, in 2025 exceeded 67.1° F. More than 26% of the temperature measurements recorded at the U.S. government-managed weather station at Long Beach Daughtery Airport (about 6 miles from the Wilmington refinery) in 2025 exceeded 67.1° F. More than 33% of

the temperature measurements recorded at the U.S. government-managed weather station at Philadelphia International Airport (about 13 miles from the Trainer refinery) exceeded 67.1° F.

66. The federal government has established Acute Exposure Guideline Levels (AEGLs) for HF. AEGLs represent inhalation exposure levels for the general public that, if exceeded, could harm the health of those exposed. AEGL-3 refers to the level "above which it is predicted that the general population, including susceptible individuals, could experience life-threatening adverse health effects or death." Subcomm. on Acute Exposure Guideline Levels, Nat'l Rsch. Council (NRC), 4 Acute Exposure Guideline Levels for Selected Airborne Chemicals 3 (2004) [hereinafter AEGLs for Selected Airborne Chemicals]. AEGL-2 refers to the level "above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape." *Id.* AEGL-1 refers to the level "above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic or nonsensory effects." *Id.* Asymptomatic or nonsensory effects are physiological changes that occur notwithstanding a person's inability to feel them.

67. The gravity of HF's effects increases the longer one is exposed. The AEGLs for HF exposures of up to an hour are as follows:

Assumed exposure timeframe	AEGL-3 (potentially lethal)	AEGL-2 (potentially disabling)	AEGL-1 (potentially harmful but nondisabling)
10 minutes	170 parts per million (ppm)	95 ppm	1 ppm
30 minutes	62 ppm	34 ppm	1 ppm
60 minutes	44 ppm	24 ppm	1 ppm

68. On information and belief, the AEGLs for HF are not sufficiently protective of the general population. For example, the AEGL-3 for HF reflects a prediction that members of the general population exposed to HF for 30 minutes may experience "life-threatening adverse health effects or death" at concentrations above 62 ppm. AEGLs for Selected Airborne Chemicals, *supra* ¶ 56, at 3. However, for multiple reasons, a significant segment of the general population exposed to HF for 30 minutes may actually experience those effects at concentrations lower than 62 ppm. One reason is that the AEGLs address exposure only through inhalation, but people may simultaneously be exposed to HF through their skin or eyes, compounding the ultimate damage.

69. The federal government has established an Immediately Dangerous to Life and Health (IDLH) level for HF of 30 ppm in air. The National Institute of Occupational Safety and Health (NIOSH) states that "IDLH values reflect an airborne concentration of a substance that represents a high-risk situation that may endanger workers' lives or health." NIOSH, Current Intelligence Bull. No. 66, Derivation of Immediately Dangerous to Life or Health (IDLH) Values, at vi (Nov. 2013), https://www.cdc.gov/niosh/docs/2014-100/pdfs/2014-100.pdf. An IDLH condition "poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment." *Id.* at xviii.

70. On information and belief, the IDLH level for HF—designed for healthy workers—would not be protective of the general population. This is because "worker populations . . . traditionally exclude the most sensitive subpopulations," including "children, [the] elderly, and [those] with pre-existing health impairments." *Id.* at 9.

71. At least 40 U.S. refineries use HF. Each of the 42 refineries shown on the following map uses HF currently or has used HF recently.

72. Refineries use HF for "alkylation": the production of alkylate, an ingredient in a refinery's formula for gasoline. Alkylation units move HF, other chemicals, and water through a series of pipes and vessels to cause reactions with hydrocarbons and form alkylate.

73. Refinery owners submit Risk Management Plans (RMPs) to EPA under Clean Air Act Section 112(r), which aims "to prevent the accidental release" of "extremely hazardous substance[s]." 42 U.S.C. § 7412(r)(1). "Extremely hazardous substances" are those "which, in the case of accidental release, are known to cause or may reasonably be anticipated to cause death, injury, or serious adverse effects to human health or the environment." *Id.* § 7412(r)(3). Section 112 identifies "hydrogen fluoride" as an "extremely hazardous substance." *Id.* The initial deadline for submitting RMPs to EPA was in 1999, and refiners are required

to update their RMPs every 5 years. EPA requires refiners' RMPs to include analysis of a so-called "worst-case release scenario," describing the furthest distance in any direction a toxic refinery chemical would spread following "an accidental release . . . from a covered process," under certain specified conditions. *See* 40 C.F.R. § 68.25(a)(2)(i).

74. Although refineries handle other toxic chemicals, every HF-using refinery whose RMP Plaintiffs reviewed based its "worst-case" scenario on an HF release.

75. Although EPA refers to these release scenarios as "worst-case," they understate the full potential extent of the HF cloud that could spread from each refinery following an HF release. One reason for this is that EPA directs refiners to assume that the amount of HF released—"the worst-case release quantity"—is "the greatest amount held in a single vessel" (or pipe). 40 C.F.R. § 68.25(b). This quantity is typically less—and often considerably less—than the total volume of HF that may be present at a refinery at any given time. For example, the Torrance refinery's RMP indicates that the refinery holds up to 250,000 pounds of HF at any given time, but its reported "worst-case" scenario assumes the release of less than half that amount (110,000 pounds).

76. The following table summarizes recent refiner estimates of how much HF would be released in their "worst-case" scenario; how far the resulting HF cloud would spread; and how many people live within the potential release zone for a "worst-case" release from the refineries in the listed cities.

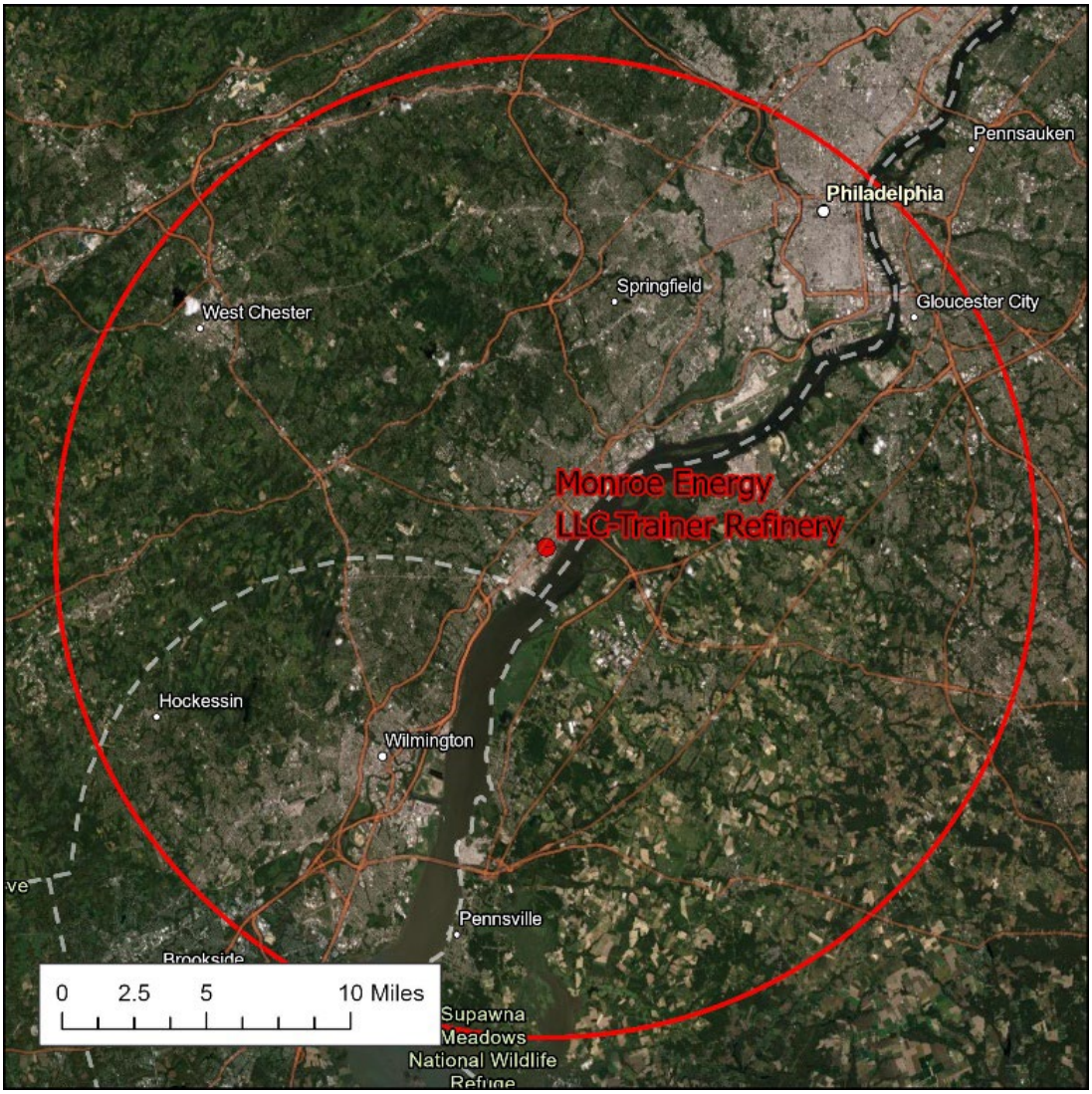
Refinery	Estimated pounds of HF released in a "worst-case" scenario (nearest 100 pounds)	Miles to endpoint (HF cloud extent)	People living in potential "worst-case" release zone (nearest 100 people)
Torrance	110,000	6.2	840,000
Wilmington	610,500	8.7	1,100,00
Channahon	631,700	25	1,270,400
Lemont	302,000	22	3,370,000
Garyville	890,000	25	400,000
Trainer	217,500	17	1,900,000

77. "Miles to endpoint" describes the farthest point in the cloud where airborne HF concentrations would exceed 0.016 milligrams per liter. 40 C.F.R. § 68.22(a)(1); *id.* pt. 68 app. A (Table of Toxic Endpoints, row marked "Hydrogen fluoride / hydrofluoric acid (conc 50% or greater)"). That is equivalent to about 19 ppm—which approaches the AEGL-2 threshold for 60-minute exposures. The "worst-case" release zone describes the circle formed by rotating the "miles to endpoint" distance around the release point (to account for different potential wind directions).

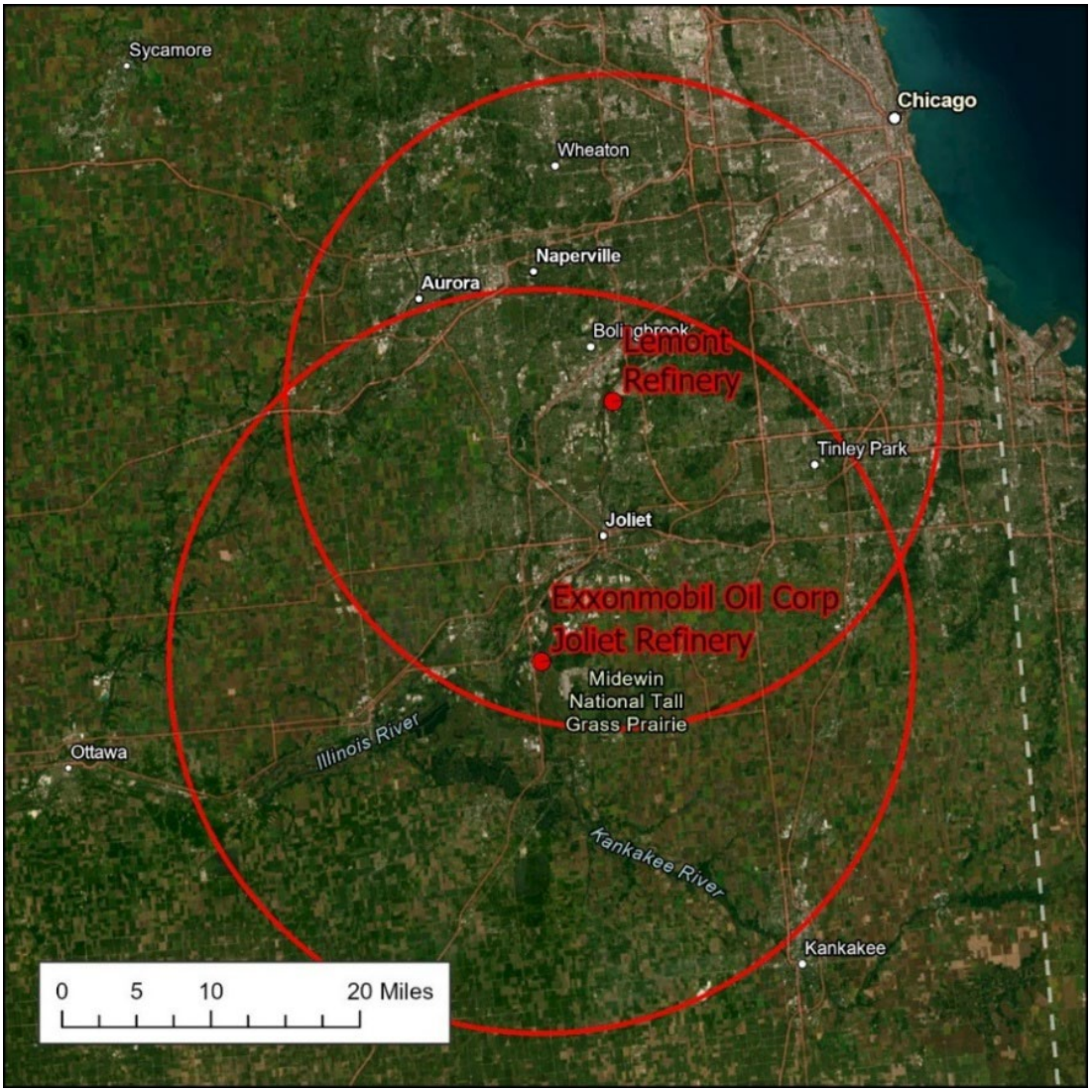
78. HF-using refineries create a risk of exposure to at least AEGL-1 concentrations in a post-release HF cloud for the approximately 19 million people who live close enough to those refineries, as demonstrated by the EPA-defined "worst-case" release scenarios generated by the refineries for purposes of RMP reporting.

79. Here are the "worst-case" release zones overlaid on maps of metropolitan Los Angeles, Chicago, and Philadelphia.

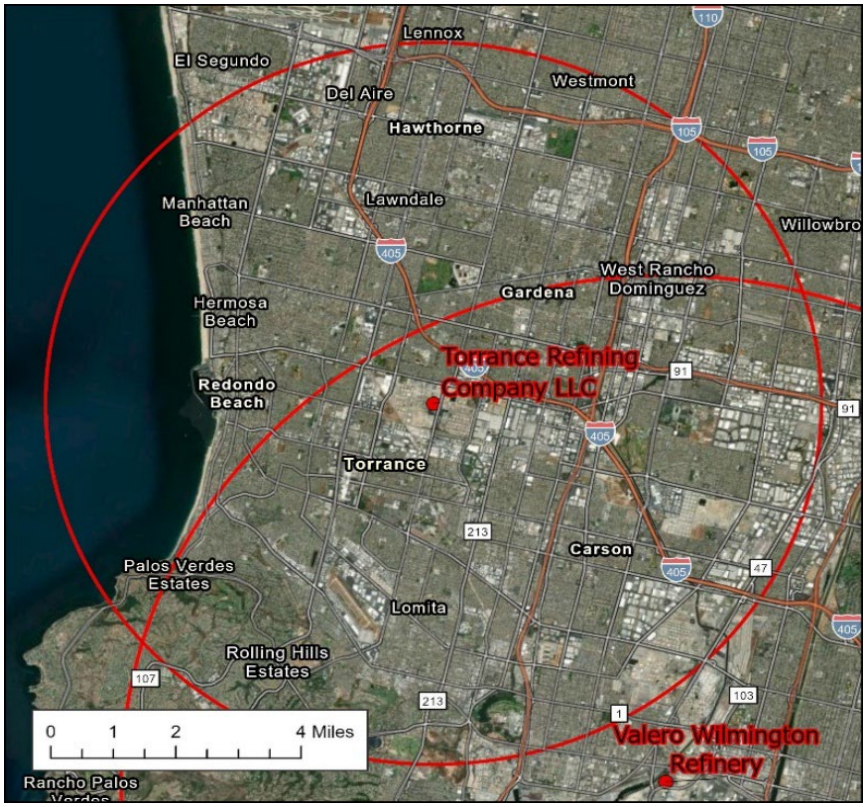
Philadelphia (Trainer refinery release zone)

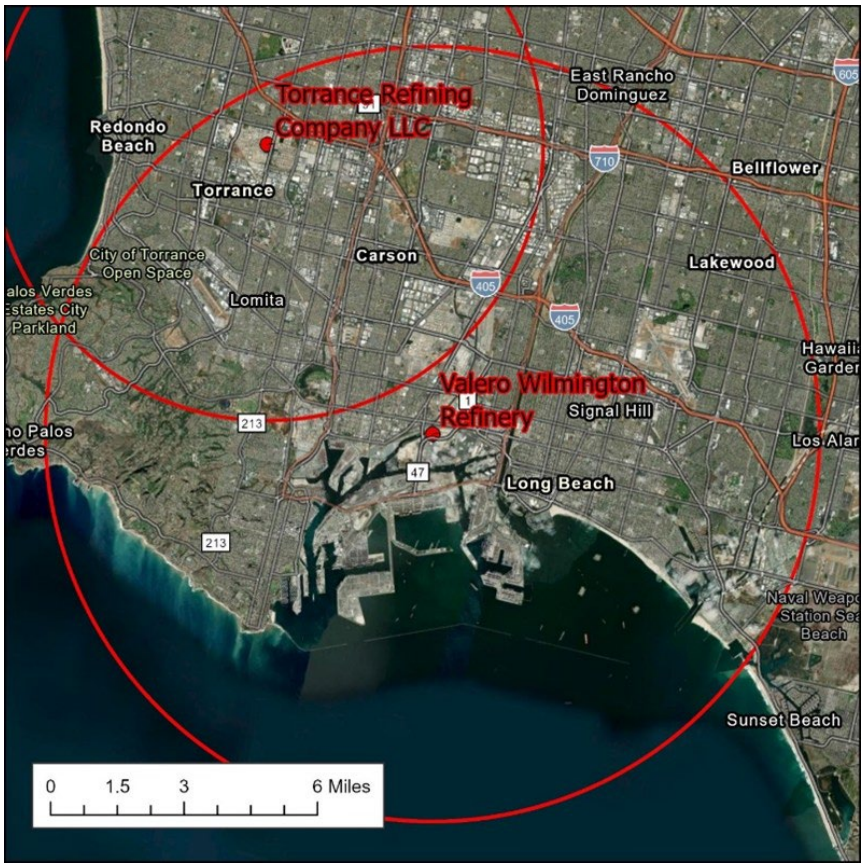


Chicago (Lemont and Joliet refinery release zones)



Los Angeles, California (Torrance and Wilmington refinery release zones)





80. Refineries must replenish their HF supplies to keep operating HF alkylation units. EPA does not require RMPs to describe how refineries source their HF.

81. On information and belief, some refineries, including those in Torrance and Wilmington, California, receive truck deliveries of HF from Honeywell's plant in Geismar, Louisiana.

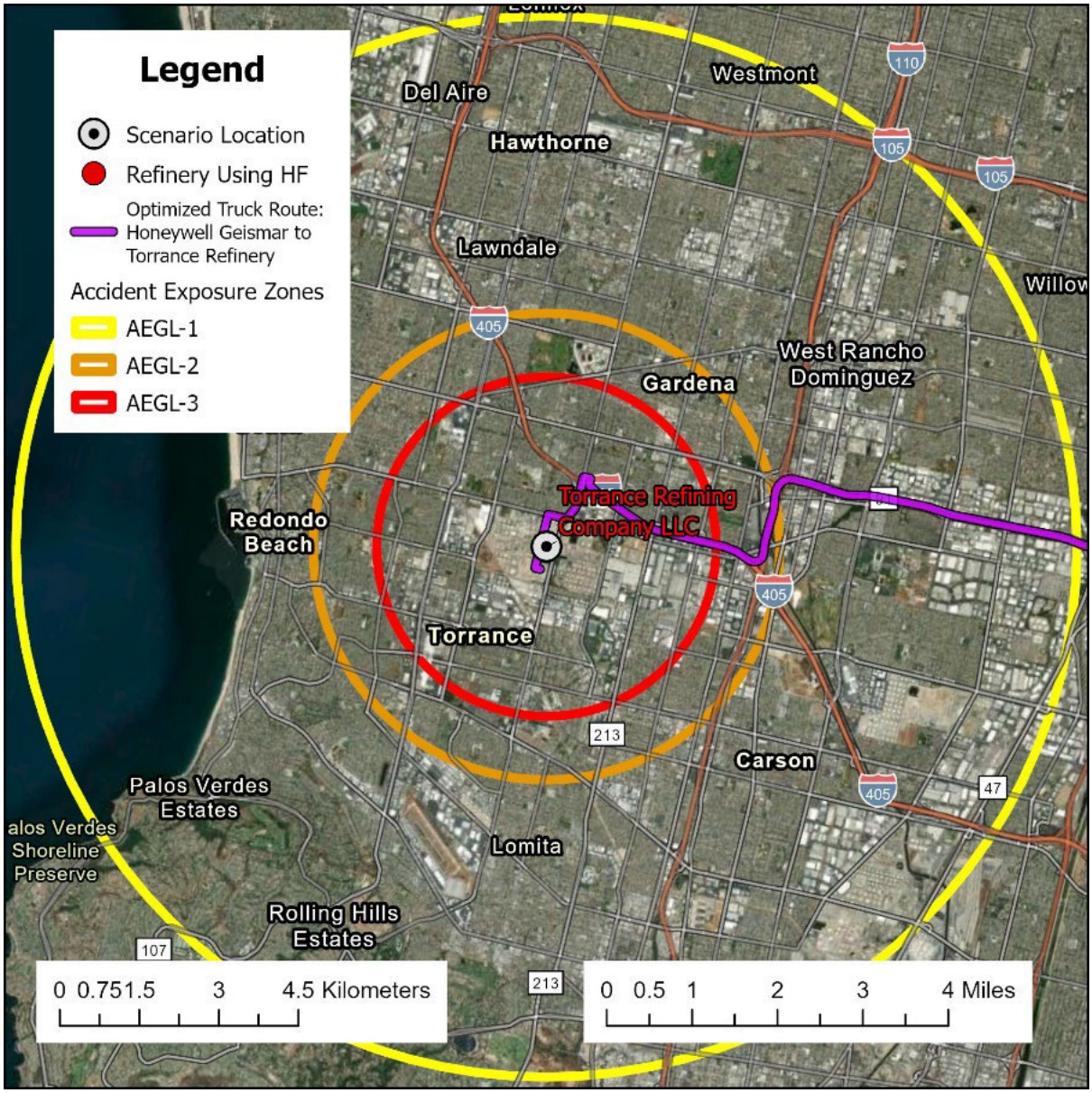
82. Cargo tankers have released HF in crashes and while unloading. The prevailing industry guidance on operation of HF alkylation units identifies the unloading of HF tanker trucks as a particularly release-prone procedure.

83. Although cargo tanker trucks hold considerably less HF than most refineries store onsite, the loss of even a tanker's worth of HF can devastate neighboring communities. A single HF cargo tanker (designed to be pulled by a semi-truck) can hold approximately 40,000 pounds of anhydrous HF (pure HF unmixed with water). As Petitioners demonstrated in analysis presented to EPA, there is a substantial risk that equipment failure during tanker unloading at the Torrance alkylation unit would cause that amount of HF to escape in less than 7 minutes. On a 77 °F day, in a light breeze, this release would cause a cloud of HF to spread more than six miles from the alkylation unit in the prevailing wind direction. Within that cloud, HF levels in the ambient air at ground level would meet or exceed the AEGL-3 as far as 2 miles from the release point, and would meet or exceed the AEGL-2 as far as 2.7 miles from the release point. HF levels would meet or exceed the AEGL-1 out to 6.2 miles from the release point, and well beyond.[1]

[1] Plaintiffs used ALOHA, a publicly available dispersion model that EPA allows refiners to use for their RMP modeling, to characterize cloud spread. ALOHA is configured to map releases to a maximum distance of only 6.2 miles (10 kilometers) from the release point. While Plaintiffs were therefore unable to map the outer boundary of the AEGL-1 cloud and threat zone, both here and in the analysis described in paragraph 96, it was clear from the available information that

(continued…)

84. The following figure shows what areas fall within approximately 2 miles (red line), 2.7 miles (orange line), and 6.2 miles (yellow line) of the Torrance alkylation unit.



85. The following table shows approximately how many people in the general population, and in some particularly susceptible subpopulations, live within 2 miles; between 2 and 2.7 miles; and between 2.7 and 6.2 miles of the Torrance

the boundary extended well past 6.2 miles from the release point.

alkylation unit.[2]

	People in areas with HF levels at or above AEGL-3	People in areas with HF levels at or above AEGL-2, and below AEGL-3	People in areas with HF levels at or above AEGL-1 and below AEGL-2
Total residential population	83,100	104,200	628,600
Young children (less than 5 years old)	4,200	6,100	35,300
People 65+ years old	13,600	17,200	93,500
People with asthma	7,100	9,200	62,400
People with coronary heart disease	4,200	5,600	35,000
People with chronic obstructive pulmonary disease (COPD)	3,600	4,900	32,800

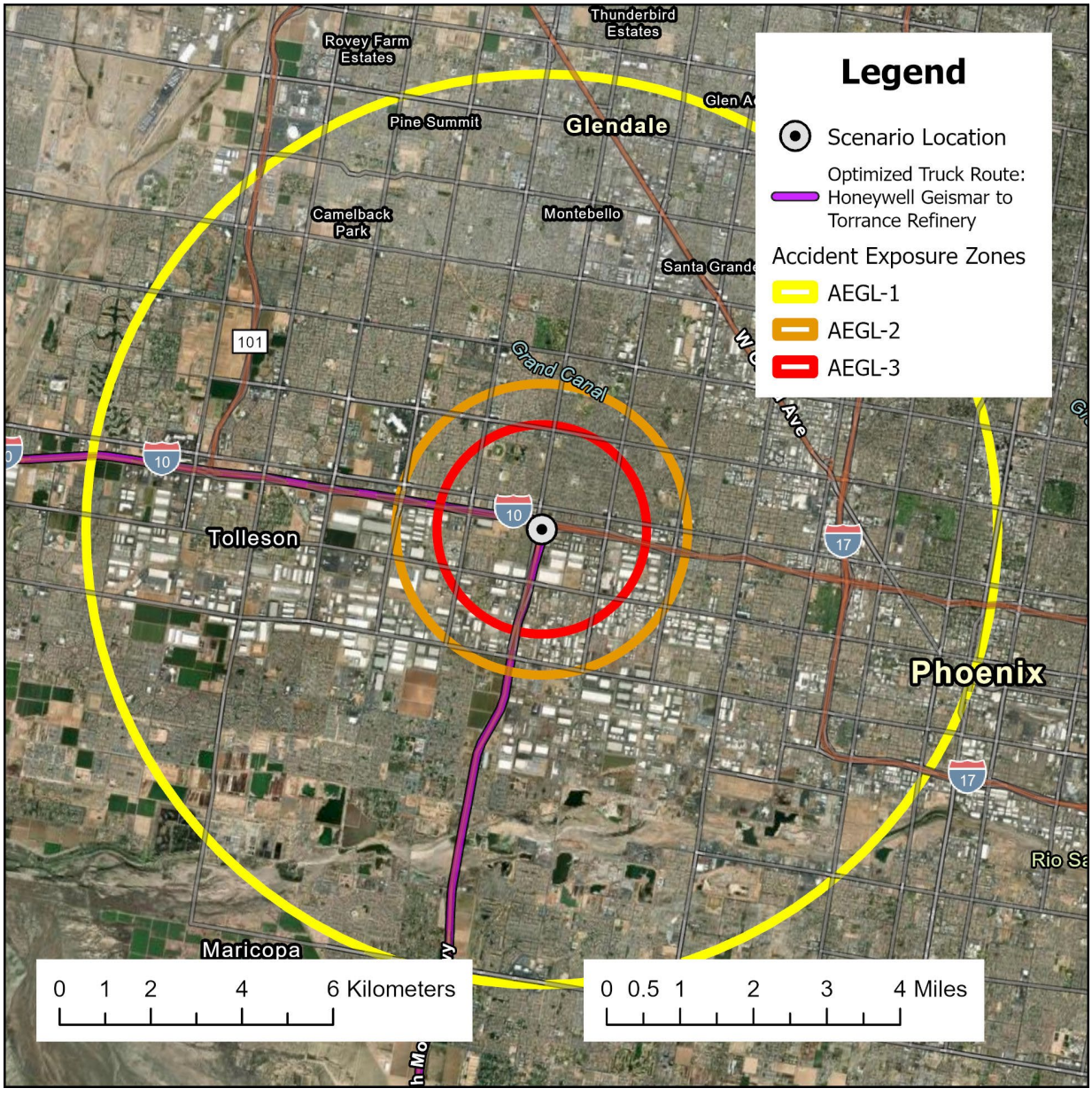
86. On information and belief, Torrance and Wilmington refinery-bound HF tanker trucks use portions of Interstate 10, including portions serving urban Phoenix, Arizona, and Baton Rouge, Louisiana.

87. A Los Angeles-bound tanker truck that crashes and releases HF while passing through central Phoenix risks causing an HF cloud that extends more than 6 miles from the crash point. As Petitioners demonstrated in analysis submitted to EPA, HF levels in the ambient air would meet or exceed the AEGL-3 as far as 1.5 miles from the crash (release) point, and would meet or exceed the AEGL-2 as far

[2] Because of the boundary issue described in note 1, *supra*, the area between the orange and yellow circles in the figure above, and the corresponding population counts on the right-hand column of the table, understate the true outer boundary of the AEGL-1 zone, and the number of people who live within that boundary.

as 2.1 miles from the crash point. HF levels would meet or exceed the AEGL-1 out to 6.2 miles from the crash point, and beyond.[3]

88. The following figure shows what areas fall within approximately 1.5 miles (red line), 2.1 miles (orange line), and 6.2 miles (yellow line) of the crash point.



[3] As with the Torrance release scenario introduced in paragraph 83, and for the same reasons discussed at note 1, the area between the orange and yellow circles in the figure above, and the corresponding population counts in the right-hand column of the table, understate the true outer boundary of the AEGL-1 zone, and the number of people who live within that boundary.

	People in areas with HF levels at or above AEGL-3	People in areas with HF levels at or above AEGL-2, and below AEGL-3	People in areas with HF levels at or above AEGL-1 and below AEGL-2
Total residential population	41,700	33,700	509,100
Young children (less than 5 years old)	3,100	2,300	37,300
People 65+ years old	3,000	2,500	39,500
People with asthma	4,200	3,700	55,600
People with coronary heart disease	2,200	2,100	28,800
People with chronic obstructive pulmonary disease (COPD)	2,500	2,400	33,700

89. The following table shows approximately how many people in the general population, and in some particularly susceptible subpopulations, live within 1.5 miles; between 1.5 and 2.1 miles; and between 2.1 and 6.2 miles of the crash point.

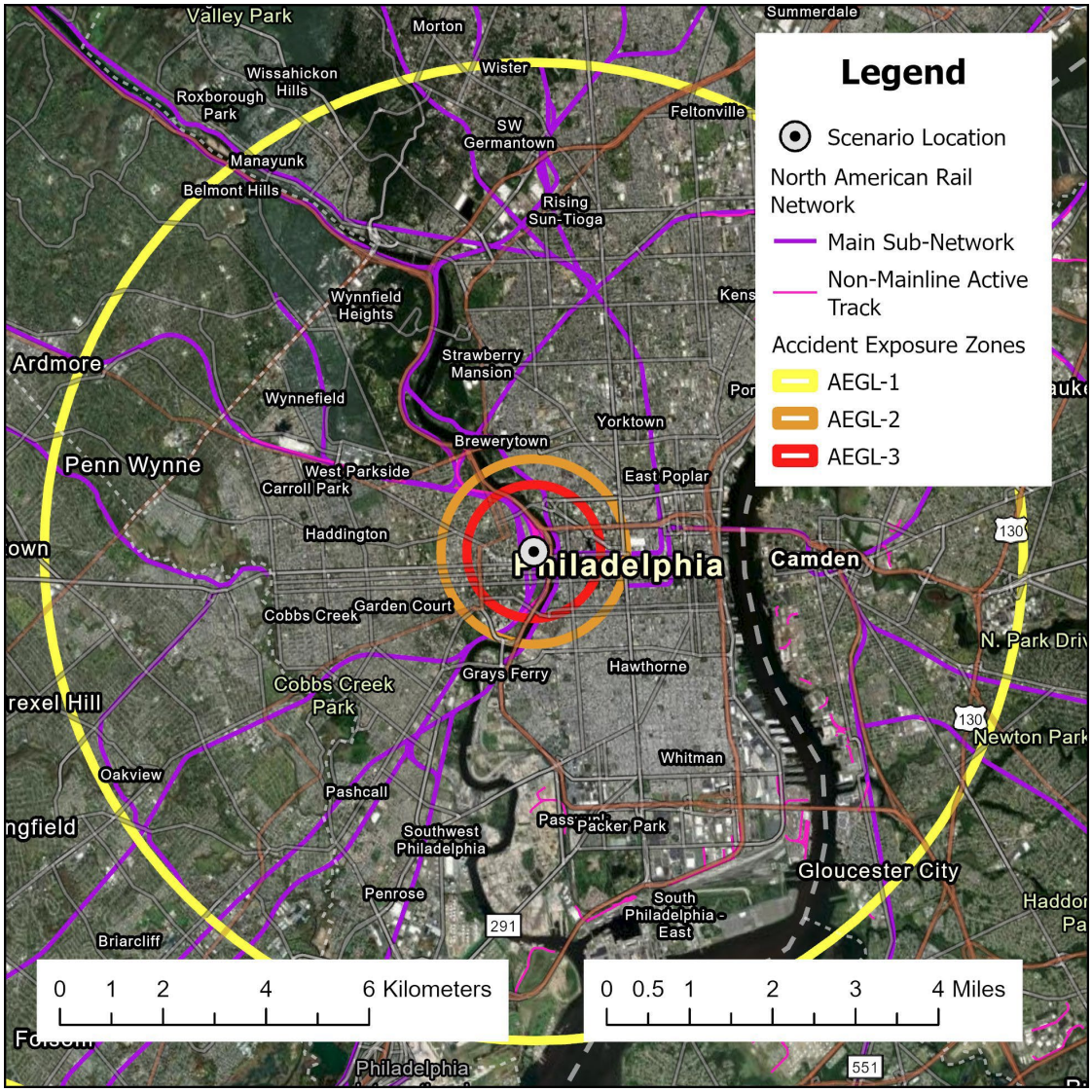
90. On information and belief, HF is delivered by train to the Trainer refinery south of Philadelphia, and the Lemont and Channahon refineries south of Chicago. Trainer-bound HF railcars likely pass through central Philadelphia. Lemont and Channahon-bound trains likely carry HF through central Memphis and Chicago's south suburbs.

91. A single railcar can carry more than 172,000 pounds of pressurized liquid HF.

92. Railcars carrying HF have derailed repeatedly, threatening people's health and disrupting their lives. A 1997 HF release from a Memphis railyard forced the evacuation of about 150 people. The 2012 derailment of HF railcars near Louisville prompted local evacuation and a shelter-in-place order.

93. A Trainer-bound railcar that derails and releases HF while passing through central Philadelphia risks causing an HF cloud that spreads more than five miles from the release point. As Petitioners demonstrated in analysis submitted to EPA, such a release would cause HF levels in the ambient air to meet or exceed the AEGL-3 as far as 0.8 miles from the derailment (release point), and to meet or exceed the AEGL-2 as far as 1.1 miles from the derailment, and to meet or exceed the AEGL-1 as far as 5.9 miles from the derailment point.

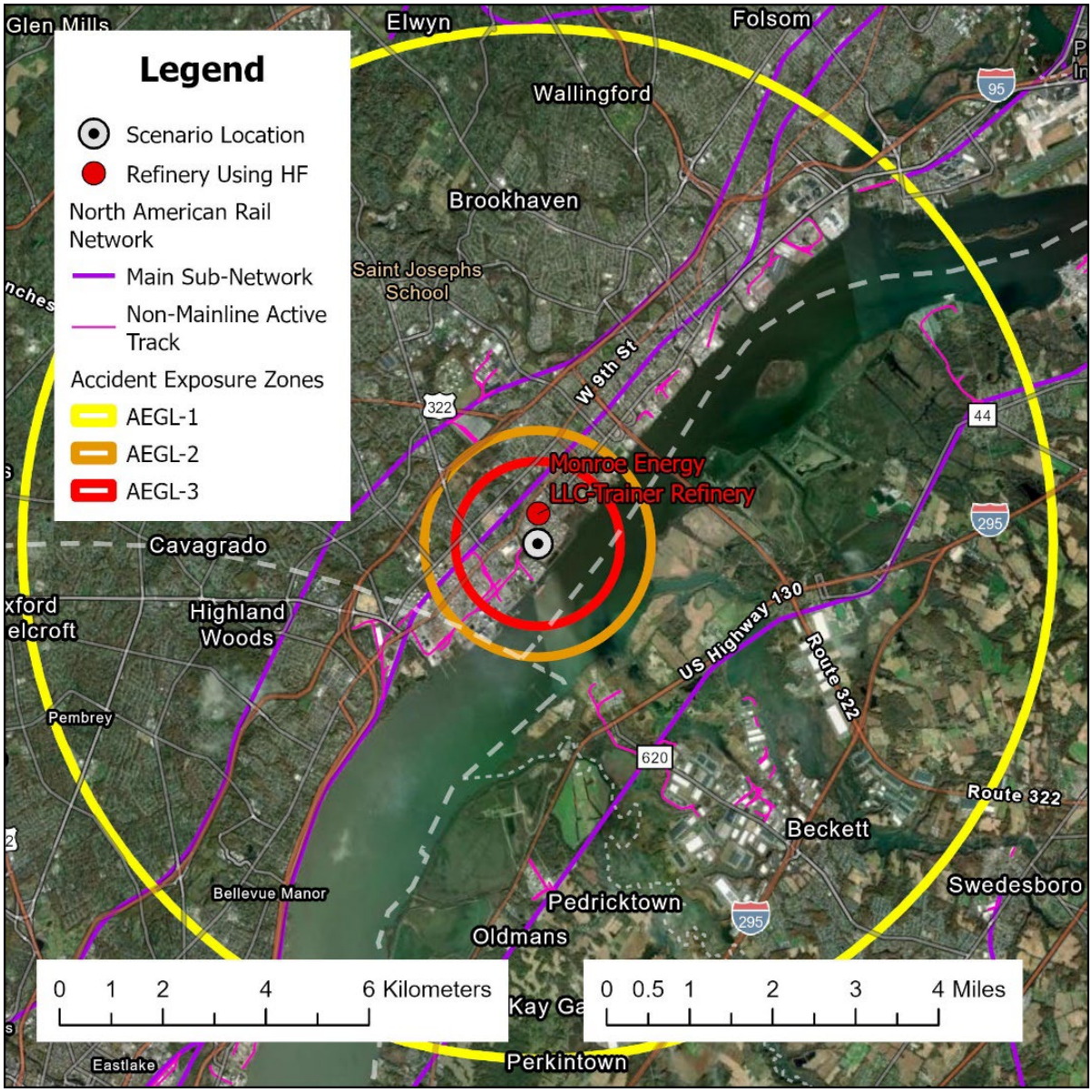
94. The following figure shows what areas fall within approximately 0.8 miles (red line), 1.1 miles (orange line), and 5.9 miles (yellow line) of the derailment.



95. The following table shows approximately how many people in the general population, and in some particularly susceptible subpopulations, live within 0.8 miles; between 1.1 and 1.8 miles; and between 1.8 and 5.9 miles of the release point:

	People in areas with HF levels at or above AEGL-3	People in areas with HF levels at or above AEGL-2, and below AEGL-3	People in areas with HF levels at or above AEGL-1 and below AEGL-2
Total residential population	43,000	45,000	1,095,700
Young children (less than 5 years old)	800	1,600	65,300
People 65+ years old	5,900	5,800	143,000
People with asthma	4,800	4,800	130,000
People with coronary heart disease	1,900	1,900	72,800
People with chronic obstructive pulmonary disease (COPD)	1,900	1,800	83,400

96. There is a substantial risk that equipment failure during railcar unloading at the Trainer refinery would also cause a toxic cloud to spread into neighboring communities. As Petitioners demonstrated in analysis submitted to EPA, a 10-minute release caused by an equipment failure during HF railcar unloading at Trainer would cause HF levels in the ambient air to meet or exceed the AEGL-3 as far as 1 mile from the release point (the refinery's railcar unloading facility), and to meet or exceed the AEGL-2 as far as 1.4 miles from the release point. HF levels would meet or exceed the AEGL-1 out to 6.2 miles from the release point, and well beyond.



97. The following figure shows what areas fall within approximately 1 mile (red line), 1.4 miles (orange line), and 6.2 miles (yellow line) of the Trainer railcar unloading area.

98. The following table shows approximately how many people in the general population, and in some particularly susceptible subpopulations, live within 1; between 1 and 1.4; and between 1.4 and 6.2 miles of the Trainer railcar unloading area.[4]

[4] As with the Torrance release scenario introduced in paragraph 83, and for (continued…)

	People in areas with HF levels at or above AEGL-3 (red zone)	People in areas with HF levels at or above AEGL-2, but below AEGL-3 (orange zone)	People in areas with HF levels at or above AEGL-1, but below AEGL-2 (yellow zone)
Total residential population	4,212	5,207	204,884
Young children (less than 5 years old)	193	255	11,166
People 65+ years old	646	689	37,539
People with asthma	592	688	22,105
People with coronary heart disease	351	405	13,587
People with chronic obstructive pulmonary disease (COPD)	466	530	14,234

99. An HF cloud caused by a refinery-related release is likely to spread rapidly. For example, in a Torrance truck-unloading failure like the one described at paragraph 83, in light winds, the cloud would spread and HF concentrations at ground level would reach AEGL-3 (the potentially fatal effects level) at rates around 6 miles per hour.

100. HF clouds can resemble water vapor.

101. HF's extreme toxicity means that even small releases can be difficult to stop and contain and should be treated as major emergencies. The U.S. Department of Transportation specifies minimum initial isolation distances of 1,500 feet in all directions following a large anhydrous HF release from a railcar, and 700 feet in all directions following a large release of anhydrous HF from a cargo

---

the same reasons discussed at note 1, the area between the orange and yellow circles in the figure above, and the corresponding population counts in the right-hand column of the table, understate the true outer boundary of the AEGL-1 zone, and the number of people who live within that boundary.

tanker.[5] Even release and threatened release events that do not result in a large, ground-hugging cloud can prompt costly response measures, like shelter-in-place and evacuation orders, that disrupt day-to-day life in communities around refineries.

102. An HF release may catch many people indoors. The less airtight a building, the more readily outside air will penetrate, and the faster HF levels will build inside following a release. People inside older homes will be less protected than those in newer residences. People in some commercial buildings including schools, restaurants, and factories will also be less protected. Because of HF's ability to infiltrate buildings, shelter-in-place measures provide only limited protection to those in the cloud's path.

C. Current refinery use of HF unreasonably endangers the natural and built environment

103. In addition to harming people, HF can injure other animals, burning their skin and causing organ damage and other serious health problems. HF also kills plant life. Once released, HF can linger in the environment, as it does not biodegrade in soil. Beyond harming terrestrial life as it spreads through air and is deposited in soil, HF dissolves easily in water, contaminating aquatic ecosystems.

104. The 1987 Texas City refinery release that caused an HF cloud to spread into a neighborhood also killed animals and plants along a three-mile path from the release point. In 2012, an HF cloud from an unloading tanker truck in South Korea killed or injured thousands of livestock and destroyed farmland and crops.

105. Current refinery use of HF also threatens the built environment. HF is

[5] These minimum distances are likely inadequate to protect first responders, other workers, and the public. As shown in paragraphs 87-88 and 93-94, HF releases from overturned cargo tankers and derailed railcars can cause HF concentrations at ground level to exceed harmful thresholds miles from the source.

so corrosive that common materials including glass and aluminum cannot be used in refinery alkylation units. The HF cloud formed during the 2012 truck release in South Korea damaged nearby houses and vehicles. Following a major HF release, the spreading cloud's corrosive effects on buildings, bridges, and vehicles threatens to impair people's ability to evacuate or shelter effectively—and emergency responders' ability to help.

D. The risks of further refinery-related HF releases that harm people and the environment are substantial, foreseeable, and growing

106. Aging refineries are generally more prone to failures and releases, in part because original components (such as piping) that have not been replaced or properly maintained have had longer to deteriorate. This country's HF-using refineries are all more than 40 years old, and some are more than a century old. The Wilmington refinery was built in 1979, the Torrance refinery was built in 1929, and the Trainer refinery was built in 1925.

107. Exhibits 1 and 2 to this complaint summarize reported HF-release events and other serious incidents (including fires, explosions, and associated "near misses" in which HF was almost released) at the United States' still-operating, HF-using refineries, from 1987 through 2025. There were at least 83 HF-release events in that period, including 14 at Torrance; 6 at Wilmington; and 8 at Trainer. There were at least 101 other serious incidents, including 4 at Torrance and 3 at Wilmington.

108. HF releases and other serious safety incidents at HF-using refineries have been widespread, not confined to a few facilities or operators. Since the 1987 Texas City release, at least 26 HF-using refineries (more than half) have released HF. At least 33 have had at least one fire or explosion, and many have had multiple fires or explosions. At least 21 refineries have had an explosion, fire, or other incident severe enough to require shelter-in-place or evacuation orders for people

living or working outside refinery boundaries.

109. More than 500 people—including first responders and people beyond refinery fencelines—have been injured in serious safety incidents, including HF releases, at U.S. refineries. More than 40 people have been killed in these incidents.

110. EPA does not limit the amount of HF refineries can import, store, or use. EPA does not require refineries to install or maintain any particular equipment to reduce the risks that HF will be released, or to reduce the likelihood that released HF will spread offsite.

111. HF releases and other serious safety incidents at HF-using refineries have recurred regularly over the past few decades, notwithstanding the adoption of new health and safety regulations. For example, there have been at least 73 HF releases and 97 other serious incidents at refineries still operating and using HF since 1992, when the Occupational Safety and Health Administration issued the first regulations implementing its Process Safety Management Program. At least 63 HF releases and 91 other serious incidents have occurred in the 2000s, following EPA's implementation of the RMP program.

112. Industry self-governance is also inadequate to protect the public and environment against future release risks. The American Petroleum Institute (API) published the first edition of its recommended practice on operation of alkylation units (commonly known as API-751) in 1992, but HF releases have continued since then. Adoption of API's recommendations has been incomplete and uneven across HF-using refineries. The recommendations also omit certain safety systems and measures that, if included and adopted, would help to reduce release risks.

113. Even at refineries whose owners choose to follow API's voluntary guidance, there remains a significant risk of HF releases that will harm people and the environment. Once HF escapes from pressurized storage and vaporizes, there is no practical way to fully contain it. Although mitigation measures like those recommended by API (when refineries choose to adopt them) can help to reduce the

risk of an HF cloud crossing refinery boundaries, mitigation measures can—and often do—fail. Systems designed to operate only in emergencies (such as water deluge systems designed to tamp down HF levels in spreading clouds, and isolation valves designed to stem HF flow to a broken vessel or pipe) are particularly failure prone.

114. Flooding, heat waves, deep freezes, high winds, and earthquakes can damage refinery equipment and cause refineries to lose power or other services—increasing the likelihood that HF will be released and compromising the functionality of mitigation measures that require power or large amounts of fresh water. A tornado outbreak in Illinois has already caused the Channahon refinery south of Chicago to lose power. The neighboring Lemont refinery lies almost entirely within a 100-year floodplain, as designated by FEMA. The Torrance and Wilmington refineries lie in a high-hazard earthquake zone. The Wilmington refinery has identified hurricanes as a risk factor in its RMP reporting.

115. Extreme weather fueled by climate change is likely to increase the frequency and severity of process-safety failures at refineries, including failures that lead to HF releases. Climate change is also causing ambient temperatures around HF-using refineries and transportation routes to rise—increasing the likelihood that refinery-related HF releases will occur in conditions that cause ground-hugging clouds. For example, according to California's Fourth Climate Change Assessment, average daily maximum temperatures across the state are expected to rise 4.4°F–5.8°F by mid-century (2040–2069), with more pronounced increases in extreme heat events along the Southern California coast. For the Philadelphia region, the Pennsylvania Department of Environmental Protection's 2024 Climate Impacts Assessment projects that average annual temperatures will rise approximately 6.6°F by 2050. These projections suggest that the frequency of conditions favorable to HF cloud formation, following a release, will increase substantially at refineries including Torrance, Wilmington, and Trainer.

116. Refinery-related HF releases like those described have already caused considerable harm and disruption to people across our country. On information and belief, these releases have been caused or exacerbated by factors including aging infrastructure, failure to implement best practices relating to safety systems to control and mitigate HF releases, failure of safety systems even when implemented in accordance with best practices, and extreme weather events. Further refinery-related releases, from both refineries themselves and from vehicles used to deliver HF to refineries, are reasonably foreseeable. As our infrastructure keeps aging and our weather becomes ever more extreme, and as implementation of best practices relating to the control and mitigation of HF incidents remains voluntary and incomplete, refinery-related HF releases similarly harmful to those that have already occurred will become more frequent. For the same reasons, even worse refinery-related releases will become ever more likely.

III. EPA is defying Congress's mandate to eliminate the unreasonable risks Plaintiffs identified in their February 2025 citizen petition

117. On February 11, 2025, Plaintiffs submitted a Section 21 citizen petition to EPA, via certified mail and email to Defendant Zeldin and Elissa Reaves, Director of the Office of Pollution Prevention and Toxics. The petition set forth facts, including those in paragraphs 1-94, establishing that current refinery use of hydrogen fluoride presents an unreasonable risk of injury to health and the environment. It asked EPA to promptly begin a TSCA Section 6(a) rulemaking in order to eliminate the grave and unreasonable risks that current refinery-related HF use presents to public health and the environment.

118. On March 10, 2025, EPA emailed Plaintiffs' counsel to acknowledge receipt of the petition.

119. EPA did not solicit further information from Plaintiffs in response to the petition.

120. EPA denied the petition in a letter signed by Defendant Beck and

emailed to Plaintiffs' counsel on May 12, 2025.

121. EPA did not dispute that HF and hydrofluoric acid are "chemical substances" within the meaning of TSCA.

122. EPA did not dispute that the "use of HF for alkylation at U.S. refineries, and the rail and truck transportation needed to supply HF to those refineries," are "condition(s) of use."

123. EPA did not dispute that the "potentially . . . susceptible subpopulations" most endangered by current refinery use of HF include infants and children, people over 65, and people with preexisting heart and lung conditions.

124. EPA did not dispute that the "potentially exposed . . . subpopulations" most endangered by current refinery use of HF include people who live or work close enough to refineries, or transportation corridors serving those refineries, to be exposed to harmful HF levels in a release.

125. EPA's denial letter took the "position" that Section 6 of TSCA does not require the agency to "consider catastrophic or accidental releases, extreme weather events, and natural disasters that do not lead to regular and predictable exposures." EPA did not dispute the evidence Petitioners submitted with the petition, or supply evidence of its own.

CLAIMS FOR RELIEF

I. Current refinery use of hydrogen fluoride presents an unreasonable risk to health, and TSCA requires EPA to eliminate that risk through rulemaking

126. Plaintiffs incorporate the allegations in paragraphs 1-125.

127. Hydrogen fluoride is a "chemical substance" for purposes of TSCA. 15 U.S.C. § 2602(2)(A).

128. Current refinery use of HF—including the storage and use of HF at refineries, and the movement of HF to refineries by truck and railcar—represents one or more of HF's "conditions of use." *Id.* § 2602(4).

129. The "potentially . . . susceptible subpopulation[s]," *id.* § 2602(12), most endangered by current refinery use of HF include infants and children, people over 65, and people with preexisting heart and lung conditions.

130. The "potentially exposed . . . subpopulation[s]," *id.*, most endangered by current refinery use of HF include people who live or work close enough to refineries, or transportation corridors serving those refineries, to be exposed to harmful HF levels in a release.

131. Current refinery use of HF presents an unreasonable risk of injury to human health, including an unreasonable risk to potentially exposed or susceptible subpopulations. TSCA requires EPA to initiate a Section 6(a) rulemaking to eliminate that unreasonable risk. *Id.* § 2605(a).

II. Current refinery use of hydrogen fluoride presents an unreasonable risk to the environment, and TSCA requires EPA to eliminate that risk through rulemaking

132. Plaintiffs incorporate the allegations in paragraphs 1-125.

133. Current refinery use of HF presents an unreasonable risk of injury to the environment. TSCA requires EPA to initiate a Section 6(a) rulemaking to eliminate that unreasonable risk. *Id.* § 2605(a).

PRAYER FOR RELIEF

134. Plaintiffs respectfully request that this Court:

A. Declare that current refinery use of hydrogen fluoride—including the storage and use of HF at refineries, and the movement of HF to refineries by truck and railcar—presents unreasonable risks of injury to public health and the environment under TSCA, and that TSCA requires EPA to eliminate these risks through regulation;

B. Order EPA to promptly commence a Section 6(a) risk-management rulemaking to eliminate those unreasonable risks;

C. Order EPA to publish a proposed rule within 1 year of the

court's ruling; and to publish a final rule within 2 years of the court's ruling, consistent with TSCA's presumptive deadlines for Section 6(a) rulemakings that follow the agency's own unreasonable-risk determinations, *see* 15 U.S.C. § 2605(c)(1); *see also* 5 U.S.C. § 555(b) ("[W]ithin a reasonable time, each agency shall proceed to conclude a matter presented to it.");

C. Award Plaintiffs their reasonable costs and attorneys' fees, as appropriate, 15 U.S.C. § 2620(b)(4)(C); and

D. Grant such other and further relief as the Court deems just and proper.

Date: January 16, 2026

Respectfully submitted,

/s/Selena Kyle

Selena Kyle (246069)
skyle@nrdc.org
(312) 651-7906
Natural Resources Defense Council
20 N. Wacker Drive
Suite 1600
Chicago, IL 60606

Margaret Hsieh (287839)
mhsieh@nrdc.org
(415) 875-6135
Natural Resources Defense Council
111 Sutter Street
21st Floor
San Francisco, CA 94104

Vivian H.W. Wang (*pro hac vice*)
vwang@nrdc.org
(212) 727-4477
Natural Resources Defense Council
40 W. 20th Street
New York, NY 10011

Counsel for Plaintiffs

Lawrence L. Hafetz (143326)
lhafetz@cleanair.org
(347) 276-4350
Clean Air Council
1617 JFK Boulevard
Suite 1130
Philadelphia, PA, 19103

Counsel for Clean Air Council

Shana Lazerow (195491)
slazerow@cbecal.org
(323) 826-9771
Communities for a Better Environment
113 E. Anaheim Street
Wilmington, CA 90744

Counsel for Communities for a Better Environment