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UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

CLEAN AIR COUNCIL; COMMUNITIES FOR A BETTER ENVIRONMENT; and NATURAL RESOURCES DEFENSE COUNCIL, INC., Plaintiffs,	Case No. 8:25-CV-1473-MWF (DFMx) **SECOND AMENDED COMPLAINT**

v.

U.S. ENVIRONMENTAL PROTECTION AGENCY; 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.

ACTION SEEKING STATEWIDE OR NATIONWIDE RELIEF

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. Plaintiffs filed their Complaint on July 8, 2025, and their First Amended Complaint on January 16, 2026. This Court conducts a de novo proceeding to determine whether unreasonable risk exists. 15 U.S.C. § 2620(b)(4)(B). If it so finds, it "shall order" EPA to initiate TSCA Section 6(a) rulemaking to eliminate that unreasonable risk. *Id.*; *see also* 15 U.S.C. § 2605(a). The Court may also award Plaintiffs declaratory relief under the Declaratory Judgment Act, 28 U.S.C. §§ 2201–2202.

INTRODUCTION

2. Millions of people across the United States are threatened by the continued transport to and onsite use of highly toxic and volatile HF at aging refineries. This refinery-related use of HF presents unreasonable risks to health and the environment.

3. 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.

4. Of the approximately 120 oil refineries across the United States, only a minority—about 40—use HF to boost fuel octane. Safer alternatives are available

and commercially viable; some refineries have already adopted them.

5. 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 transport 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. About 19 million Americans live close enough to an HF refinery that they could become caught in such a cloud.

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

7. Releases and so-called "near-miss" events (near-release events, in which an HF release was narrowly averted) have occurred repeatedly over the three-plus decades since the Texas City release, despite the adoption of new regulatory regimes under the federal Clean Air Act and other laws. For example:

8. In 2009 at the CITGO Corpus Christi refinery, the sudden failure of a control valve in the HF alkylation unit caused a hydrocarbon gas release. The gas ignited; the ensuing fire burned for several days and caused the release of approximately 21 tons (42,000 pounds) of HF. At the time of the incident, workers were unable to reach a manually operated safety bypass valve because of the hydrocarbon release. A water mitigation system (where one exists) is the last line of

defense against an HF release into the surrounding community. On day one of the multi-day fire, CITGO nearly exhausted its stored water supply for HF mitigation. The fire company had to pump salt water from the Corpus Christi ship channel into a barge equipped for firefighting. Multiple failures occurred during this process: barge-to-shore transfer hoses ruptured and two water pump engines failed. The water mitigation system failed to capture all of the released HF, and an HF cloud spread beyond refinery boundaries. By luck, winds that day carried the HF cloud away from the neighborhoods directly south and east of the refinery and toward the ship channel and bay instead.

9. In 2015, a large pollution-control device at a refinery in Torrance, California, exploded, launching a 40-ton piece of debris approximately 100 feet. The debris landed on scaffolding surrounding an HF tank in the nearby alkylation unit, coming within a few feet of the tank itself. Schools and hundreds of homes are within a mile of the HF tanks. Approximately 9,200 neighboring residents had to shelter in place. This was not the first time an HF release or near-release at the Torrance refinery caused offsite disruption. In 2001, according to local news reports, nearby residents were ordered to shelter indoors because of an HF leak.

10. After the 2015 Torrance explosion, the U.S. Chemical Safety and Hazard Investigation Board (CSB)—an independent federal agency—recommended that American Fuel and Petrochemical Manufacturers (a trade association of oil and gas manufacturers) study and implement design, maintenance, and procedural changes needed to prevent a similar incident from occurring. But three years later, in 2018, a similar, large explosion occurred at a refinery in Superior, Wisconsin.

11. The 2018 Wisconsin explosion 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 CSB, 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.

12. CSB concluded that the causes of the Wisconsin and Torrance explosions were similar. Both resulted from inadvertent mixing of hydrocarbons with air, and both occurred in the fluid catalytic cracking unit. In both explosions, a similar type of safeguard failed. Documents from the Occupational Safety and Health Administration (OSHA) show that the Wisconsin refinery had known for at least ten years that the valve that failed was prone to leak.

13. In 2019, at the former Philadelphia Energy Solutions refinery, a 50-year-old pipe ruptured, releasing approximately 5,200 pounds of HF. The resulting fires triggered explosions that hurled a 38,000-pound fragment of a hydrocarbon vessel across the Schuylkill River. Two other fragments, one weighing about 23,000 pounds and the other 15,500 pounds, landed elsewhere in the refinery. 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 also failed. The incident injured five refinery workers and a first responder, and the refinery was so badly damaged it never reopened. CSB's investigation revealed that the failed pipe had corroded to a thickness of 0.011 inch, which is less than 7% of the thickness at which the refinery ostensibly replaces piping. By pure luck, light winds that day prevented significant concentrations of HF from crossing the perimeter. CSB emphasized, however, that this "specific set of circumstances . . . will not always be present during releases of HF." Different weather or terrain conditions, for instance, would "plausibl[y]" have resulted in hazardous offsite concentrations of HF. CSB called the incident "a wake-up call to industry to prevent a similar event from occurring in the future."

14. In 2023, a reboiler at Solstice Advanced Materials US's Geismar, Louisiana, HF manufacturing plant (then owned by Honeywell, Inc.) ruptured due to HF corrosion, releasing toxic chemicals, including 800 pounds of HF, and

requiring a complex-wide shelter-in-place order and the temporary closure of nearby highways. Although the Geismar 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.

15. People across the United States—including Plaintiffs' members—face a continued and mounting threat of harm from refinery-related HF use. 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. These numbers are drawn from refiners' own reports.

16. EPA's reporting requirements focus on scenarios in which a refinery releases all of the HF in its single largest containing vessel or pipe. But even substantially smaller releases—such as a release from a tanker truck unloading HF, *infra* ¶ 96—have the potential to cause toxic clouds large enough to harm people living and working near HF-using refineries.

17. The movement of HF to refineries extends these dangers. On information and belief, just one U.S. plant—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.

18. 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 complicate emergency response, shelter, and escape.

19. 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.

20. 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.

21. Aging infrastructure and climate change are increasing the risk of refinery-related HF releases by the day. All HF-using refineries in the U.S. were built more than 40 years ago; some are more than 100 years old, making them more prone to failures and unintended releases. Many of the road, rail, and utility systems that refineries rely on to source HF are also aging. Refineries and HF transit routes are ever more vulnerable to extreme weather, endangering people who live or work near them.

22. Continued use of a highly toxic, volatile chemical at an aging plant located in a densely populated area has well-known consequences. On a night in December 1984, at the Union Carbide pesticide plant in Bhopal, India, some 40 tons of methyl isocyanate leaked. It formed a deadly, ground-hugging cloud that spread into the surrounding community. Residents attempting to escape ran from their homes directly into the chemical cloud, which resulted in increased exposure. An estimated 3,800 people died immediately. Many more were permanently disabled or died prematurely in the following weeks and months. Estimates of the total death toll run from 15,000 to upwards of 20,000. What industry calls an

unexpected tragedy was, in hindsight, an avoidable one. Plaintiffs' members do not wish to wait for another Bhopal.

23. 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

24. 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 CSB to request 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.

25. 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.

26. For example, Council member Pamela Verdi lives about a quarter 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 could deprive her of some of her most important personal relationships. For example, she realizes 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 a toddler, 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 at risk of damage that corrosive HF could cause to the brick architecture of her home and to the plants and wildlife in the local parks that she and her family enjoy.

27. 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.

28. 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.

29. 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.

30. For example, CBE member Emilza Guzman lives about 2 miles from the Wilmington refinery. Living within the refinery's proximity makes Guzman unsafe and uneasy 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.

31. 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 risk is 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. The difficulty and cost of evacuating in response to a release would also harm Ms. Lara-Venegas; 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.

32. 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.

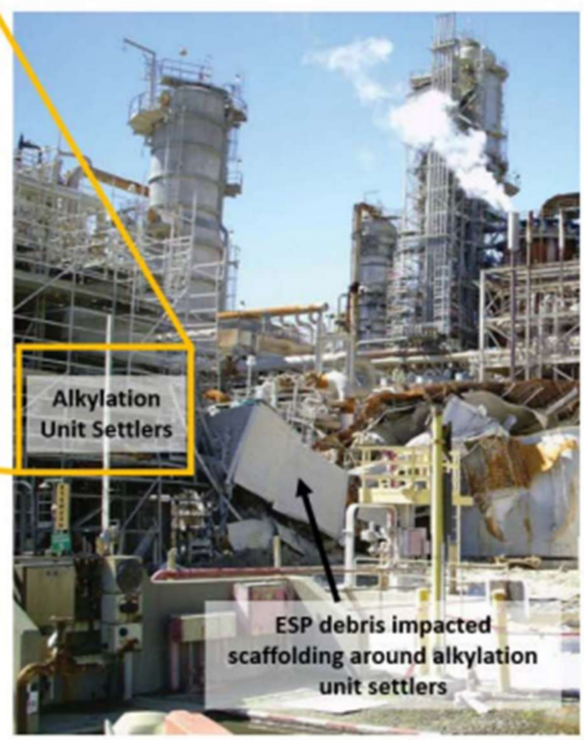
33. NRDC has members who live and work near HF-using refineries in densely populated areas, including metropolitan Los Angeles, Chicago, and Philadelphia, and along transportation corridors that serve those refineries. At or around the time of filing, NRDC has 113 members within a 2-mile radius of the Torrance and Wilmington refineries, and 872 members within a 6-mile radius. (These figures may reflect some double counting because the exposure circles for the two refineries have some overlap.) Within a 6-mile radius of the Trainer (Philadelphia) refinery, there are 165 NRDC members. Approximately 157 members live within a 6-mile radius of the Lemont (Chicagoland) refinery. NRDC has members near other refineries with a history of HF releases and other incidents with offsite consequences. There are 103 members within a 6-mile radius of the

Catlettsburg, Kentucky refinery; 261 members within the same radius of the Phillips 66 refinery in Ferndale, Washington; and 153 members within the same radius of the Placid Refining Co. in Port Allen, Louisiana. NRDC also has several dozen members within a 6-mile radius of HF-using refineries along Texas's Gulf coast (Corpus Christi, Texas City, and Port Arthur). NRDC members face risk of injury or death from 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. And near-releases result in costly evacuation and shelter-in-place orders.

34. 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 and his family and friends nearby would likely 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.

35. These are images of the Torrance refinery after the February 2015 explosion:

Torrance refinery after the ESP unit exploded, with damaged vehicle in the foreground. Photo: Associated Press (reproduced in Wall Street Journal, *Explosion at Exxon Mobil Refinery Raises Gas-Price Fears*, Feb. 18, 2015).



Images from CSB's Investigation Report: ExxonMobil Torrance Refinery ESP Explosion (May 2017).

36. 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 risk 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.

37. 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 doctors' 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.

38. NRDC member Dr. Genghmun Eng has lived in Torrance since 1979. His home is about 2 miles from the Torrance refinery and 9 miles from the Wilmington refinery. Dr. Eng holds a Ph.D. in physics from the University of Illinois Urbana-Champaign. He worked at The Aerospace Corporation for 43 years, retiring as a senior scientist at the federally funded research center supporting the national security space mission. Dr. Eng's training in applied mathematics and diffusion grounds his understanding of the dangers posed by continued HF use in current refinery conditions. When he learned of the near-miss at Torrance in 2015 and read about the 1986 test in the Nevada desert showing that HF disperses as a ground-hugging cloud, Dr. Eng realized that he and his neighbors could have all been killed. HF use is a sword of Damocles over his head—being caught in a toxic cloud could kill or seriously harm him. Dr. Eng previously petitioned EPA to compel additions to the Wilmington refinery's Clean Air Act Title V permit that would mitigate future HF releases. After EPA denied the petition, Dr. Eng sought review by the Ninth Circuit Court of Appeals. Among other relief, he asked for more robust EPA requirements addressing "plans and controls, emergency procedures, staff training, and . . . simulated emergency response" for small-, medium-, and large-scale HF releases. EPA rulemaking under TSCA to address nationwide refinery use of HF would better protect Dr. Eng and help fulfill EPA's duty to safeguard public health.

39. NRDC member Jim Vandenbosch lives approximately 2.9 miles east of the Lemont, Illinois, refinery. The wind often blows from west to east, carrying noxious fumes. He and his wife notice these odors about 2 or 3 times a week. The

smells are worse at night and in the summer, and sometimes linger for 12 or more hours. Mr. Vandenbosch spends, on average, three hours each day working outside in his vegetable garden, mowing the lawn, collecting firewood, and managing the land, which is about 1.5 acres. An HF release could very well catch him outdoors. He and his wife would not be able to safely shelter in place because their house, built in the 1940s, is not airtight. There are cracks and crevices, and the windows are not tightly sealed. An HF release would also damage his vegetable garden and contaminate the soil. In Mr. Vandenbosch's view, replacing HF with a safer chemical would be the best way to avoid the risks of harm to him, his wife, and his land. If that is not possible, a requirement for refineries to provide better public education and training about how to respond to an HF release would also make him and the community safer.

40. Members of Plaintiffs across the country, including those named above, are injured by current refinery-related use of HF. Plaintiffs' members would benefit from EPA regulations eliminating or reducing the unreasonable risks that refinery-related HF use pose to public health and the environment.

Defendants

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

42. 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.

43. 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

44. 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 through a petition process and with recourse to federal courts

45. 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).

46. 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).

47. 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).

48. 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.

49. The level of risk presented by a particular industrial use of a chemical is a function of both the chances that the chemical will be released and the consequences of the release. The more toxic a chemical is, and the more damaging that chemical would be to the health and the environment if released, the more risk it presents at any given likelihood of release, relative to less damaging chemicals. On information and belief, owners of industrial chemical facilities, including HF-using refineries, commonly use "risk matrices" that weigh the likelihood of a particular failure scenario against its severity (measured by reference to human and environmental injuries, property damage, and/or effects on production). Higher-severity scenarios are assigned higher risk rankings than lower-severity scenarios of the same likelihood.

50. 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).

51. "[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).

52. 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).

53. 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. Hydrogen fluoride is extremely dangerous to health and the environment

54. 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 exceptionally toxic

55. 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.

56. 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). CSB has identified HF as one of the most hazardous chemicals covered by EPA's Risk Management Program (RMP).

57. 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.

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

i. HF destroys human tissue

59. 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).

60. 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.

61. 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.

62. 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).

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

63. 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.

64. 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.

65. 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.

66. 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.

67. 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.

68. 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.

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

69. 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.

70. 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.

71. 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 damage, including permanent blindness or even destruction of the eye.

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

72. 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.

73. 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.

74. 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. HF's toxicity and corrosivity also damage the natural and built environments

75. In addition to harming people, HF can injure and kill 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.

76. 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 cargo tanker truck in South Korea killed or injured thousands of livestock and destroyed farmland and crops.

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

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.

III. Continued refinery use of HF puts millions in harm's way

A. The use and transportation of HF endangers people near refineries and along transportation routes

78. HF is commonly transported to and stored at refineries as a pressurized liquid. When liquid HF stored under pressure is released in ambient temperatures 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.

79. 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.

80. 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

81. 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* ¶ 79, 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.

82. The federal government has established an Immediately Dangerous to Life and Health (IDLH) level for HF of 30 ppm in air, over 30 minutes. 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.

83. 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.

84. 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.

85. 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.

86. 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 [process covered by the regulations]," under certain specified conditions. *See* 40 C.F.R. § 68.25(a)(2)(i).

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

88. 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).

89. 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.

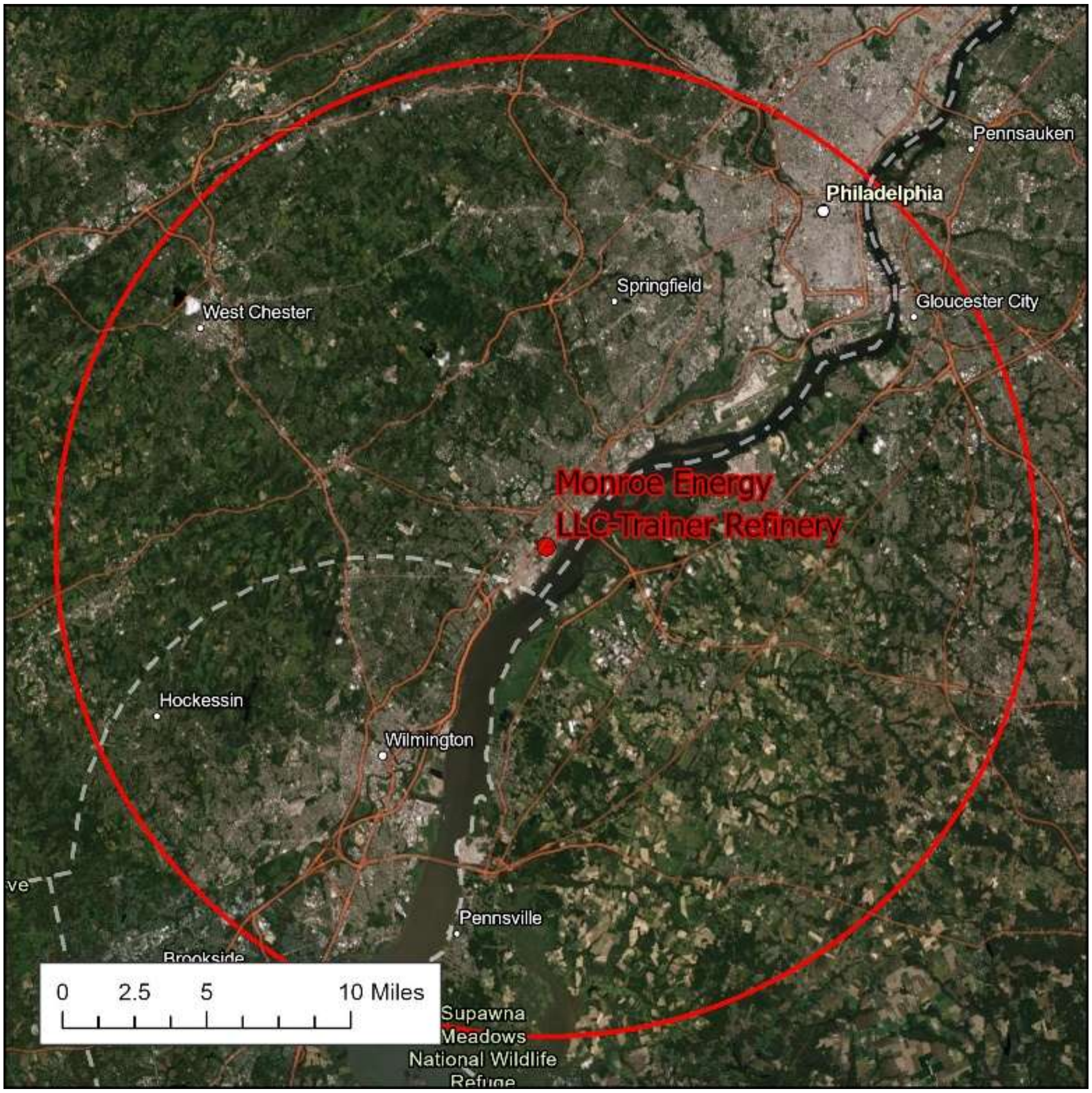
Refinery	Estimated pounds of HF released in a "worst-case" scenario (nearest 100 pounds)	Miles to endpoint (HF cloud extent)	People living in potential "worst-case" release zone (nearest 100 people)
Torrance, CA	110,000	6.2	840,000
Wilmington, CA	610,500	8.7	1,100,00
Channahon, IL	631,700	25	1,270,400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

90. "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 (irreversible health harm) to escape 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).

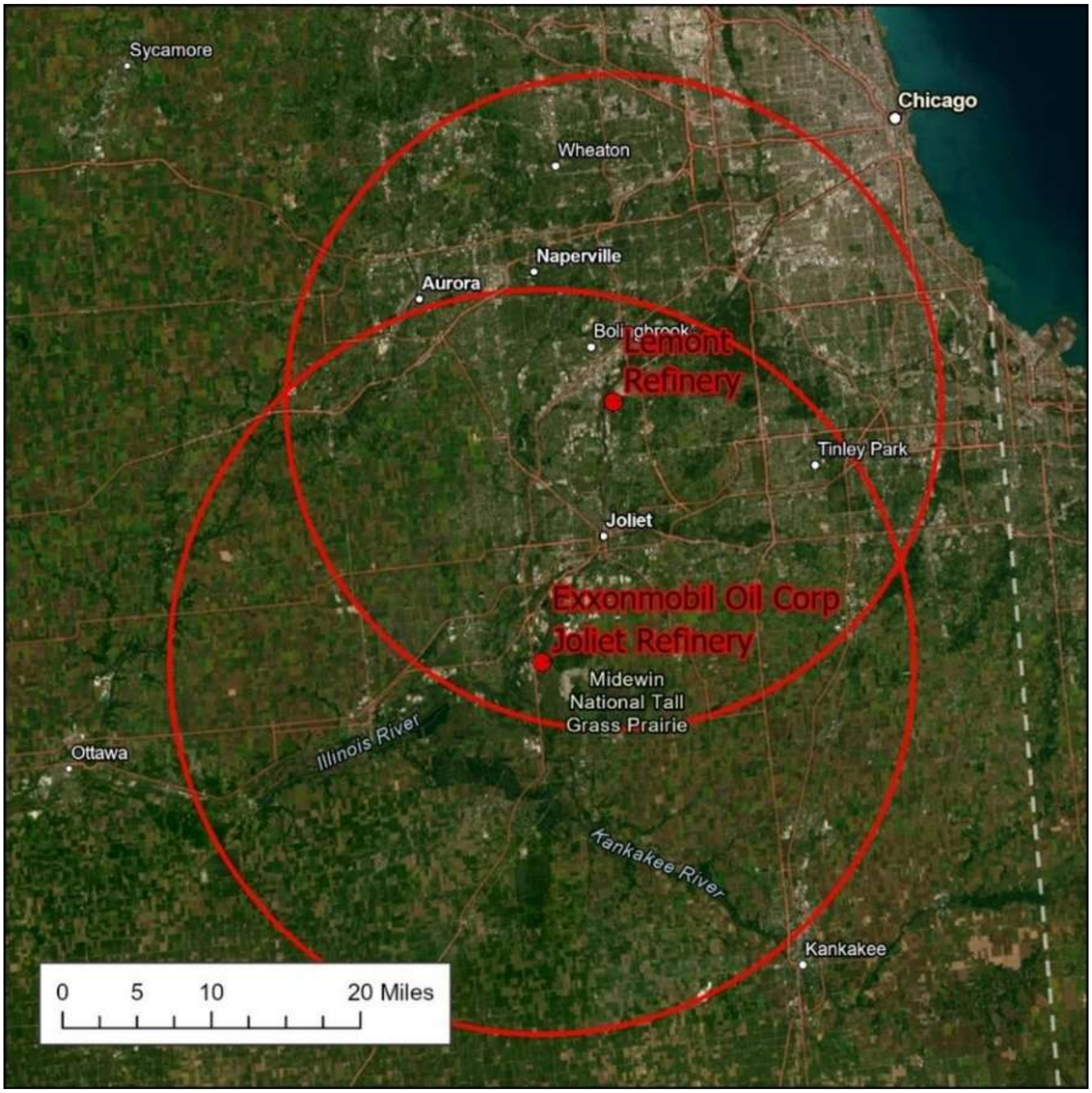
91. HF-using refineries create a risk of exposure to at least AEGL-1 concentrations in a post-release HF cloud for the approximately 19 million people who live close enough to those refineries, as demonstrated by the EPA-defined "worst-case" release scenarios generated by the refineries for purposes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

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

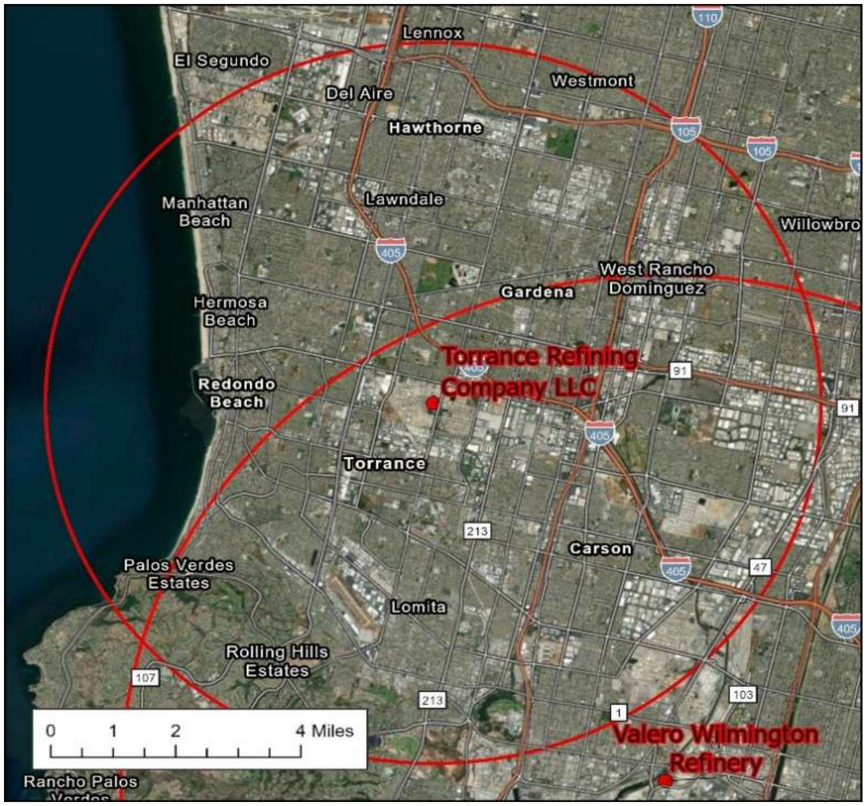
Philadelphia (Trainer refinery release zone)

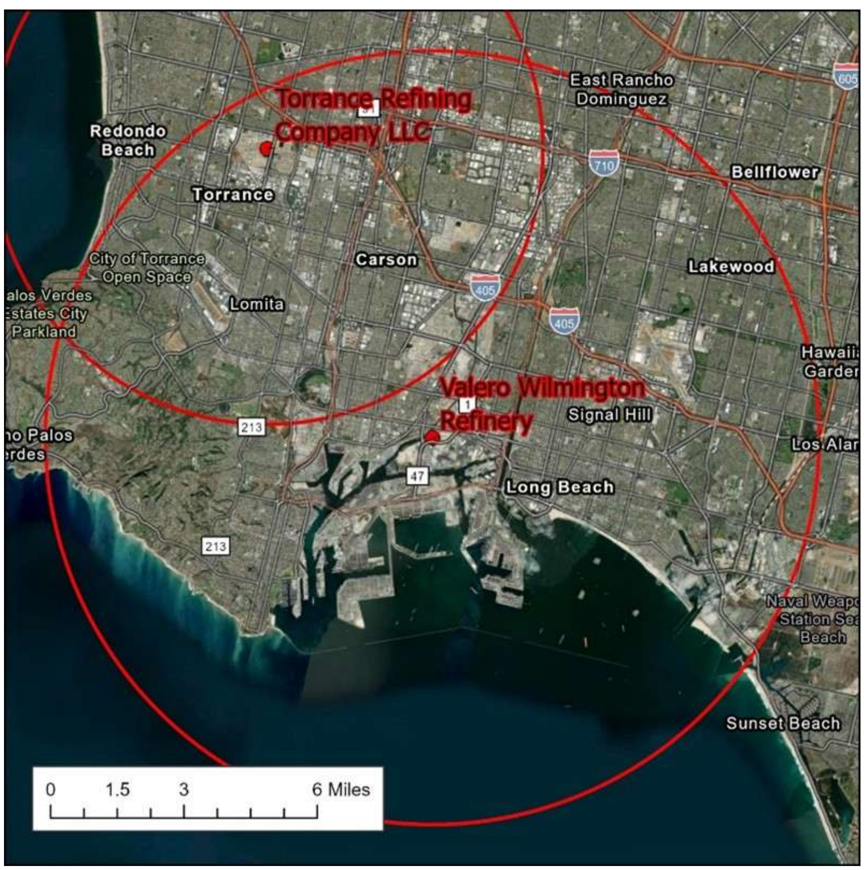


Chicago (Lemont and Joliet refinery release zones)



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





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

94. On information and belief, some refineries, including those in Torrance and Wilmington, California, receive cargo tanker truck deliveries of HF from Solstice Advanced Materials' plant in Geismar, Louisiana. 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). On information and belief, and based on the Torrance refinery's Fluid Catalytic Cracker (FCC) unit's reported throughput capacity of 103,600 barrels per day (bpd), about 10 cargo tanker truckloads' worth of HF are delivered to that refinery each month. On information and belief, and based on the Wilmington refinery's FCC unit's reported throughput capacity of 85,000 bpd, about 8 to 9 cargo tanker truckloads' worth of HF are delivered to that refinery each month.

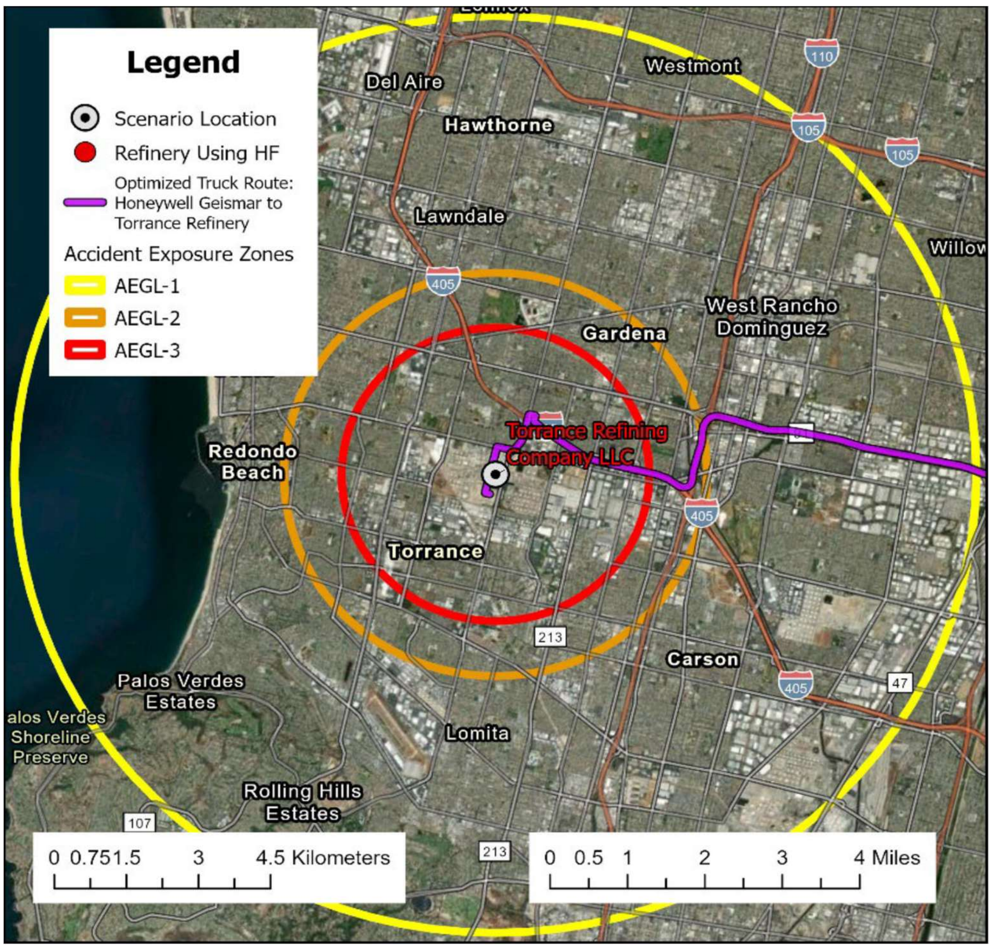
95. Cargo tankers have released HF in crashes and while unloading. The prevailing industry guidance on operation of HF alkylation units identifies the unloading of HF cargo tanker trucks as a particularly release-prone procedure.

96. Although cargo tanker trucks hold considerably less HF than most refineries store onsite, the loss of even a cargo tanker's worth of HF can devastate neighboring communities. As Plaintiffs demonstrated in analysis included in their petition to EPA, there is a substantial risk that equipment failure during cargo tanker unloading at the Torrance alkylation unit would cause that amount of HF to escape in less than 7 minutes.[1] 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

[1] A closed-circuit TV video of a 2012 HF release from a truck being unloaded at a chemical plant in Gumi, South Korea is available here: https://www.youtube.com/watch?v=6EpE3JHHoaI (visited July 16, 2026). Five workers were killed in the release.

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.[2]

97. 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.



[2] 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 the boundary extended well past 6.2 miles from the release point.

98. 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 alkylation unit.[3]

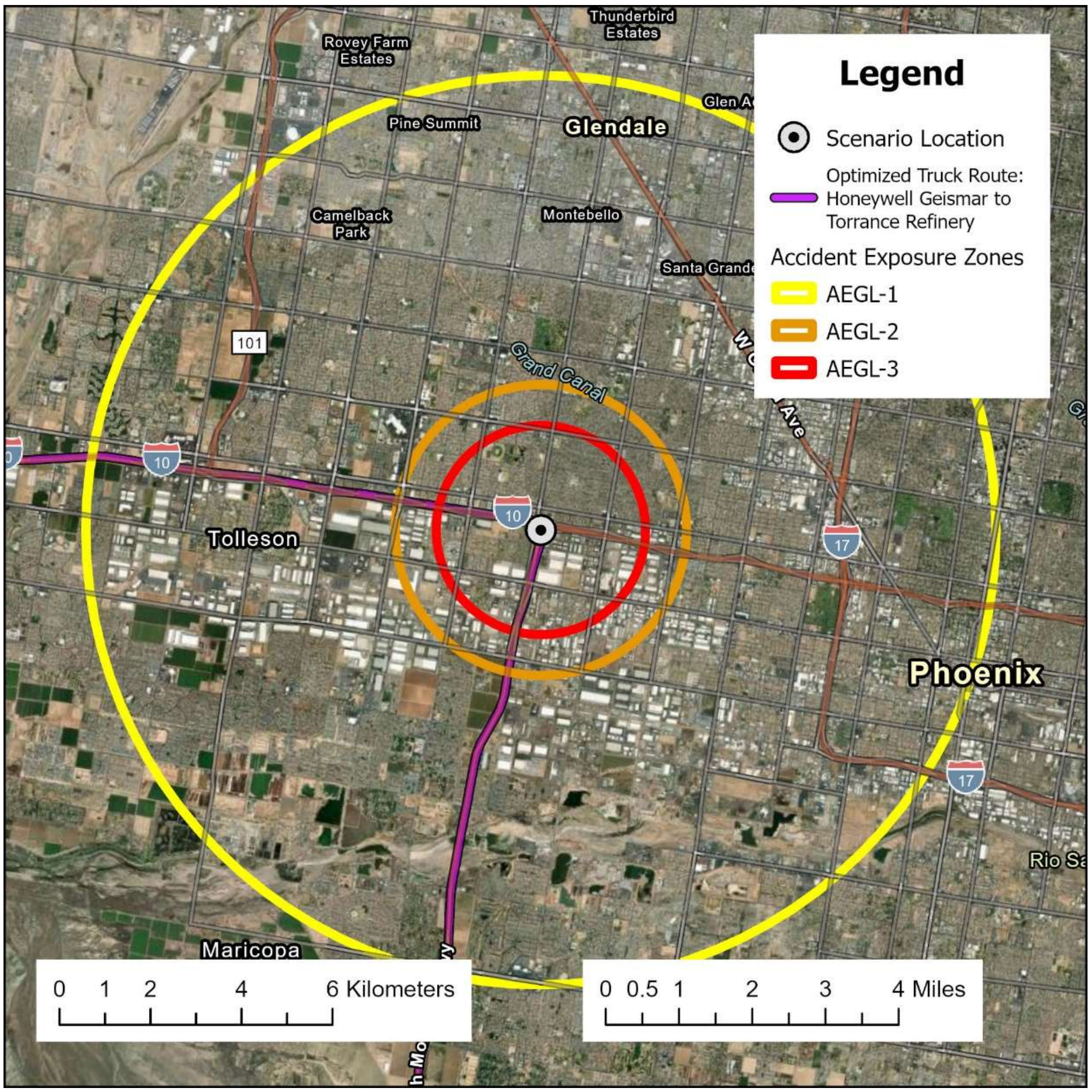
	People in areas with HF levels at or above AEGL-3	People in areas with HF levels at or above AEGL-2, and below AEGL-3	People in areas with HF levels at or above AEGL-1 and below AEGL-2
Total residential population	83,100	104,200	628,600
Young children (less than 5 years old)	4,200	6,100	35,300
People 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

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

100. A Los Angeles-bound cargo tanker truck that crashes and releases HF while passing through central Phoenix could cause an HF cloud that extends more

[3] Because of the boundary issue described in note 2, *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.

than 6 miles from the crash point. As Plaintiffs 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 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.[4] The following figure shows what areas of Phoenix fall within approximately 1.5 miles (red line), 2.1 miles (orange line), and 6.2 miles (yellow line) of the crash point.



[4] As with the Torrance release scenario introduced in paragraph 96, *supra*, and for the same reasons discussed at note 2, *supra*, 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.

101. The following table shows approximately how many people in Phoenix's 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.

	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

102. The Torrance and Wilmington refineries have reported using a modified form of anhydrous HF (MHF) that includes a chemical additive designed to reduce the amount of HF that vaporizes after a release. Their current RMP reports to EPA do not identify the additive; the concentration of the additive (if present); or the level of cloud suppression that the additive, at its present concentration and in current refinery operating conditions, can be expected to (or has been shown to) achieve. On information and belief, the MHF used at Torrance and Wilmington today is overwhelmingly anhydrous HF; the additive accounts for less than ten percent of the mixture by weight. On information and belief, the MHF

used at Torrance and Wilmington today is chemically similar to anhydrous HF and presents similar risks to health and the environment.

103. Within the past ten years, both the Torrance and Wilmington refineries have submitted erroneous RMP reporting understating the risks that an HF release would pose to the public. EPA's 2017 inspection report on Torrance found that the owner's worst-case-scenario modeling for HF was "not reliable" and that the owner had inappropriately reduced the HF-release quantity in its worst-case scenario. In 2025, EPA fined the owner of the Wilmington refinery for chemical-safety violations identified in a 2022 inspection. These included underestimating the distance that HF could spread in a worst-case scenario; inaccuracies in "equipment diagrams essential for emergency response; "insufficient analysis of how facility-wide power failures" would affect emergency response; "failure to implement previously recommended safety measures"; and "omission of mandatory information in both operating procedures and incident reports."

104. 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.

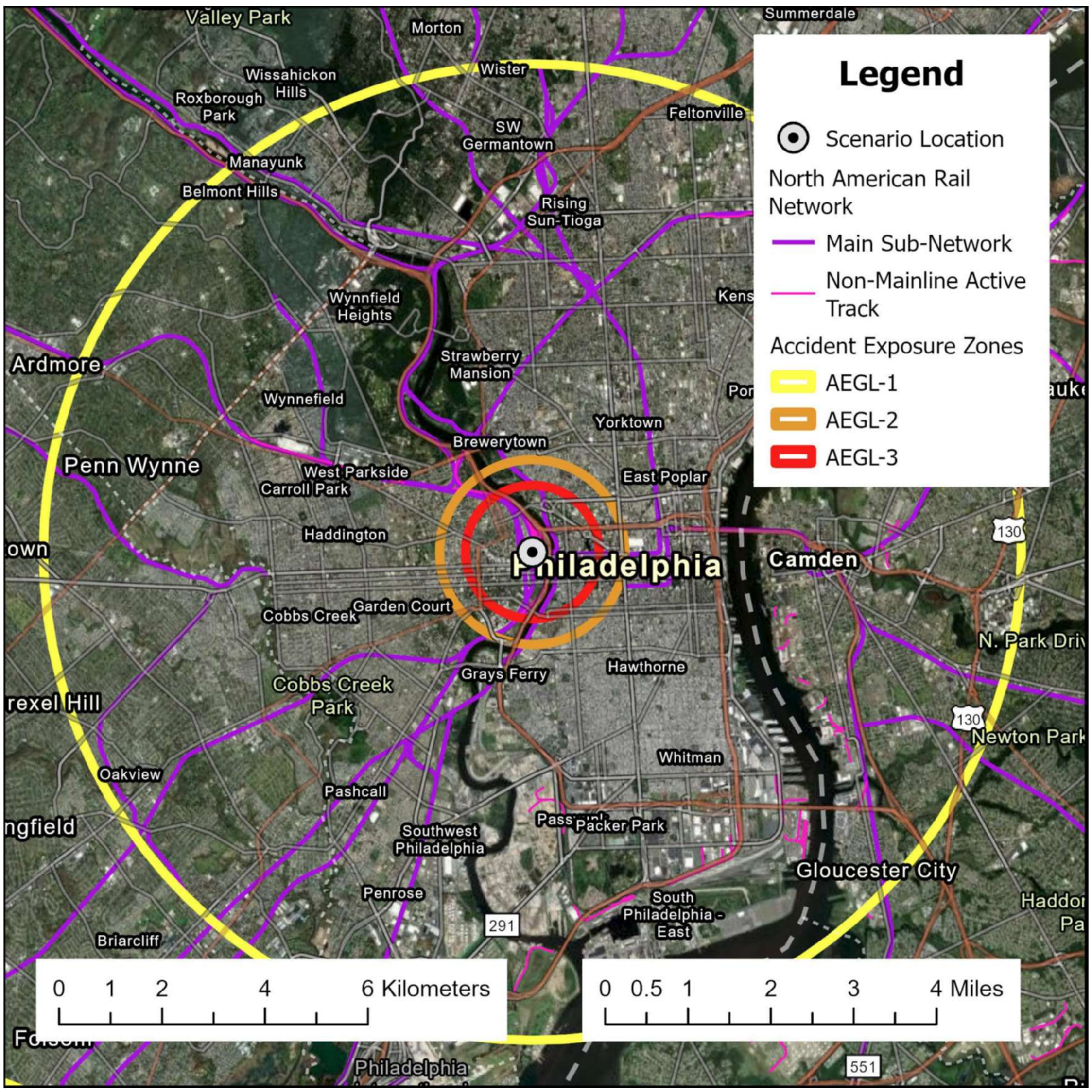
105. A single railcar can carry more than 172,000 pounds of liquid HF. On information and belief, based on their reported FCC throughput capacities of 53,000 bpd (Trainer) and 69,500 bpd (Lemont), the Trainer and Lemont refineries each receive approximately one railcar load's worth of HF per month.

106. 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.

107. 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 Plaintiffs 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.

108. 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 release point.



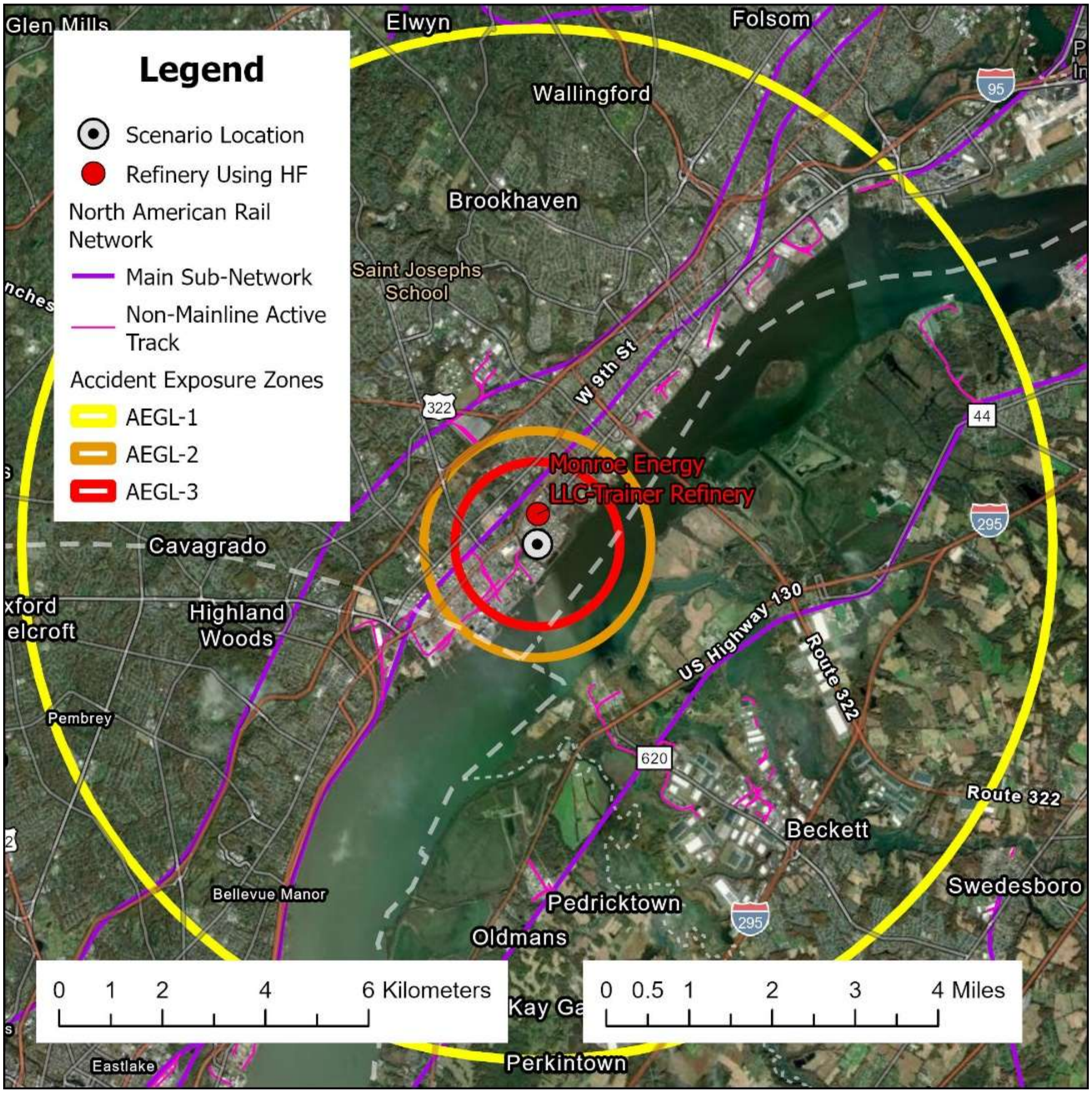
109. The following table shows approximately how many people in the general population, and in some particularly susceptible subpopulations, live within 0.8 miles; between 1.1 and 1.8 miles; and between 1.8 and 5.9 miles of the release point:

	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

110. 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 Plaintiffs 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.

111. 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.



112. 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.[5]

	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

113. An HF cloud caused by a refinery-related release is likely to spread rapidly. For example, on a day with light winds, a Torrance cargo tanker truck-unloading failure like the one introduced at paragraph 96, *supra*, would cause a cloud to spread, with HF concentrations at ground level reaching AEGL-3 (the potentially fatal effects level) at rates around 6 miles per hour.

114. HF clouds can resemble water vapor.

115. 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.

[5] As with the Torrance release scenario introduced in paragraph 96, *supra*, and for the same reasons discussed at note 2, *supra*, 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.

Department of Transportation advises emergency responders to establish minimum initial isolation zones of 1,500 feet (about a quarter mile) 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 tanker.[6] 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.

116. An HF release may catch many people indoors, but in inadequately protective buildings. 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.

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

i. Refineries are aging and degrading, and have poor safety records and cultures

117. Oil refineries are complex systems that pose risks to workers onsite and to the surrounding communities. Large-scale, complex systems, by their very nature, require greater skill and teamwork to plan, manage, and operate safely. This increases the number of critical points where an error can occur and trigger a cascading chain of failures.

118. According to reports filed with CSB, between 2021 and 2025, U.S. industrial accidents resulting in chemical releases increased more than 50%—from

[6] These minimum distances are likely inadequate to protect first responders, other workers, and the public. As discussed in paragraphs 99-101 and 105-109, *supra*, HF releases from overturned cargo tankers and railcars can cause HF concentrations at ground level to exceed harmful thresholds miles from the source.

83 in 2021 to 131 in 2025. At least 30 of the incidents reported to CSB for the years 2020-2025 occurred at refineries, and at least 10 of those occurred at HF-using refineries.

119. Aging refineries are particularly prone to failures and unintended releases, in part because their design and construction are inherently behind the state-of-the-art knowledge. For example, all of the HF-using refineries still operating in the United States were built and running by the time the first HF field-release tests were conducted in 1986. The conventional belief at the time was that HF leaked from a pressurized pipe or vessel would form a pool that could be contained in a dike or pit. The field-release tests (codenamed Goldfish), conducted at a Department of Energy site in the Nevada desert, disproved this theory. Instead of forming a pool, all the released HF liquid moved downwind in a dense, low-lying cloud.

120. Another reason that older refineries are more failure- and release-prone is that components that have not been replaced or properly maintained (such as the 50-year-old pipe that ruptured at the former Philadelphia Energy Solutions refinery) 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 in 1929, the Lemont refinery in 1926, and the Trainer refinery in 1925.

121. 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, since 1987. There have been at least 94 HF-release events in that period, including 17 at Torrance; 8 at Wilmington; and 8 at Trainer (boldfaced in Exhibit 1). There have been at least 233 other serious incidents, including 11 at Torrance, 5 at Wilmington, 4 at Lemont, and 5 at Trainer (boldfaced in Exhibit 2). 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 28 HF-using refineries (more than half) have released HF. At least 4 of those HF release incidents resulted in evacuation or shelter-in-place orders for the nearby community. At least 11 HF-using refineries have had an explosion, fire, or other incident severe enough (though not causing an HF release) to require shelter-in-place or evacuation orders for people living, working, or attending school in the area.

122. 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.

123. These safety incidents point to deficiencies and vulnerabilities that are a feature, not a bug, of complex refinery operations. On information and belief, even after the 2015 Torrance explosion that nearly caused an HF release, the refinery's HF settler tanks continue to be located close to the ESP unit (the unit that exploded). CSB's final investigative report, published in 2017, found that then-owner ExxonMobil had not performed a risk analysis of the HF tank siting decision even though ESPs have historically caused explosions in the refining industry. The Board also found that ExxonMobil extended the maintenance and inspection intervals of the catalyst slide valve and pumparound heat exchanger without analyzing whether the extended operation period had safety implications. And despite the massive explosion in February 2015 that put the refinery on notice of process safety weaknesses, failures continued. In September of that year, a leak from a clamped pipe in the alkylation unit caused an HF acid release. The leaking clamp was connected to a vessel containing thousands of pounds of HF acid. Fortunately, there were no reported injuries. In November 2016, a fire occurred during work on the alkylation unit. EPA conducted an inspection later that month that focused on the alkylation unit and found that "several critical safety systems were bypassed or deactivated on multiple occasions for extended periods of time,"

including during HF unloading and day-to-day operations. In early- and mid-February 2017, two more fires occurred.

124. EPA has found that the accident rate for the oil refining and coal manufacturing sectors is more than seven times the blended rate for all facilities it regulates under the RMP program, which also covers chemical manufacturing and oil and gas extraction.

125. Insurance and risk advisory analyses show mounting rates of safety incidents as industrial facilities operate past 30 years of age. All HF-using refineries in the country are 46 years or older.

126. Insurance analysis also shows that U.S. refineries, as a group, are more dangerous than refineries in the former Soviet Union, Southwest Asia/North Africa, and Asia. Despite plant and operational complexities, U.S. refineries have a culture of “pushing the operating envelope.” Limited or deferred maintenance, coupled with variable inspection practices and the pressure to keep staffing levels at a minimum, contribute to this heightened and ever-growing danger.

127. Worker fatigue and understaffing are associated with an increased risk of serious chemical-release incidents at refineries. On information and belief, the Torrance refinery, including under current ownership, has a history of understaffing and overworking its operators. In 2018, a class of refinery operators sued former owner ExxonMobil and current owners PBF Energy Limited and Torrance Refining Company, alleging that they had failed to provide them with rest breaks, and seeking compensation for missed rest breaks, in accordance with California law. In 2020, Defendants agreed to a total settlement of nearly $4.4 million, of which $2.9 million was paid by the refinery’s current owners.

ii. Increasingly severe weather events compound the risks

128. Flooding, heat waves, deep freezes, and high winds 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. The Lemont refinery south of Chicago lies almost entirely within a 100-year floodplain, as designated by FEMA. A tornado outbreak in Illinois has already caused the nearby Channahon refinery to lose power, and tornado activity is increasing; NOAA recorded more Illinois tornadoes in the first half of 2026 than during all of 2024, which until recently held the record for the highest annual number.

129. 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.

130. According to industrial hygiene analysts, the probability of occurrence of domino-effect events—where a single event causes a cascade of multiple problems—is increasingly high as petroleum facilities become ever more vulnerable to climate-change-driven natural disasters. Domino effects greatly increase the severity of the impacts.

iii. Refineries in earthquake-prone areas are particularly vulnerable

131. A recent study revealed that 28% of major industrial accidents occur in process plants, including oil refineries. Approximately 15.5% of such incidents occurred due to earthquakes, according to the Natech (Natural hazard-triggered technological accidents) database.

132. EPA's 2024 revisions to its RMP rules (which EPA now plans to rescind) discussed the need for facilities to demonstrate proper siting, including analysis of the placement of processes and equipment within the facility, factoring in natural hazards like earthquakes.

133. The Torrance and Wilmington refineries lie in a high-hazard earthquake zone. According to the American Society of Civil Engineers (ASCE) Hazard Tool, both refineries are classified as S_{DS} (Seismic Design Study) category E (red), which is the highest hazard rating for structures near major active faults.

134. In 2014, the U.S. Geological Survey published the Third Uniform California Earthquake Rupture Forecast, which estimated a 7% likelihood that California will experience a magnitude 8 or larger earthquake in the next 30 years. Research published in June 2026 shows that tectonic stress along the San Andreas and San Jacinto fault systems in Southern California has now reached, and in some places exceeded, the highest levels seen in the past 1,000 years. The Cajon Pass, which is a critical junction between the two fault systems, could facilitate a joint rupture of both the San Andreas and San Jacinto faults simultaneously, causing greater damage than a single-fault rupture and affecting densely populated areas including Los Angeles.

135. In an earthquake, tanks can buckle, and pipes can crack; power outages impact all aspects of facility operation. In 2021, a magnitude 4.3 (relatively small) quake near Carson (a suburb south of Los Angeles) caused a refinery power loss, explosion, and release of sulfur dioxide and nitrogen dioxide at levels well above

Air Quality Board limits. Less than five miles away in Wilmington, the Phillips 66 refinery set a continuous flare for hours to burn off excess chemicals.

136. An earthquake that caused an HF release would force difficult choices on emergency responders and the public. HF releases (or feared releases, like the 2018 Wisconsin refinery explosion) often require people to shelter in place. Earthquake safety response typically dictates that people evacuate. Residents would be choosing between heightened risks of HF exposure and building collapse.

137. 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 degrading and our weather becomes ever more extreme, and as control and mitigation practices remain 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 HF releases will become ever more likely.

iv. Some U.S. refineries have already adopted safer alternatives

138. Safer refinery alternatives to HF exist and are already used in other U.S. refineries, at commercial scale. Sulfuric acid, the most traditional and established alternative alkylation catalyst, has a boiling point above 600° F and remains largely or entirely liquid when released—making it much easier to capture and contain a spill onsite. Newer industry-developed alternative catalysts remain in liquid or solid form at ambient temperatures, and are substantially less toxic to

people. In 2021, Chevron's Salt Lake refinery completed the conversion of its HF alkylation unit to a new alkylation process that uses a safer catalyst. Honeywell, which developed the technology, says it lowers overall operating costs and increases feed flexibility (the ability to switch seamlessly between raw inputs, such as different grades of crude oil). At least two other HF-using refineries, Big West Oil's North Salt Lake City refinery and Wynnewood Refinery (about an hour south of Oklahoma City, Oklahoma), have entered contracts for or started construction on projects to convert or replace their HF alkylation units with safer alternatives.

IV. Existing regulation, agency oversight, and industry self-governance have not eliminated the unreasonable risks posed by refinery-related HF use

A. Existing regulations and agency oversight are deficient

139. Current government regulations and agency oversight of HF-using refineries are inadequate to protect the public and environment from unreasonable risk. 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 under laws other than TSCA.

140. For example, as detailed in Exhibits 1 and 2, there have been at least 94 HF releases and 233 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 (PSM) Program. At least 75 HF releases and 223 other serious incidents have occurred in the 2000s, following EPA's implementation of the RMP program. EPA's current process-safety standards under Section 112 of the Clean Air Act, concerning accidental releases to air of highly hazardous substances, are largely coextensive with OSHA's PSM standards for occupational settings.

141. The federal regulations that currently govern refinery-related HF use focus on the kinds of safeguards that modern chemical-safety practice classifies as least effective.

142. In its 2022 investigative report on the 2019 Philadelphia HF release incident, CSB recommended that EPA consider prioritizing HF for risk evaluation under TSCA. CSB also recommended that, assuming HF presented an unreasonable risk, EPA "apply requirements … necessary to eliminate or significantly mitigate the risk, for example, by using a methodology such as the hierarchy of controls."

143. The "hierarchy of controls" is a chemical process-safety approach that ranks different categories of safeguards from most to least effective. According to CSB, drawing on work by the Center for Chemical Process Safety (a nonprofit group within the American Institute of Chemical Engineers), the most effective approaches involve "eliminating" a hazard "by using materials and process conditions that are non-hazardous," or "less hazardous." These approaches are also known as "inherently safer design." As CSB's then-chair explained in 2019 Congressional testimony, eliminating or minimizing use of a highly toxic chemical at an industrial facility is an especially powerful safeguard because "what you don't have, can't leak."

144. In the context of HF-based refinery alkylation, the most-effective, inherently safer approaches include substituting a sulfuric acid catalyst or other alternative catalyst for HF.

145. The next-most effective safeguards in the hierarchy of controls, "passive safeguards," involve "[m]inimizing the hazard through process and equipment design features that reduce either the frequency or the consequence of the hazard without the active functioning of any device" (for example, building a diked wall around a tank that holds flammable liquids, in order to help contain the liquids if they are spilled). Less effective than passive are "active safeguards" that require the active functioning of a device (for example, alarms and automatic shutoffs) or human intervention. Worker-activated safeguards expose people to greater risk; moreover, chemical releases, fires, and explosions can prevent workers from accessing and activating a safety device.

146. The least-effective safeguards, at the bottom of the hierarchy of controls, are "procedural safeguards," otherwise known as "administrative controls." These include "[u]sing policies, operating procedures, training, administrative checks, and other management approaches to prevent incidents, or to minimize the effects of incidents."

147. Procedural safeguards are only effective when adhered to, and refineries' safety incidents show that management and implementation are not strong. For instance, EPA's November 2016 inspection of Torrance revealed that alkylation unit operating procedures lacked a clear chain of command designating the operators in charge of initiating and completing emergency shutdowns. The operating procedures contained incorrect or incomplete information. Operating logs had many blank spaces where the supervisor should have verified required tasks. During a period when the refinery received four truck deliveries of MHF, nobody signed the log to verify that a safety alarm was functional—and indeed, operating procedures failed to reflect that a safety alarm had been deactivated for several months.

148. Current federal regulations governing refinery-related HF use focus on the least-effective category of safeguards: reporting, recordkeeping, training, planning and similar procedural safeguards. No federal agency limits the amount of HF that refineries can import, store, or use. No federal agency requires refineries to use any particular equipment or design features to reduce the risks that HF will be released into the environment, or to reduce the likelihood that released HF will spread offsite.

149. OSHA regulations are not a substitute for regulation of unreasonable risk under TSCA. TSCA regulates the use of chemicals more broadly, while the Occupational Safety and Health (OSH) Act regulates health and safety in the workplace. TSCA covers a wider range of workers than the OSH Act does, including volunteers, self-employed workers, and some state and local government

workers. And EPA's findings and occupational risk mitigations may differ from OSHA's. Most OSHA chemical exposure standards are inadequately protective and out of date; many were based on industry consensus standards set in the 1960s. By contrast, EPA's exposure limits (when the agency does conduct a rulemaking to address unreasonable risk) should be based on current science, and must account for susceptible subpopulations. *See supra* ¶ 53.

B. Recent rollbacks of federal chemical-safety regulations and enforcement have further undermined chemical safety

150. In late 2023, EPA announced that for the first time, as part of an updated National Enforcement and Compliance Initiative (NECI) on chemical accident risk reduction, it would emphasize inspecting and addressing noncompliance at HF-using facilities. EPA referenced "recent incidents involving the release or potential release of highly toxic hydrogen fluoride," and "concerns about the potentially catastrophic consequences of an HF release."

151. EPA reversed course in 2025, abandoning the prioritization under NECI of HF-using facilities. EPA also announced a new "advance approval" requirement for "[a]ny order or other enforcement that would unduly burden or significantly disrupt energy production."

152. In February 2026, EPA announced it plans to rescind 2024 updates to its RMP regulations that, come their May 2027 effective date, would have required HF-using refineries to consider safer alternatives to HF, and to adopt at least one additional "passive [mitigation] measure, or an inherently safer technology or design, or a combination of active and procedural measures equivalent to or greater than the risk reduction of a passive measure."

153. The administration's 2027 budget proposal requested no funding for the CSB, which would effectively eliminate the agency.

C. The refinery industry's self-regulation is inadequate

154. Industry self-governance is inadequate to protect the public and environment against the unreasonable risks of refinery-related HF use. The American Petroleum Institute (API) published the first edition of its recommended practice on operation of alkylation units (commonly known as API RP 751) in 1992, but HF releases have continued since then. API refers to its recommendations as voluntary, and there is no express federal mandate that refineries follow them. As CSB observed in its report on the 2018 Superior, Wisconsin near-release event, "compliance with standards is voluntary unless a regulation specifically incorporates the standards."

155. API RP 751 does not recommend certain process-safety measures (such as redesigns to minimize HF use or the substitution of alternative, safer catalysts for HF) that, if adopted, would help to reduce or eliminate refinery-related HF release risks.

156. Adoption of the measures recommended in the latest edition of API-RP 751 (from 2021) and its predecessors has been incomplete and uneven across HF-using refineries.

157. On information and belief, at least twenty HF-using refineries lack Rapid Acid Deinventory (RAD) or equivalent systems to quickly drain and isolate their HF inventory in the event of emergency, and at least two lack remotely operated isolation valves—both measures recommended in API RP 751. At least two HF-using refineries lack API-recommended water mitigation systems that are designed to help tamp down the formation and spread of HF and other toxic clouds.

158. As another example, CSB's investigation of the 2009 Corpus Christi incident showed that CITGO had never conducted a safety audit of HF alkylation operations at either its Corpus Christi, Texas, or its Lemont, Illinois, refineries, even though such audits were recommended in API RP 751.

159. Even at refineries whose owners choose to follow API's voluntary

guidance, there remains a significant risk of HF releases that 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 and implement them correctly) 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 deluge and water curtain systems designed to tamp down HF levels in spreading clouds, and isolation valves designed to stem HF flow to a broken vessel or pipe) require regular testing and maintenance to function properly. Unlike the passive safeguards that rank above them in the hierarchy of controls, *supra* ¶ 146, mitigation systems like water spray curtains, isolation valves, and drainage systems require some device or person to activate them—an inherent weakness in the chain of response. The initiating event that leads to an HF release (e.g., fire, explosion, debris strike) can disable mitigation equipment, delay its activation, or make it unsafe for workers to attempt to activate.

160. The 2019 Philadelphia incident is illustrative. Shortly after sensors detected an HF leak around 4am that morning, a hydrocarbon vapor cloud ignited. The cameras pointing at the affected unit went black immediately, preventing the control room operator from knowing the extent of the incident. The operator tried to remotely turn on the water pumps that fed the HF mitigation water cannons, but the explosion had damaged the alkylation unit and knocked out the communication link to the water pumps. The backup power system in the unit—designated as an "uninterruptible power supply"—failed nine seconds later. A field operator was unable to manually turn on the pumps because the fire made the area too hot to enter. It took approximately 40 minutes for a shift supervisor wearing firefighting gear to manually activate the water pump so that the water cannons could begin suppressing some of the released HF. Of the approximately 5,200 pounds of HF released, 3,270 pounds—about 60%—were not contained by the water spray.

161. Even where a water curtain or other mitigation system functions as designed, design limitations may hamper its effectiveness. The efficacy of a water curtain, for example, depends on many factors, including spray nozzle hole size and location, distance between the release point and water curtain, and the ratio of water flow to HF flow. The 1984 Bhopal disaster that killed upwards of 20,000 people, *supra* ¶ 22, illustrates one way in which safety systems can fail. The facility's water curtain, which should have mitigated the chemical release, was too short to reach the top of the tower from which the gas leaked. Even properly designed and maintained water mitigation systems cannot fully prevent the formation of HF clouds in large-scale releases. To achieve the highest possible cloud-suppression rates, a water-mitigation system must also be able to release enormous amounts of water, on the order of tens of times the volume of the HF being released, at just the right time and place.

D. Refinery operations are largely a black box, which undercuts government oversight and public accountability

162. Although current federal law calls for some information on refinery-related HF use to be published or made available for public review on request, the publicly accessible information lacks the detail necessary to identify vulnerabilities in particular refineries' alkylation units and mitigation systems. For example, the RMP reports EPA makes available for public review lack specifics on the design of each refinery's alkylation unit and associated physical mitigation measures; on the condition of that equipment; and on refineries' inspection and maintenance regimes for that equipment. The RMP reports do not include detail on important assumptions underlying the worst-case scenario figures, such as the nature and "anticipated effect" of "any administrative controls and any passive mitigation that were assumed to limit the quantity that could be released," although refiners are required to keep records of those assumptions. 40 C.F.R. § 68.39(a).

163. The publicly available information on refinery-related HF releases and close calls is also limited. For example, RMPs must include only those releases of hazardous chemicals "that resulted in deaths, injuries, or significant property damage on site, or known offsite deaths, evacuations, sheltering in place, property damage, or environmental damage," and only for the preceding 5 years. 40 C.F.R. § 68.42. Some HF releases can be identified only through state and facility-specific public records requests, or reference to federal data that omits the most recent year or more of facility history. For example, at the time of this filing, EPA's Detailed Facility Reports on HF releases from the Torrance, Wilmington, and Trainer refineries provided data for only calendar years 2015-2024. RMPs may be updated as infrequently as every 5 years. *See* 40 C.F.R. § 68.190.

164. EPA previously had a public website—the RMP Data Tool—that informed communities and first responders which chemicals are in use at facilities near them. In January 2025, the American Chemistry Council and other industry groups sent a letter to EPA requesting that the agency remove this online tool. A few months later, EPA complied with industry's request and took down the site.

165. EPA now advises the public to submit Freedom of Information Act requests for RMP information. It also makes portions of RMP reports available for in-person review at EPA reading rooms. The reports are provided only in hard copy, and public reviewers are not allowed to scan or photograph them. This further hampers efficient, timely data collection and analysis.

166. Key information on HF-related refinery process safety is not readily available even to government investigators. During CSB's investigation of the 2015 Torrance explosion, ExxonMobil refused to turn over documents relating to the HF alkylation unit. CSB sought records including: (1) risk assessments for the alkylation unit for the past 15 years; (2) information on vendors and manufacturers of the modified HF acid, including quantity purchased annually; (3) studies, data, experiments, modeling, technical analysis, and specifications relating to the

documented or asserted effectiveness of HF cloud suppression for modified HF compared to unmodified HF; (4) records related to the volume and concentration of HF acid in each of the two alkylation unit HF settlers at the time of the 2015 incident; and (5) all documents identifying alkylation unit siting hazards, risks, and safety concerns. The requested documentation included preventative and mitigation measures implemented, and plot plans and simulations identifying toxic, flammable, and explosive hazards. The Ninth Circuit Court of Appeals ultimately ordered ExxonMobil to comply with the request. Plaintiffs do not know if ExxonMobil ultimately complied with the request in full. On information and belief, the produced documents are not available to the public.

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

167. 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 facts included in paragraphs 1–168, *supra*, establishing that current refinery use of hydrogen fluoride presents an unreasonable risk of injury to health and the environment. Plaintiffs 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.

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

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

170. EPA denied the petition in a letter signed by Defendant Beck and emailed to Plaintiffs' counsel on May 12, 2025.

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

172. 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."

173. 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.

174. 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.

175. 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 Plaintiffs submitted with their petition, or supply evidence of its own.

CLAIMS FOR RELIEF

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

176. Plaintiffs incorporate the allegations in paragraphs 1–176, *supra*.

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

178. 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).

179. 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.

180. 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.

181. 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 HF presents an unreasonable risk to the environment, and TSCA requires EPA to eliminate that risk through rulemaking

182. Plaintiffs incorporate the allegations in paragraphs 1–179, *supra*.

183. 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

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.");

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

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

Date: July 22, 2026 Respectfully submitted,

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