

What They Don't Know

An Analysis of Worker and Public Safety Hazards at Marathon Petroleum's St. Paul Park Refinery

Lucas Franco and Kevin Pranis, April 2021





ABOUT LOCAL JOBS NORTH

Local Jobs North seeks to promote good, family-supporting construction jobs for North Dakota and Minnesota workers through research and advocacy. Our goal is to educate the public and policy makers about the social and economic benefits of using local workers. Local Jobs North is a project of LIUNA Minnesota & North Dakota, which represents more than 12,000 unionized construction laborers across Minnesota and North Dakota and is affiliated with the half-million member Laborers International Union of North America.

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INTRODUCTION

Refineries are a vital component of our economy. Refineries turn crude oil into gasoline, diesel, and jet fuel, and they produce materials that are used in thousands of products ranging from plastics to medical devices. This is accomplished by breaking raw crude into component parts, using heat for distillation along with various chemical compounds.

Refineries are designated as high-hazard facilities under the International Building Code, and operating them safely requires a skilled workforce with a shared commitment to safety. Minor mistakes can have serious consequences, especially if operators or contractors fail to follow protocols designed to minimize the risk of a catastrophic incident.

Refinery operators and their maintenance contractors must be held to the highest standards, not only because of the risks that refinery workers face, but also due to the potential impact of a major safety event on surrounding communities and the natural environment. Failure to follow instructions or use of the wrong equipment can inadvertently expose workers to toxic chemicals, or, in the worst case, risk a major chemical release or fire.¹

While Minnesota has largely avoided major refinery incidents in recent decades, high-profile accidents elsewhere have highlighted potential safety hazards. For example, in February 2020 a major fire broke out at a Marathon Petroleum Corporation (“Marathon”) refinery in Carson, California which had previously been cited for workplace safety violations by Cal/OSHA.² Agency inspectors visited the refinery in July of 2019, and cited the operator for four workplace safety violations, including failing to “provide training to its unit operators’ before rolling out new maintenance procedures... obtain signatures from employees indicating they’d been trained, and [allowing] maintenance crew the ability to review and approve any of the changes.”³

A 2018 explosion at the Husky oil refinery in Superior, Wisconsin, sparked concerns in Minnesota about the potential risk of refineries to workers and the surrounding communities, including the nearby city of Duluth. A hole in a valve caused an explosion that injured 36 people. The explosion sprayed debris across the facility, puncturing an asphalt tank and spilling 15,000 gallons of asphalt.⁴ The explosion injured 36 workers, caused approximately \$27 million in damage, and impacted an estimated 3,000 businesses and residents. But experts say that the consequences could have been much worse if the explosion had damaged a hydrogen fluoride rather than an asphalt tank.⁵

1 Matt McKinney and Mike Hughlett, “Superior refinery fire is reminder of toxic hydrogen fluoride risk in Twin Cities,” Star Tribune, May 6, 2018. <https://www.startribune.com/superior-refinery-fire-exposes-toxic-risk-of-hydrogen-fluoride-to-metro-area/481836091/> (accessed March 10, 2021).

2 Susanne Rust and Tony Barboza, “Fire exploded from part of Carson refinery recently cited for workplace safety issues,” Los Angeles Times, February 27, 2020. <https://www.latimes.com/environment/story/2020-02-27/carson-refinery-fire-california-workplace-safety-violations> (accessed March 10, 2021).

3 Rust and Barboza, “Fire exploded from part of Carson refinery.”

4 McKinney and Hughlett, “Superior refinery fire.”

5 Kathryn Hockman, “Husky Energy says damages from fire, explosion will cost \$27 million,” Minnesota Public Radio, July 26, 2018. <https://www.mprnews.org/story/2018/07/26/husky-energy-says-damages-from-fire-explosion-will-cost-millions> (accessed March 11, 2021).

The Husky Refinery explosion was a reminder of the possible risks to surrounding communities, posed by refineries, especially those that use hydrogen fluoride -- a toxic chemical that can be deadly even at limited levels of exposure. Just over a third of all US refineries use hydrogen fluoride, including the Husky Refinery and Marathon's St. Paul Park Refinery (SPP), but not the region's largest refinery in Rosemount, Minnesota.⁶

Use of hydrogen fluoride is not the only characteristic that sets SPP apart from the neighboring Pine Bend refinery, which has been owned and operated by Flint Hills Resources since 1969.⁷ SPP has also seen an unusually high level of ownership turnover since 2010. Marathon took over ownership of SPP when the company merged with Andeavor in 2018 -- the fourth ownership change in less than a decade. Near constant ownership turnover has clearly taken a toll on the safety culture at SPP, where one refinery operator described the result as a "hodge podge" of safety standards and protocols.

Interviews with workers with extensive refinery experience yielded disturbing accounts and observations which suggest that an already troubled safety culture became markedly worse after Marathon's 2018 takeover. These workers cited management decisions to eliminate safety positions, and to replace local contractors and workforce with decades of experience at the facility, in an apparent effort to cut operating costs. In the words of Matt Foss, a longtime operator, many of the new maintenance workers, "don't know what they don't know, and that is a dangerous thing in a place like St. Paul Park refinery."

A poor safety culture at any workplace should be cause for concern, but the possibility of serious safety lapses at a refinery -- especially one that uses hydrogen fluoride -- is especially concerning given the potential risk to both workers and the general public. The goals of this report are to assess the current conditions at SPP, and to recommend steps Marathon could take to minimize risks to workers and surrounding communities. Based on interviews with current and former employees of SPP and the facility's maintenance contractors, this report finds evidence of a troubled safety culture and unsafe practices that could jeopardize the health and safety of workers, or even the public at large.

In this report we find the following:

- **Finding #1** – The safety standards and culture at the St. Paul Park refinery compared unfavorably to the neighboring Pine Bend refinery according to workers with experience at both facilities. Workers interviewed described several key differences, including management's evident failure to make safety a priority, and the facility's continued use of problem maintenance contractors.
- **Finding #2** – Workers interviewed shared evidence that safety conditions worsened at the St. Paul Park refinery after Marathon assumed control of the facility in 2018, citing

6 Daniel Horowitz, "This Chemical Kills. Why Aren't Regulators Banning It?," New York Times, Jul 8, 2019. <https://www.nytimes.com/2019/07/08/opinion/philadelphia-chemical-refinery-blast.html> (Access March 11, 2021).

7 McKinney and Hughlett, "Superior refinery fire."

decisions that include the elimination of dedicated safety positions and the removal of experienced maintenance contractors, among other factors.

- **Finding #3** – Workers interviewed provided multiple examples of hydrocarbon or other chemical releases that clearly occurred as a result of avoidable errors, potentially endangering refinery personnel and environmental resources. Examples included the accidental aerial dispersal of sodium hydroxide, failure to properly document chemical disposal, and hydrocarbon spills that were apparently so common that they earned the nicknames “snail trails” and “chemtrails” -- the latter is a reference to contractor HydroChemPSC (“HydroChem”).
- **Finding #4** – Workers provided multiple examples of clearly unsafe work practices that created avoidable fire hazards, including apparent failures to properly handle flammable chemicals, improper installation of fire safety controls during maintenance, and attempts to use the wrong equipment for hazardous material cleanup which could have triggered a potential explosion according to witnesses. A worker at a Marathon refinery in Mandan, North Dakota also described a major fire hazard incident that apparently required an evacuation and use of multiple water cannons.
- **Finding #5** – Witness accounts indicate an obvious lack of experience and training on the part of replacement workers brought into the facility after Marathon began removing local maintenance contractors. For example, one witness encountered replacement workers that clearly did not know how to operate breathing apparatus or refinery fire hydrants, while another found a group of workers apparently trying to figure out how to operate their vac truck by watching a YouTube video.
- **Finding #6** – Witnesses provided examples of workers reportedly being assigned to work under potentially hazardous conditions, even after safety concerns had been raised. These included workers assigned to work on scaffolding that multiple individuals with scaffold-building experience deemed to be unsafe; and an incident in which a union crew asked for supplied air, and instead a nonunion crew was sent in to do the work.
- **Finding #7** – Workers indicated that management evidently bent rules or ignored safety policies and best practices in apparent efforts to cut costs or accommodate problem contractors. Workers cited examples ranging from operators being required to allow crews to dump unknown chemicals into tanks, to work evidently being performed without adequate safety plans in place.

Industrial disasters are prevented by employing highly trained workers and maintaining rigorous safety standards. Unfortunately, this report details evident failures to stick to these foundational principles. Ultimately, we are concerned that failure to adhere to rigorous safety standards could not only endanger SPP workers but also surrounding communities.

Not only could the use of an inexperienced and poorly trained workforce increase the risk of a fire or chemical release, as detailed in this report, but it is unclear whether these workers would be prepared to properly use a hydrant to contain a fire, or personal breathing apparatus to protect themselves.

INTERVIEW METHODOLOGY

The key findings of this report are based in significant part on in-depth interviews of more than a dozen current and former employees of the St. Paul Park (SPP) refinery and contractors that have worked at the facility. While a handful of the workers interviewed were willing to be named publicly, most preferred to remain anonymous due to fear of retaliation. The interview subjects included operations staff, safety professionals, and skilled tradespeople that perform maintenance work. In the report, the facility staff interviewed are described as “operators” and tradespeople employed by contractors are described as “maintenance workers.” Operator positions include crude unit operators, board operators, unit operators, and plant safety personnel.

Maintenance workers include laborers, pipefitters, and other trades workers.

TWO REFINERIES “WORLDS APART”

Finding #1 – The safety standards and culture at the St. Paul Park refinery compared unfavorably to the neighboring Pine Bend refinery according to workers with experience at both facilities. Workers interviewed described several key differences, including management’s evident failure to make safety a priority, and the facility’s continued use of problem maintenance contractors.

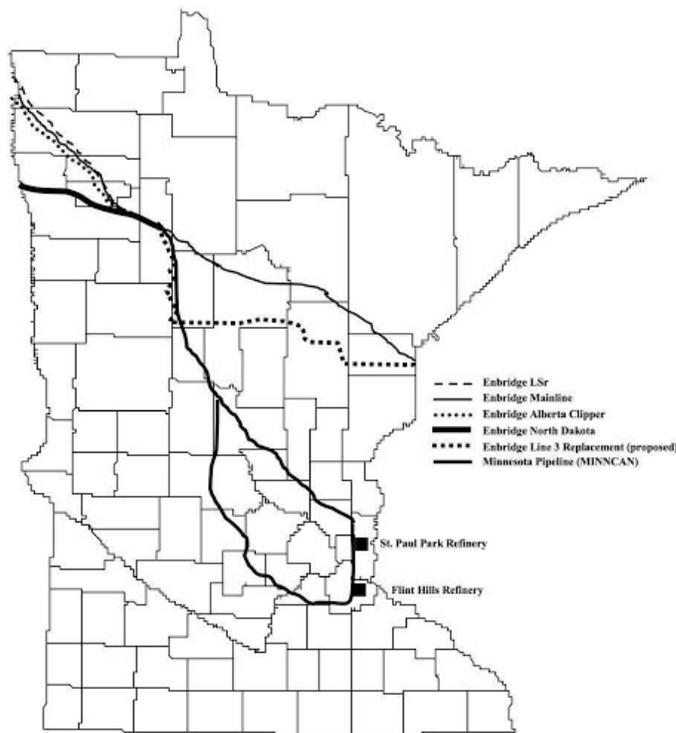
There are two refineries in Minnesota: St. Paul Park Refinery (SPP) and Pine Bend Refinery. SPP is the smaller and the older refinery – it was built in 1939 and it can process approximately 102,000 barrels of crude oil per day.⁸ The Pine Bend Refinery is owned by Flint Hills Resources (FHR), a subsidiary of Koch Industries. The Pine Bend refinery processes more than three times the volume of oil handled at SPP – roughly 339,000 barrels per day. SPP directly employs an estimated 411 full-time workers, while Pine Bend employs approximately 1,300 workers. Both refineries provide employment to hundreds of additional workers during maintenance turnarounds – periods of cleaning and repair.

The consistency of management at Pine Bend sets the larger refinery apart from SPP, where regular ownership turnover has been a fact of life since 2010. Pine Bend has been owned by Koch Industries since 1969. SPP, on the other hand, had five different owners between 2010 and 2018. Marathon’s predecessor corporation previously owned the facility from 1997 to 2010.⁹

⁸ Peter Teigland, “Petroleum Refining in Minnesota,” North Star Policy Institute, May 10, 2018. <https://northstarpolicy.org/petroleum-refining-in-minnesota> (Accessed April 12, 2021).

⁹ McKinney and Hughlett, “Superior refinery fire.”

IMAGE 1: MINNESOTA REFINERIES¹⁰



Workers interviewed for this report indicated that frequent changes in ownership made it more difficult to maintain consistent safety protocols and practices. As previously mentioned, a veteran refinery operator described how frequent ownership turnover contributed to what he called a “hodge podge” of safety standards and protocols.

Skilled tradesmen and tradeswomen who have worked at both SPP and Pine Bend drew stark contrasts between the safety cultures of the two refineries. For example, a career pipefitter described the two facilities as “worlds apart” when it came to safety. To him, Flint Hills Refinery “is as clean, and as safe as a refinery can

be [while SPP was] a whole other animal... Safety wasn’t the first thought... or the second, or the third.”

A second maintenance worker described hearing “horror stories about unsafe working conditions at SPP” while working at Pine Bend and said that “my fears were confirmed” after being transferred to SPP. Another, who has spent most of a career working at both St. Paul Park and Flint Hills Refinery, echoed the stark contrast between the two facilities:

“The difference between working at St. Paul Park and Flint Hills is unbelievable. If so much as a little bit of oil leaks from a car engine at Flint Hills everyone freaks out, while oil is all over the facility at SPP. The stuff that goes on at Marathon would never fly at Flint Hills. At SPP, they wait until something happens and they don’t have a choice but to fix something. Marathon has clamps everywhere covering leaks at SPP.”

¹⁰ Bob Eleff, “Minnesota’s Petroleum Infrastructure: Pipelines, Refineries, Terminals,” Minnesota House of Representatives: Research Department, October 2018. <https://www.house.leg.state.mn.us/hrd/pubs/petinfra.pdf> (Accessed March 10, 2021).

A “TERRIBLE” SAFETY CULTURE?

One of the operators we interviewed for this report worked as a health, safety and environmental (HSE) technician as part of the fire-department for many years. The operator explained how the team of HSE technicians strove to build a strong safety culture where workers closely followed protocols, reported problems and stopped operations if they felt something was amiss. The HSE team worked hard to raise awareness and improve communication, and by 2018, the operator felt the facility had developed a much stronger safety culture.

Unfortunately, the operator said they saw the safety situation change for the worse when Marathon took over in 2018. According to this individual, one of the early steps Marathon took after assuming ownership was to eliminate the four HSE technician positions and reassign staff to other jobs at the refinery.

According to the operator, canceling the program was not a reflection of poor performance by individual workers, as all were offered the same or better paying positions. Instead, the decision to move the team to other operations positions apparently reflected a re-prioritization of resources away from safety.

The operator did not mince words in explaining how they viewed Marathon’s decision to eliminate the positions: “what cancelling this program told me is that they are willing to take the risk because it is a low frequency event. They just wanted to save money. To me, this was a clear reflection of putting profits over health and safety of workers at the facility.” In the operator’s opinion, the current safety culture at SPP is “absolutely terrible.”

Finding #2 – Workers interviewed shared evidence that safety conditions worsened at the St. Paul Park refinery after Marathon assumed control of the facility in 2018, citing decisions that include the elimination of dedicated safety positions and the removal of experienced maintenance contractors, among other factors.

Safety concerns at SPP preceded Marathon’s 2018 merger with Andeavor. Yet despite the challenge of maintaining and improving safety standards across changes in ownership, there was a sense that progress was being made in the years leading up to Marathon’s takeover of the facility. For some, the concerns began with staffing changes made not long after Marathon took control of SPP, including the elimination of four health, safety and environmental (HSE) technicians and numerous firefighters.

A current volunteer firefighter explained how prior to Marathon buying the facility, “The full-time was only 15 of 16 guys with another 30 volunteers.” In his view, “Marathon saw [the fire department as] a giant cost.” The firefighter reported that, when Marathon took over, the company eliminated most of the full-time positions in the fire department and “shuffled [firefighters] into other jobs.”

An experienced operator who worked for several years as a health, safety and environment (HSE) technician within the fire department, described “a clear commitment to safety” prior to Marathon, but said “[t]hat all changed when Marathon took over in 2018.”

Workers interviewed expressed concerns that the cuts would leave the refinery less safe, and more reliant on fire departments in neighboring communities like Cottage Grove, St. Paul Park and Newport. They pointed out that local fire departments lack specialized training needed to effectively fight a refinery fire, and observed that reliance on neighboring fire departments could significantly lengthen response times.

One operator who also serves as a volunteer firefighter was skeptical of the ability of local fire units to handle a large chemical fire, suggesting that, “they are probably not equipped if they had to fight a two-pronged fire” similar to the explosion at the Husky refinery. The operator attributed Marathon’s safety staff reductions to a desire to save money.

“Marathon saw a giant cost and completely got rid of our full time [firefighters], they hacked down the leadership, we had a chief, an assistant chief and a captain. They got rid of both the captain and the assistant chief. On the administration side, there is really nobody left to even plan trainings or run them. They got rid of all of our lieutenants and shuffled them into other jobs. They are getting rid of the full-time guys as well...A lot of the volunteers quit because they didn’t like what was going on.”

Marathon’s approach to safety since taking over control of SPP is evident not only in decisions to eliminate 15-16 firefighter positions including HSE officials, but also in the replacement of local contractors and their skilled local workforce. In 2019, Marathon began removing long-time maintenance contractors and replacing them with out-of-state contractors.

The previous union maintenance workforce had decades of combined experience at the facility. Many workers had also completed extensive training as part of registered apprenticeship programs. By contrast, many of the replacement workers came from outside the area, and many clearly lacked basic safety skills according to workers interviewed.

Matt Foss, a 22-year veteran of the facility, expressed his concerns about a degradation of the skills of contract workers at the facility in committee testimony before Minnesota’s House of Representatives.

“I’ve seen first-hand what happens when high road contractors are replaced with contractors who do not train their employees to apprenticeship standards. That is a risk that doesn’t need to exist. I’ve also seen untrained subcontractors that don’t know how to use Minnesota fire hydrants – a critical infrastructure and safety for the plant. I’ve seen untrained subcontractors use life critical safety equipment such as self-contained breathing apparatus incorrectly. That puts myself, a firefighter, my coworkers and the community at risk.”

A long-time maintenance worker shared Foss's evident frustration, observing that "I loved working in there until Marathon bought it."

Multiple workers interviewed said that, when Marathon brought in HydroChem in 2019, the Houston-based firm was offering hourly wages as low as \$15 per hour. By comparison, Veit & Company, the local contractor that HydroChem replaced, paid local skilled laborers approximately \$35 in hourly wages and an additional \$20 in hourly health and pension benefits.¹¹

It is not hard to guess the likely impact of slashing wages for hazardous and physically demanding refinery work to hourly rates comparable to those paid to a checkout clerk at Target. One operator described the replacement workforce as follows: "A lot of the guys were from Texas or rejects from Veit (those with very little experience). Extremely poorly trained workers."

Not only did the low wages apparently make it difficult to recruit skilled labor, but they likely also contributed to what another operator described as a "ton of turnover". The safety concerns described by workers interviewed for this report overwhelmingly involve the conduct of contractors like HydroChem and their workforce.

¹¹ Wage rates are based on Laborers (LIUNA) Metropolitan Builders Wage Rates for May 1, 2019 - April 30, 2020. Rates are available here: https://drive.google.com/open?id=1oR8awJ_FoxFDIIFWa7ZEaRgl6qBLGrp0&authuser=lf Franco%40liunagroc.com&usp=drive_fs.

HEALTH, SAFETY AND ENVIRONMENTAL FINES AND PENALTIES

Since 2000, nearly \$1.5 billion in penalties or settlements have been assessed for environmental, workplace safety and wage and hour violations against Marathon Petroleum or its predecessor company (Marathon Oil); or companies or facilities that were acquired by Marathon or its predecessor. In some cases, the list includes assessments for violations that occurred at a company or facility prior to Marathon's ownership. (Information was obtained from a database of citations maintained by Good Jobs First.)

TABLE 1: PENALTIES SINCE 2000¹²

Top 5 Primary Offense Types	Penalty Total	Number of Records
Environmental violation	\$1,366,878,536.00	178
Workplace safety or health violation	\$40,016,884.00	60
Wage and hour violation	\$28,037,445.00	8
Consumer protection violation	\$22,500,000.00	1
Accounting fraud or deficiencies	\$20,000,000.00	1
Totals	\$1,477,432,865.00	248

REFINERY HAZARDS

Refineries can be dangerous workplaces. Maintenance workers face safety hazards that are common to any construction site, including falls, trips and slips; scaffold, ladder, and trench collapses; electrocution; and hearing damage from repeated exposure to loud noises; among others. But refinery work brings added risk because the entire refining process relies on the application of high heat to volatile materials and the use of reactive chemicals to alter the molecular structure of petroleum and petroleum byproducts.

Unlike most construction sites or manufacturing facilities, refineries also have the potential for a catastrophic accident that could impact surrounding communities. For example, there is no better illustration of the potential for a mass casualty event from an accident at a refinery than the threat posed by a hydrogen fluoride plume sweeping across the Twin Cities due to a crack in a containment tank.

¹² This table provides an overview of penalties levied against Marathon Petroleum, affiliated companies and associated facilities since 2000. Some penalties included in this table were assessed before Marathon Petroleum took over ownership of the company or facility in question. For example, the table includes penalties for violations at the St. Paul Park Refinery under multiple owners including Marathon Saint Paul Park Refinery (then owned by Marathon Petroleum as a subsidiary of Marathon Oil), Western Refining (subsequently acquired by Tesoro), and Tesoro (which changed its name to Andeavor before being acquired by Marathon). Of the 10 largest penalties, approximately one third involved direct fines to Marathon Petroleum, one third involved fines to companies that later merged with Marathon Petroleum and one third involved fines to facilities that Marathon later purchased. A correction was made on 05/02/2021 to clarify penalty attribution. Source citation: Good Jobs First, "Violation Tracker Parent Company Summary: Marathon Petroleum." <https://violationtracker.goodjobsfirst.org/parent/marathon-petroleum> (Accessed March 9, 2021).

Refineries clearly deserve a high level of scrutiny to ensure a continued commitment to robust health and safety standards. Unfortunately, there are limits to what Federal and state authorities can do to adequately oversee worker safety in a refinery setting. The Federal Occupational Safety and Health Administration and its state counterpart MNOSHA are chronically underfunded and understaffed. A recent report by the National Employment Law Project (NELP) found that it would take OSHA more than 150 years to visit every workplace under its jurisdiction just once, and the agency has cut back on the number of inspections where the agency measured individual workers' levels of exposure to dangerous chemicals.¹³

The COVID-19 pandemic has put further demands on safety regulators, while limiting their ability to conduct workplace inspections.¹⁴ The high level of security at refineries also limits the usefulness of randomized inspections -- a pillar of workplace safety enforcement -- because the time required to clear security can remove the element of surprise. Finally, refineries are complex systems, so it can be difficult for workplace safety inspectors who lack specialized expertise to properly evaluate program compliance and safety hazards.¹⁵

Many refinery workers realize that they cannot count on OSHA to protect them, because the agency may only become aware of safety hazards after something bad has happened. While they could, in theory, report safety concerns directly to OSHA, many expressed fear that being identified as whistleblowers could jeopardize their jobs or even their careers. As a result, refinery workers must rely on facility owners to set and enforce strong safety standards.

Lack of strong worker safety oversight and challenges in reporting safety concerns are reasons why an in-depth analysis of first-hand worker accounts is critical. This report has sought to fill a gap in our understanding about safety practices at the St. Paul Park refinery. We found evidence of persistent safety problems and apparent disregard for safety standards by managers.

This report documents a long list of reported safety lapses, including apparent "near miss" events, since Marathon took over the facility in 2018. The list includes reports of chemical contamination, mistakes that workers say could have ignited volatile hydrocarbons, inadequate installation of safety controls for pipe repair operations, and use of poorly constructed scaffolding, among other hazards. The workers interviewed for this report tied many of these safety lapses to evident lack of training and experience on the part of contractors employed by Marathon to maintain the refinery, as well as management's apparent failure to prioritize safety over cost-cutting measures.

Areas of possible risk and documented examples of safety lapses are separated into categories below.

¹³ Deborah Berkowitz, "Workplace Safety Enforcement Continues to Decline in Trump Administration," National Employment Law Project, March 14, 2019. <https://www.nelp.org/publication/workplace-safety-enforcement-continues-decline-trump-administration/> (Accessed March 9, 2021).

¹⁴ Mike Hughlett and Joe Carlson, "Workplace COVID-19 complaints flood Minnesota safety inspectors," Star Tribune, February 8, 2021. <https://www.startribune.com/workplace-covid-19-complaints-flood-minnesota-safety-inspectors/600020351/> (Accessed April 2, 2021).

¹⁵ Insights based on interviews with two former refinery safety specialists.

CHEMICAL HAZARDS

Chemical agents are used in different aspects of refining including during processes of cracking, unification and alteration. The cracking process breaks larger hydrocarbons into smaller pieces. Unification combines smaller components into larger ones. And alteration rearranges various chemical components of raw crude oil into desired hydrocarbons. Refineries also dewax crude oil or “sweeten” it by removing sulfur, among other processes.

Chemical exposure is one of the most dangerous aspects of refinery work. Improper handling of chemicals or accidental releases of toxic chemicals can have serious or even deadly consequences for workers at a refinery or for surrounding communities. The Husky Refinery explosion brought new attention to an EPA analysis of the worst-case scenario for a hydrogen fluoride leak, which was the subject of an in-depth report by the Minneapolis Star Tribune.¹⁶ The reporters found, based on a 2017 EPA analysis, that the St. Paul Park refinery stored approximately 190,000 pounds of hydrogen fluoride.

Hydrogen fluoride is a toxic chemical used by some refineries in an isomerization process that produces high-octane gasoline.¹⁷ If hydrogen fluoride comes into contact with moisture, including skin tissue, it can immediately change to hydrofluoric (HF) acid. Exposure to hydrogen fluoride requires immediate medical attention. Hydrogen fluoride can cause blindness by rapidly destroying the cornea, and severely damage skin cells causing severe burns and skin ulcers.¹⁸ Inhaling a small amount can produce an irregular heartbeat or cause a fluid build-up in the lungs.¹⁹ Even limited exposure can be deadly.

The Star Tribune story described a scenario in which, “If the largest tank cracked open and released its contents within 10 minutes, and if the wind conditions were right, the hydrogen fluoride gas might form a ground-hugging cloud capable of traveling up to 19 miles before dispersing, putting 1.7 million people at risk, according to the worst-case scenario.”²⁰ Additionally, if a transfer hose failed, the Star Tribune reported that 5,700 pounds of hydrogen fluoride could escape in 19 minutes putting 1,400 people at risk—those living closest to the facility in St. Paul Park, Minnesota.

The Star Tribune investigation detailed safety concerns involving hydrogen fluoride at SPP, including an April 8, 2017 release of isobutane and a “trace amount” of hydrogen fluoride that resulted in five employees being sent to the hospital for examination. The reporters also cited a 2016 internal investigation involving the refinery’s hydrogen fluoride alkylation unit.²¹

16 McKinney and Hughlett, “Superior refinery fire.”

17 Speight, James G. *The refinery of the future*. Gulf Professional Publishing, 2020.

18 “Facts About Hydrogen Fluoride (Hydrofluoric Acid),” CDC, Accessed March 9, 2021, <https://emergency.cdc.gov/agent/hydrofluoricacid/basics/facts.asp#:~:text=Eye%20exposure%20to%20hydrogen%20fluoride,lingering%20narrowing%20of%20the%20esophagus>.

19 Ibid.

20 Ibid.

21 McKinney and Hughlett, “Superior refinery fire.”

In addition to hydrogen fluoride, aluminum hydrosilicate, bauxite, silica-alumina hydrofluoric acid, sulfuric acid, and zeolite are among the chemicals that are commonly used in the refining process.²² Many other volatile or toxic chemicals used by refineries have the potential to harm workers and surrounding communities. Exposure to some of these chemicals can cause immediate harm and require medical attention. The following table lists chemicals used in the refining process and describes potential consequences of exposure.

TABLE 2: COMMON REFINING CHEMICALS AND THEIR POTENTIAL HEALTH IMPACTS

Process ²³	Potential Chemical Exposure ²⁴	Common Health Concerns ²⁵
Solvent Extraction and Dewaxing	Phenol	Neurologic symptoms, muscle weakness, skin irritation.
	Furfural	Skin irritation
	Glycols	Central nervous system depression, weakness, irritation of the eyes, skin, nose, throat.
	Methyl ethyl ketone	Airway irritation, cough, dyspnea, pulmonary edema.
Thermal Cracking	Hydrogen sulfide	Irritation of the respiratory tract, headache, visual disturbances, eye pain.
	Carbon monoxide	Electrocardiogram changes, cyanosis, headache, weakness.
	Ammonia	Respiratory tract irritation, dyspnea, pulmonary edema, skin burns.
Catalytic Cracking	Hydrogen sulfide	Irritation of the respiratory tract, headache, visual disturbances, eye pain.
	Carbon monoxide	Electrocardiogram changes, cyanosis, headache, weakness.
	Phenol	Neurologic symptoms, muscle weakness, skin irritation.
	Ammonia	Respiratory tract irritation, dyspnea, pulmonary edema, skin burns.
	Mercaptan	Cyanosis and narcosis, irritation of the respiratory tract, skin, and eyes.
	Nickel carbonyl	Headache, teratogen, weakness, chest/abdominal pain, lung and nasal cancer.
Catalytic Reforming	Hydrogen sulfide	Irritation of the respiratory tract, headache, visual disturbances, eye pain.
	Benzene	Leukemia, nervous system effects, respiratory symptoms.
Isomerization	Hydrochloric acid	Skin damage, respiratory tract irritation, eye burns.
	Hydrogen chloride	Respiratory tract irritation, skin irritation, eye burns.

²² Kelland, "Production chemicals for the oil and gas industry."

²³ OSHA, "Technical Manual (OTM) - Section IV: Chapter 2." <https://www.osha.gov/otm/section-4-safety-hazards/chapter-2#dprhsc> (Accessed March 11, 2021).

²⁴ Ibid.

²⁵ CDC, "NIOSH Pocket Guide to Chemical Hazards (NPG) Search". <https://www.cdc.gov/niosh/npg/search.html> (Accessed March 17, 2021).

TABLE 2 (CONTINUED)

Process ²³	Potential Chemical Exposure ²⁴	Common Health Concerns ²⁵
Polymerization	Sodium hydroxide	Irritation of the mucous membranes, skin, pneumonitis.
	Phosphoric acid	Skin, eye, respiratory irritation.
Alkylation	Sulfuric acid	Eye and skin burns, pulmonary edema.
	Hydrofluoric acid	Bone changes, skin burns, respiratory tract damage.
Sweetening and Treating	Hydrogen sulfide	Irritation of the respiratory tract, headache, visual disturbances, eye pain.
	Sodium hydroxide	Irritation of the mucous membranes, skin, pneumonitis.
Unsaturated Gas Recovery	Monoethanolamine (MEA)	Drowsiness, irritation of the eyes, skin, and respiratory tract.
	Diethanolamine (DEA)	Corneal necrosis, skin burns, irritation of the eyes, nose, throat.
Amine Treatment	Monoethanolamine (MEA)	Drowsiness, irritation of the eyes, skin, and respiratory tract.
	Diethanolamine (DEA)	Corneal necrosis, skin burns, irritation of the eyes, nose, throat.
	Hydrogen sulfide	Irritation of the respiratory tract, headache, visual disturbances, eye pain.
	Carbon dioxide	Headache, dizziness, paresthesia, malaise, tachycardia.
Saturated Gas Extraction	Hydrogen sulfide	Irritation of the respiratory tract, headache, visual disturbances, eye pain.
	Carbon dioxide	Headache, dizziness, paresthesia, malaise, tachycardia.
	Diethanolamine	Corneal necrosis, skin burns, irritation of the eyes, nose, throat.
	Sodium hydroxide	Irritation of the mucous membranes, skin, pneumonitis.

Finding #3 – Workers interviewed provided multiple examples of hydrocarbon or other chemical releases that clearly occurred as a result of avoidable errors, potentially endangering refinery personnel and environmental resources. Examples included the accidental aerial dispersal of sodium hydroxide, failure to properly document chemical disposal, and hydrocarbon spills that were apparently so common that they earned the nicknames “snail trails” and “chemtrails” -- the latter in reference to contractor HydroChem.

Chemical exposure can occur as a result of operational errors, damage to tanks and containments, and improper handling or disposal practices. Proper storage of chemicals is also vital to prevent spills, leaks and fires. Workers interviewed shared multiple examples of accidental releases and apparent handling errors.

For example, on one occasion, HydroChem workers who clearly did not understand how to operate a vac truck reportedly spread sodium hydroxide across a section of the refinery where others were working, according to an experienced operator:

“I was working near a spent caustic tank. The HydroChem guys came to clean it up. They were supposed to vacuum the chemicals up, but instead they had the suction hose settings wrong. They ended up blowing the material they were trying to suck up. It was like a damn leaf blower. They were blowing sodium hydroxide (NaOH). They blew it on people and they blew it all over the area they were working in.”

A maintenance worker with two decades of refinery experience said he observed many safety lapses during recent turnarounds, including crews cleaning caustic tanks with leather gloves, which provide insufficient protection for handling caustic materials, as well as a worker who was clearly suffering from a caustic exposure.

Careful record-keeping and consistent use of written permits are practices that can help to prevent dangerous mistakes. But one operator explained that, in his experience, safety protocols were clearly ignored by both HydroChem and Marathon management when it came to disposal of hazardous chemicals.

“Throughout that 2019 turnaround HydroChem would arrive at the west side of the FCC with full tanks of supposed Sodium Hydroxide to offload into our spent caustic tank. The HydroChem employees were supposed to have a vac truck form (Waste Manifest Form) but routinely did not have the right forms. Marathon supervision continuously forced operators to go against safety [protocols] and offload the unknown chemical into our spent caustic tank.”

One complaint from both operators and maintenance personnel concerned the “chemtrails” or “snail trails” that they said HydroChem vac trucks left throughout the refinery. Several workers said HydroChem workers consistently fail to properly close vac truck valves resulting in frequent leaks. An operator observed that leaks were common enough that he heard HydroChem workers “jokingly call them chemtrails.”

An operator shared a story of a 2019 hydrocarbon spill. He explained that his team was called to deal with a leak that was headed toward the river. “We showed up and there was a 60-foot stream flowing down towards the river. Thankfully, not enough to go into [the] river, but enough to get in storm drains.” The operator said he later learned that the spill was a result of the HydroChem crew’s failure to properly seal the truck’s main tank.

“This was a truck full of hydrocarbons meant for disposal. They started by the contractor tents and did not verify that the plug to the main tank was in place. While the truck was parked, it leaked diesel type hydrocarbon down the hill towards the river. When they moved the truck they leaked waste oil across the refinery from Broadway to the north tank farm. This was an environmental nightmare, and it took over 14 hours to clean up.”

The problems described by workers included not only spills but also failed cleanup efforts that apparently threatened to contaminate water systems. One maintenance worker said he saw crews “hydroblasting a vessel that had caustic” and noted that “[y]ou can’t dump this stuff

down into the waste water.” Another worker described a series of mistakes and delays on a clean-up job.

“One time I was running a job in the CAT Unit. I was coordinating a tank cleaning of our Spent Caustic Tank. I did a Joint Jobsite Visit (JJV) with a foreman for HydroChem. In the JJV we discussed the chemical and hydrocarbon hazards associated with the removal of the product from the tank and ways to mitigate these hazards. After the JJV was completed I issued a permit to the foreman who told me his workers would be down within 30 minutes to start the work, they didn't show up for over 6 hours. Once they did show up they were completely unaware of the hazards with the job and did not have the correct personal protective equipment (PPE). I gave these contractors another JJV, they did not have the correct PPE so I found some chemical resistant PPE and gave it to them.

In my years of working at SPPR I have never seen this amount of confusion or lack of understanding of a job, so I decided to stay with the contractors to make sure things were done safely. The contractors ran hose from their vac truck to the tank to remove the spent caustic. I instructed the operator of the truck to put a vacuum on the truck, he was messing around for awhile then told me he and the other 2 workers that were with him just started and they did not know how to operate the truck. As [a] refinery operator you trust contractors to know their equipment prior to entering the refinery. I walked down the vac truck and noticed that it was not grounded, this was a huge safety issue due to the product they were vacuuming out has lighter end hydrocarbon that can [easily] ignite. At this point I raised my concerns to management, there had been many safety complaints against HydroChem already and I felt I was more white noise, the mentality around there I believe was to keep pushing forward as not to cost more time or money to the turnaround. The job continued and HydroChem fumbled through it.”

FIRE HAZARDS

Refineries move crude oil, refined petroleum products, and other chemicals through an extensive network of pipes and vessels, which require regular maintenance. Refinery operators and maintenance crews must follow strict protocols to keep hydrocarbons and other volatile chemicals separate from welding and other operations that could ignite a fire.

Finding #4 – Workers provided multiple examples of clearly unsafe work practices that created avoidable fire hazards, including apparent failures to properly handle flammable chemicals, improper installation of fire safety controls during maintenance, and attempts to use the wrong equipment for hazardous material cleanup which could have triggered a potential explosion according to witnesses. A worker at a Marathon refinery in Mandan, North Dakota also described a major fire hazard incident that apparently required an evacuation and use of multiple water cannons.

Unfortunately, interviews with operators and maintenance workers suggest that, too often, poorly-trained workers have failed to follow fire safety protocols or taken risky shortcuts. For example, one worker described how SWAT, a welding and piping contractor that has performed maintenance at SPP, apparently put maintenance workers and the facility at risk by failing to properly dispose of flammable materials in the vicinity of a welding job.

“SWAT replaced that bad spot of the flare line...finished their job packed up and left to be on their way... After looking at what we were going to need to do to finish their work, we noticed the SWAT employees just cut the oil lines out and left them on the scaffold. The pipes were just left laying on the scaffold, the ends of the pipe were not properly capped or bagged to prevent oil residue from inside the pipe to leak out. We ended up having to tape and bag the ends of the pipe, dispose of the pipe properly and have the ‘Green Team’ (company that handles spills) come out and clean up the oil and hazardous liquid before we could finish the welding job to prevent a fire.”

The safe maintenance of refinery piping and vessels also frequently requires the installation of metal discs known as blind flanges (“blinds”) to keep hydrocarbons and other chemicals from entering the segments that are being repaired. One maintenance worker described the critical importance of blinds in preventing a fire or explosion.

“Blinds act as a dam....These blinds can be thousands of feet from us. Hydrocarbons in the pipes we are working on can explode, causing serious injury or death for us and folks working in and around the facility.”

Maintenance workers shared troubling stories of issues with these critical safety components. One worker described a 2019 incident in which blinds and flanges were evidently installed by Starcon workers using the wrong components.

“After one of the turnarounds we were scheduled to pull blinds so the operators could put the piping back into service. Of course, we did not put the blinds in. Starcon put the blinds in before the turnaround started. The blinds were used during a regen, where they super heat the piping to burn all the scale off the inside of the pipe/vessel. When we went to pull the blinds, the pipe flange in place was a ring type joint flange....yet the blind flange and gasket used to seal was a regular flex gasket and raised face blind flange. Both were completely black, most likely from being overheated and burnt from not being sealed properly because the components they used were not appropriate.”

Piping was not the only potential fire hazard cited by workers. Multiple witnesses described instances where HydroChem crews brought the wrong truck to hazardous material cleanup jobs, risking a potential explosion according to one operator who shared the following example:

Last winter, about this time, we needed vac support to clean out tanks in the North Tank Farm. We were cleaning the towers as part of routine maintenance to replace filters within the tanks. When they showed up they had the wrong truck. They brought a truck for water

based clean up, not a truck appropriate for light ends (fuel gas) clean up...It was frustrating because HydroChem should have had accurate information about what vessel we were working on...In fact, the operator had a sheet that told him what truck one needs for what products and it was clear from that sheet that they brought the wrong truck.

We went to the HydroChem guys to tell them they needed to bring a different truck. My co-worker told the HydroChem crew at the blender building that the water clean up truck they had brought was not going to work for light ends clean up. He told the HydroChem guys that trying to use the vac truck for this job would likely cause an explosion. They seemed like they had no idea what was going on. They ultimately agreed not to use the truck they had brought and went to get a different truck.

A second witness corroborated the operator's account of the incident, calling it an "explosive situation". Sadly, the worker said this was not the only time they witnessed a HydroChem crew trying to use the wrong truck.

Another operator explained how HydroChem crews apparently started a fire by mishandling iron sulfide:

"As part of the refining process, these towers get build ups of iron sulfide. Iron sulfide can catch fire when exposed to air. You need to fill skids with water and cap them to prevent them from catching on fire. [HydroChem] would routinely leave the skid towers unfilled and opened through the middle of the night...One time I got called in to extinguish the fires in these towers in the middle of the night during the 2019 turnaround."

The most troubling story comes from Marathon's refinery in Mandan, North Dakota, where the refinery also replaced skilled local construction and maintenance workers with a largely out-of-state workforce in the fall of 2019. One worker described a harrowing late 2019 experience that he said required an evacuation and use of multiple water cannons.

"I'm out there working, and all of a sudden I hear sirens and see everybody running. Everyone got evacuated and they had water cannons going. It was a scary fucking deal.

Someone told me later there was a plastic gasket that never got swapped out on a heated line, and when it melted the product shot all over the place. They said we were maybe 10 or 15 minutes from the whole refinery blowing up.

It's bad what's happening out there. Morale is awful. A lot of guys who have been there for years are quitting or retiring."

LACK OF TRAINING AND EXPERIENCE

Finding #5 – Witness accounts indicate an obvious lack of experience and training on the part of replacement workers brought into the facility after Marathon began removing local maintenance contractors. For example, one witness encountered replacement workers that clearly did not know how to operate breathing apparatus or refinery fire hydrants, while another found a group of workers apparently trying to figure out how to operate their vac truck by watching a YouTube video.

Along with the failure to properly handle dangerous chemicals, workers interviewed for this report frequently cited examples of poorly trained non-union workers using incorrect PPE or not knowing how to properly use safety equipment. For example, Matt Foss, a 22-year veteran operator who works as a behavioral safety specialist and a fire lieutenant at SPP, has testified publicly about the troubling lack of knowledge among non-union subcontracted workers about how to wear and use oxygen tanks and breathing apparatus.²⁶

Foss explained that many HydroChem workers with whom he interacted clearly did not know how to properly don and activate oxygen tanks -- an essential piece of safety equipment for workers operating in confined spaces and areas where they could be exposed to gas leaks. Foss believes that knowing when and how to use portable oxygen is essential information for working safely within a refinery.

Unfortunately, Foss indicated that, in his experience, HydroChem workers rarely knew how to properly use the equipment. He described their evident lack of safety training around how to use fire hydrants and inability to properly use critical compressed air PPE equipment as “breathtaking”. Another operator described having to explain the operation of a Minnesota fire hydrant to multiple workers, but found it to be a fruitless exercise due to high workforce turnover.

A third operator reported that HydroChem personnel clearly lacked adequate training in the use of vacuum trucks, which resulted in crews repeatedly bringing the wrong trucks, avoidable safety incidents, and cleanup delays. The operator suggested that his suspicions about the lack of training were confirmed after encountering “a group of HydroChem workers (3 or 4 guys) watching a YouTube video about how to run a vac truck.” He observed that:

“You are supposed to have certification proving you knew which trucks to use for which jobs, but I don’t think the HydroChem guys really knew one from another. There are a number of different trucks and even today, two years after that first disastrous turnaround in 2019, the HydroChem guys still end up grabbing the wrong truck.”

A maintenance worker described another incident where a HydroChem crew evidently failed to use a spotter when backing up a vac truck and hit an I-beam hard enough that the beam

²⁶ Matt Foss legislative testimony: <https://www.house.leg.state.mn.us/hjvid/92/893608>.

had to be repaired. This was one of several occasions where workers interviewed reported crews backing up trucks without use of spotters -- a basic safety practice that not only protects equipment and structures, but even more importantly, prevents workers from being struck or run over.

“The refinery has a rule of...backing up any vehicle inside of a unit/tank farm area, you need a spotter to back up to ensure you don't run into anything. But of course, in this instance both of the [HydroChem] workers were inside the cab of the vehicle so no spotter was being used. There was also enough damage to the I beam that the unit operator had to put in a request to have the I beam repaired/replaced.”

Another maintenance worker described a HydroChem crew with whom he spoke as “clueless.” “I asked what unit are you working in? Not one of the guys knew... If you are in an evacuation, you have to know what unit you are in. I was totally blown away.”

UNSAFE WORKING CONDITIONS

Finding #6 – Witnesses provided examples of workers reportedly being assigned to work under potentially hazardous conditions, even after safety concerns had been raised. These included workers assigned to work on scaffolding that multiple individuals with scaffold-building experience deemed to be unsafe; and an incident in which a union crew asked for supplied air, and instead a nonunion crew was sent in to do the work.

Scaffolding construction is a common and essential part of work at a refinery. Scaffolding provides temporary platforms that allow workers to work at heights and reach difficult-to-access portions of the refinery such as tanks and towers that require frequent maintenance. A properly-built scaffold should be stable under approved loads, and provide a safe work space. Poorly-built scaffolding can expose workers to avoidable fall hazards, and in the worst case buckle or collapse, potentially endangering not only workers but also critical refinery equipment and systems.

Scaffolding is among the safety concerns cited most frequently by the maintenance workers interviewed. Several described examples where crews were expected to work on questionable scaffolding, even when contractor representatives or workers with scaffold experience indicated that the structures were apparently unsafe. Witnesses reported that, when a contractor that had been asked to review the condition of the scaffold refused to sign off, someone else was brought in to render a different opinion. In the words of one maintenance worker,

“Starcon had been in charge of building the scaffolding. Boldt got called in to inspect, certify and tag the scaffolding. They refused to certify the scaffold because they argued it was poorly constructed and unsafe... We had union guys telling us not to go on. The scaffold never got fixed. We just had to use it and be extra careful.”

Despite repeatedly raising concerns and flagging safety hazards, maintenance workers said they were asked to continue to work on the scaffolding. Another worker described a separate 2019 incident where they “personally witnessed clear inconsistencies and problems” with scaffolding built by Starcon:

“The scaffolding I observed was not properly braced with cross diagonal braces. A very large multi deck scaffolding had been tied back (anchored) to unapproved points such as ladder brackets. One scaffold that comes to mind was suspended in a pipe rack and one anchor point was a piece of angle iron used to run conduit... These are things any trained and certified, competent scaffold builder would know is 100% not safe. The scaffold could have failed if overloaded with materials, tooling or employees... As soon as I observed issues with the scaffolding, I asked a colleague from Boldt Construction, who had extensive experience in scaffold construction, to review the scaffolding. He flagged extensive issues and raised serious safety concerns, but there was little we could do.”

A maintenance worker described another incident in which a crew was assigned to install blinds in a system that was being purged with nitrogen. The union crew requested supplied air based on the facility’s safety protocols. Instead, however, the work was reportedly reassigned to Starcon, potentially putting the company’s workers at risk in the event of a nitrogen leak.

“Under Marathon’s safe work procedures it states that for any vessel or piping that is being purged with nitrogen all blinds need to be installed under supplied air. We were asked to perform some work without using fresh air equipment. We declined and stated why. So instead of taking the time to set up the work to do it safely they just had Starcon do it without fresh air equipment.”

Finding #7 – Workers indicated that management evidently bent rules or ignored safety policies and best practices in apparent efforts to cut costs or accommodate problem contractors. Workers cited examples ranging from operators being required to allow crews to dump unknown chemicals into tanks, to work evidently being performed without adequate safety plans in place.

In previous sections, this report provides numerous examples in which workers indicated that Marathon failed to follow or enforce the company’s own safety protocols and procedures -- examples ranging from allegedly allowing a contractor to dump potentially unknown chemicals without the proper manifests, to having crews work on what was evidently poorly-constructed scaffolding or in a potentially hazardous environment without supplied air.

In the view of many workers interviewed, there were two standards at SPP: one for responsible contractors who were expected to comply with the facility’s safety policies, and a second for problem contractors where management “turned a blind eye” to noncompliance, in the words of one maintenance worker. Beyond problems described above, workers indicated that management was made aware of repeated failures by problem contractors to meet basic safety

requirements, such as the development and consistent implementation of approved safety plans; ensuring that workers received required safety training; and timely injury reporting.

For example, one worker shared a story of a serious injury that was apparently not reported to Marathon until nearly a week after it occurred, and only after it seemingly became impossible to conceal. Another reported that a contractor was put to work on a project without a clear safety plan, which “didn’t feel like a safe situation.” A third indicated that on various occasions work was evidently performed without the right facility work permits.

Even after dozens of problems had been identified and brought to the attention of management, according to workers interviewed, problem contractors like HydroChem continued to operate at SPP, in some cases repeating the same safety mistakes.

ENVIRONMENTAL VIOLATIONS

Refineries typically emit sulphur dioxide (SO₂), nitrogen oxide (NO₂), carbon monoxide, hydrogen fluoride, carbon dioxide, methane and other gases. The Environmental Protection Agency (EPA) and the Minnesota Pollution Control Agency (MPCA) closely monitor emissions levels at the SPP and Pine Bend refineries to minimize emissions levels. These agencies rely on monitoring devices, such as flare tip analyzers to measure emissions from flare stacks, inspections and voluntary reporting.

Flare stacks are one of the main sources of emissions at a refinery. Flare stacks are used to burn off flammable gases that are often released as the result of unplanned pressuring of plant equipment. Flare stacks are often used during shutdowns or turnarounds for the planned combustion of excess gases.

IMAGE 3: REFINERY FLARE STACK²⁷



Over the last five years the St. Paul Park refinery has faced over \$700,000 in penalties for violations of the Clean Air Act.²⁸ In contrast, Flint Hills Refinery has not been fined for violations of EPA standards over the same time period, based on a review of publicly available records, despite operating a facility that is capable of processing roughly three times as much crude oil.

²⁷ Reuters photo: <https://www.voanews.com/americas/mexican-senate-finalizes-historic-reforms-oil-sector> (Accessed April 12, 2021).

²⁸ A correction was made to this sentence on 05/02/2021 to clarify attribution for Clean Air Act violations. The St. Paul Park refinery has faced multiple penalties for violations over the last five years. The largest penalties for violations were assessed approximately one month before Marathon took over ownership of the facility in October 2018. The Civil Enforcement Case Report is available here: <https://echo.epa.gov/enforcement-case-report?id=05-2018-5025>.

TABLE 3: EPA ENFORCEMENT

EPA Enforcement and Compliance Summary						
St. Paul Park Refinery²⁹						
Statute	Inspections (5 years)	Date of Last Inspection	Compliance Status	Informal Enforcement Actions (5 years)	Formal Enforcement Actions (5 years)	Penalties from Formal Enforcement Actions (5 years)
Clean Air Act (CAA) ³⁰	2	09/03/2020	No Violation Identified	2	4	\$730,100
Clean Water Act (CWA)	4	04/11/2018	Violation Identified	-	-	-
Resource Conservation and Recovery Act (RCRA)	1	12/11/2019	No Violation Identified	1	-	-
Flint Hills Resources³¹						
Statute	Inspections (5 years)	Date of Last Inspection	Compliance Status	Informal Enforcement Actions (5 years)	Formal Enforcement Actions (5 years)	Penalties from Formal Enforcement Actions (5 years)
CAA	3	09/23/2020	No Violation Identified	1	-	-
CWA	1	05/08/2018	No Violation Identified	-	-	-
RCRA	3	09/13/2019	No Violation Identified	-	-	-

29 Enforcement data available here: <https://echo.epa.gov/detailed-facility-report?fid=110043813816#history110043813816>. This table was corrected and updated on 05/02/2021.

30 A full list of formal and informal actions and associated penalties are available in the following Detailed Facility Report: <https://echo.epa.gov/detailed-facility-report?fid=110043813816#history110043813816>.

31 Enforcement data available here: <https://echo.epa.gov/detailed-facility-report?fid=110000424611>.

CONCLUSION

Maintaining high safety standards at a refinery is vital to the health and safety of refinery workers and surrounding communities. A seemingly minor mistake can have serious consequences for workers and even nearby communities.

This report has documented Marathon's apparent failure to prioritize worker safety. Instead the company has evidently sought to boost short-term profits by cutting critical health and safety programs, reducing staffing levels, and replacing skilled local workers with traveling workers from Texas and Louisiana that are evidently poorly-trained and poorly-paid.

The drive for profits over safety is putting workers and the community at unnecessary risk. It is also potentially putting shareholders at risk. The accident that occurred at the Husky Refinery in 2018, cost owner Husky Energy an estimated \$27 million,³² and will set the company back hundreds of millions of dollars in lost production and rebuilding costs.³³

The failure to maintain a strong commitment to safety and to invest in properly trained workers could cause a similar disaster at the St. Paul Park facility, where the potential for disaster is greater due to its location in a heavily populated area. As with the Husky facility, an explosion could lead to a hydrogen fluoride leak, creating the potential for substantial liability.

The good news is that there is a better way. Marathon can restore cuts to safety programs, return to a reliance on skilled local workforce, and end the lockout. The company can also go further by instituting industry best practices in the areas of safety and responsible contracting, including increased utilization of workers trained through registered apprenticeship programs.

The following are steps that Marathon should take before it's too late:

1. End the current lockout, and bring the trained and experienced professionals represented by Teamsters Local 120 back into the refinery.
2. Fully fund the refinery's fire department and Health, Safety and Environmental unit, and restore staff positions that were eliminated after Marathon assumed control of the facility.
3. Return to the use of a local skilled maintenance workforce, including bringing back union workers with years, or in some cases decades, of experience at the refinery.
4. Conduct a full investigation into safety concerns, revamp existing safety policies, and strengthen enforcement to ensure that workers cannot be placed in harm's way on unsafe scaffolding, in a low-oxygen environment, or due to a lack of training and experience on the part of other workers, among other potential hazards.

³² Hockman, "Husky Energy says damages from fire, explosion will cost \$27 million."

³³ Danielle Kaeding, "Superior Refinery Rebuild Costs Nearly Double," Wisconsin Public Radio, March 2, 2020. <https://www.wpr.org/superior-refinery-rebuild-costs-nearly-double> (Accessed March 8, 2021).

5. Adopt a company-wide Responsible Contractor Policy that comprehensively applies affirmative performance, responsibility, and safety standards across the company's operations, including minimum contractor requirements and a preference for contractors that employ best-practices in the areas of environmental protection, past performance and qualifications, worker and public safety, whistleblower protection, workforce practices, legal compliance, and general ethical conduct. Large infrastructure and private equity funds have adopted such policies in recent years to minimize risks posed by use of non-responsible contractors, especially in industrial settings.

Federal and state officials also have a role to play. Workers have described troubling safety practices and lapses that could endanger the public. Minnesota's Department of Labor and Industry, Department of Public Safety and Pollution Control Agency should take steps to ensure that workers, local communities, and the environment are protected from chemical contamination, explosion, fires, and other potential hazards that could result from a lack of adequate training and experience, or a lack of appropriate safety oversight. ■

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