Wayne Nastri
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Dear Mr. Nastri,

The South Coast Air Quality Management District (SCAQMD) is a forward thinking, progressive organization. At a recent conference the SCAQMD provided an excellent opportunity to learn more about portable air monitoring and the application of this monitoring to improve air quality. Speakers at the conference suggested that the SCAQMD was moving forward to a new future. The SCAQMD is currently facing the challenge to take forwarding thinking steps to end the use of Hydrogen Fluoride at the Valero Energy and PBF Energy facilities.

Consideration of this important work has as its backdrop a grim reality; hydrofluoric acid is an extremely dangerous, life threatening chemical. Many may not completely understand that Hydrogen Fluoride (HF) differs from other acids commonly used in industry. The HF fluoride ion readily penetrates the skin, causing destruction of deep tissue layers including bone. The effect on the human body is catastrophic and may cause death from heart failure. Tissue destruction may continue for days and result in limb loss or death. Deaths have occurred from exposure to concentrated acid burns involving as little as 2.5% of the body service area. The Hydrogen Fluoride molecule is so mobile that it can easily pass through the skin. Because Fluorine has an extremely high affinity for calcium, bones will be attacked. There are several worker death case studies that demonstrate that death from exposure to the chemical can occur in less than 24 hours. In addition, proper emergency medical treatment may not be completely understood or readily available.

The SCAQMD has acknowledged there are no zero risk alternatives that facilitate the continued use of HF. The Federal Chemical Safety Board has not backed away from their conclusion that the February 2015 explosion at the Torrance Refinery was a near miss; the explosion could have resulted in a catastrophic release of HF.

We ask that the SCAQMD remain resolute in demanding the discontinued use of hydrogen fluoride at the two Los Angeles refineries that still use this dangerous chemical. The SCAQMD must require the use of more advanced technologies using less dangerous chemicals and processes. We ask that you do not bend to the arguments made by refinery personnel, their attorneys and the lobbyists paid to get what the refineries want. Torrance and Harbor Gateway community residents and businesses deserve a zero risk solution to the HF issue. This solution must be found through an open public process and must be implemented before another accident at the refinery impacts health and safety.

The workgroup meetings on Rule 1410 have included presentations demonstrating there are alternatives to HF. These include the ISOALKY (tm) Technology. Chevron is retrofitting their Salt Lake City HF Alkylation Plant with this technology. The construction of this unit started in 2017. Commercial operation of the unit is planned for 2020. When the new unit is operational the HF inventory will be removed and disposed. Demolition of the HF equipment will occur after the successful start up. Their presentation was comprehensive and impressive. It would encourage the use of Chevron products in preference to other petroleum products.

The workgroup's September meeting included a presentation on the Du Pont Conv Ex technology. This presentation included information on reducing costs for a conversion to a sulfuric acid alkylation unit. This would be accomplished by using as much of the existing equipment as possible. The Du Pont system also includes the option of the use of a sulfuric acid recycling process to reduce transportation and sulfuric acid costs.

Rule 1410 work group representatives apparently representing the two refineries advocate for a minimal action approach. They make their arguments time and time again. Their arguments include:

- It's too expensive to do anything, people will have to pay more for gas during the time needed to replace HF use with a safer alternative California petroleum supplies will be more limited. While the 1410 workgroup has reviewed viable and much safer alternatives to the continued use of the chemical the refineries; it does not appear that the refineries are willing to consider these alternatives.

- The refineries argue that the SCAQMD should solely consider legitimate scientific or technical facts. They argue that the phase out of HF is not scientifically or technically justified. It is difficult to view this argument as legitimate. The health impact of the chemical is a scientific fact. The Chemical Safety Board has never backed away from their position regarding a near miss of a catastrophic accident as a result of the 2015 explosion at the Torrance Refinery. **The absence of a zero risk alternative is unquestionable.**

- The refineries also argue that community members are irrational and emotional. Community members continue to make legitimate and rational comments regarding the dangers of HF. The comments are based, not on irrational emotions but on indisputable information on the extreme health risks associated with the continued use of HF placing refinery workers and community members at unacceptable risk. The September 2017 letter from the Torrance refinery is replete with emotion. They are "severely disappointed that the SCAQMD is pulling this requirement from thin air." A particularly inadequate argument alleges that this requirement is being imposed on only two refineries. Of course this is because the two refineries are the only ones using HF.

The refineries argue that the safety measures in place are adequate and extensive. We appreciate the work the SCAQMD has done in evaluating the safety measures and the proposal to require more. This work is certainly needed and important.

It must be recognized however that some of the safety measures in place at the Torrance Refinery failed during the February 2015 explosion. The refineries argue that there has never been an HF accident. This point must be counter balanced by the US Chemical Safety Board determination of a near miss of a catastrophic release of HF as a result of the February 2015 explosion. The explosion was caused by the use of outdated and faulty equipment seriously exceeding its operating life. The explosion destroyed the refinery's air pollution control equipment.

It is ironic that the USEPA began doing indoor vapor intrusion testing in the Del Amo community on the day the explosion occurred. A businessman living in the Del Amo Community incurred expensive repairs when the windows in his shop blew out as a result of a refinery explosion in 1988 that caused the death of a young woman driving by the refinery. Accidents could be characterized as a way of life at the Torrance refinery. The SCAQMD has determined that the Torrance refinery emergency flaring significantly exceeds flaring incidents at all other Los Angeles refineries by a significant margin. There have been a number of fires and other emergencies at the Torrance refinery.

1994: A gas explosion ripped through Mobil's Torrance refinery, sending flames 40 feet into the air and injuring at least 28 people, at least six seriously. An elevated pipe carrying liquid petroleum gas apparently sprang a leak, releasing flammable vapor into the air that exploded within moments. The resulting fire burned for about half an hour before it was extinguished by Torrance firefighters and Mobil fire crews.

1988: One person was killed and nine others injured in a massive blast at Mobil's Torrance refinery. Some of the injured suffered serious burns. The case resulted in a criminal investigation.

The USEPA evaluation of the Torrance Refinery's Risk Management and Preparedness Program identified several significant deficiencies. These deficiencies could have resulted in a failure to adequately respond to even a small emergency. It is also interesting to note that the California Environmental Protection Agency, Department of Toxic Substances Control cited the Torrance refinery with the illegal storage of a large volume of hazardous waste during their inspection.

Government regulatory and safety requirements depend on compliance. When compliance is not achieved estimates of safety are undermined.

Community members are not unreasonable to demand a zero risk scenario at both refineries. Why should community members shoulder anything less? Zero risk is not guaranteed without a ban on HF. Additional safety measures will not guarantee zero community risk. While enhancement of safety measures at the two refineries certainly makes sense the enhancement

will not do enough to achieve an elimination of the risks. Perhaps other options should be considered. They are:

1) Tanks and unloading areas could be placed in pressurized buildings with safeguards to prevent a release outside the buildings.

2) Tanks could be placed underground in an environment where risks of an above ground release were eliminated.

The risk of an accident that could injure or kill large numbers of people living and working in the areas surrounding the two refineries eliminates the option of not doing more to reduce this risk. Would anyone working at the refineries or the government organizations charged with the responsibility to protect public health want to live with the consequences of a catastrophic accident? A transportation or onsite accident could occur at any time. The safeguards in place will not prevent a catastrophic release from an earthquake or other natural disaster. Do any of us really understand or fully appreciate what could happen?

We are all deeply saddened by the extent of damage caused by recent fires and hurricanes. No one in LA would deny the potential for "the big one" something we are told is almost certain.

Sometimes it is difficult for community members to truly participate in and influence the decision making of any government organization. The SCAQMD offers generous opportunity for public comment and in offering opportunities for participation. But community members often do not fully understand highly technical information being offered for consideration. They aren't being paid to attend the many meetings associated with SCAQMD rule making. But their comments must be weighed carefully by the SCAQMD because their lives and welfare are at stake. Community representatives on the Rule 1410 workgroup have diligently attended the meetings and have actively participated in the discussions. Many of the community members are well educated and have extensive knowledge and experience. Community comments and concerns must be fully considered.

There is one scientific and technically correct reality that is minimized by the refineries and the organizations arguing for the continued use of this chemical. Hydrogen fluoride is an extremely dangerous chemical capable of causing a high number of injuries and deaths in an accidental release. The systems in place at the refineries to detect and minimize the impact of a release are only effective if they are operational and capable of eliminating an offsite release. In a catastrophic accident or a natural disaster they will not be effective. A review of case studies prepared by industrial safety professionals reveals that workers exposed to HF cause by spills of even small quantities of the material died from this exposure within 24 hours. They include a trash truck worker who died when a small vile of HF in the trash broke open and spilled on him.

Do any of the people making the too expensive argument live in the communities near the Torrance Refinery? The argument that the gas prices will go up must be weighed against the

concerns of community members who have much to lose if there is a release of HF at the Torrance Refinery.

The Del Amo Action Committee is encouraged by the direction the SCAQMD is taking to enhance safety measures at refineries using hydrogen fluoride. It is our understanding that SCAQMD's ultimate goal is to eliminate the use of this dangerous chemical at any of the refineries in the SCAQMD's jurisdiction. The elimination of this hazardous chemical should be achieved in the shortest time frame possible. It is our understanding that the enhanced safety measures are needed because the phase out of the use of this chemical at the refineries will take time. It is important not to forget that this is the second time the SCAQMD has considered a rule to require the refineries to replace HF. In the early nineties the SCAQMD Board voted 11-1 to require the refineries to replace the dangerous chemical.

It is our position that leadership of an organization establishes its culture, priorities and actions. The priority of a refinery is to produce as much refined oil as possible. While other priorities may be defended to regulatory agencies and the public, the executive management of a refinery is judged in large part by the amount of oil produced at the lowest cost. This axiom is reinforced by the circumstances that caused the February 2015 Torrance Refinery explosion.

US Chemical Safety Board Report

Many of the comments in this correspondence are taken from the US Chemical Safety Board final report. The US Chemical Safety Board did not alter their belief that the 2015 explosion at the refinery was a near miss due to the possible rupture of two large HF tanks near the explosion and the risk of falling equipment damaging the tanks. We will also review information prepared for the United Steel Workers Union. The final Safety Board report acknowledged limitations in evaluating safety measure for HF. The report could not analyze whether the safeguards in place at the refinery could prevent a potential release of HF because Exxon/Mobil refused to provide the safety equipment information needed for this evaluation. This issue is now being handled by the US Department of Justice. The CSB report also concluded that leading to the incident, multiple safeguards had failed.

Unfortunately accidents at the Torrance refinery continue. The CSB report provides a list of additional Torrance Refinery Incidents since the February 2015 explosion. Three of them occurred after the refinery changed ownership.

On November 15, 2016 a fire occurred while work was being conducted on a portion of the refinery flare system in the alkylation unit. On February 1, 2017 a fire occurred in the Torrance refinery tank farm. On February 18, 2018 a pump related fire occurred in the crude unit.

The US Chemical Safety Board has extensive expertise and knowledge of safe refinery operations. We rely on their review of the circumstances that lead up to the February 2015 explosion and their refinery and worker safety recommendations.

They identified four issues. 1) Lack of refinery safe operating limits and operating procedures. 2) Ineffectiveness of Safeguards. 3) The failure of the refinery to replace equipment operating beyond the equipment's safe operating life. 4) The Re-use of a procedural variance without sufficient hazard analysis.

The CSB report provides the following recommendations:

1. Ensure all refinery safety-critical equipment can effectively perform its safety-critical function.
2. Ensure procedure deviations are analyzed for safety by a diverse, experienced team prior to their approval and implementation.
3. Ensure refinery Electro Static Preceptors (ESP) are assessed for potential sitting risks and are designed with safeguards to prevent major consequences of an ESP explosion.
4. Ensure the lessons learned from this incident are learned broadly throughout the refinery industry.

The February 2015 explosion could have resulted in extensive injury and loss of life at the refinery and in the surrounding community. Some of the circumstances that prevented greater harm include:

The scaffolding surrounding the HF tanks may have protected the tanks from damage from debris from the ESP unit. Tanks on the other side of the ESP unit were significantly damage from falling debris. What work was being done on the equipment surrounding the HF tanks that required scaffolding? It would be interesting to know more about that work. Were the HF tanks moved to another location before the explosion? The CSB report indicates that the explosion caused more damaged because the ESP unit was located in close proximity to other refinery equipment and the HF tanks. The report indicates that explosions in the ESP unit are an ongoing hazard at refineries.

On the day of the explosion at 8:07 AM, a maintenance supervisor working in the FCC unit received an alarm on his personal hydrogen sulfide (H2S) monitor; an alarm indicated that hydrocarbons were likely leaking from an unanticipated location. Refinery personnel, however, continued working near the expander until 8:40 am when the H2S monitors on multiple workers around the expander registered an alarm. This resulted in the workers leaving the area. Had they stayed in the area they might have been killed or seriously injured in the explosion. Debris also fell on a building frequently used by operators; fortunately the building was not occupied at the time of the explosion.

Sadly workers are often at greatest risk. A Princeton University Study identified OSHA records as reflecting the greatest number of HF-related fatalities. The study indicates that while limited, the OSHA records suggest that some victims did not receive appropriate medical care, nor was the regional poison center contacted regarding care. The study recommends that the full extent of health problems related to HF could be better quantified if usual surveillance sources, such as vital records, included a unique coding for this acid. The CSB report identifies

HF as a highly toxic chemical that can seriously injure or cause death at a concentration of 30 ppm.

United Steel Workers Report

The report; A Risk Too Great, Hydrofluoric Acid in US Refineries, April 2013 prepared for the United Steelworkers through the Tony Mazzocchi Center. USW report includes the findings of a survey they conducted. Following is a quote from the report:

> The results are shocking. Over a five-year period, the refineries in the study experienced 131 HF releases or near misses and committed hundreds of violations of the OSHA rule regulating highly hazardous operations. Most alarming, for a risk that demands very effective controls, the vast majority of refineries did not reach that level.
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> Fortunately, HF alkylation can be entirely eliminated. The industry has the technology and expertise. It certainly has the money. It lacks only the will. And if it cannot find the will voluntarily, it must be forced by government action.
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> This is truly a risk too great.

The report also includes recommendations:

1. Educate Workers and the Public About the Dangers of HF.
2. Investigate Safer Alternatives to HF.
3. Commit to ending HF use and replacing all HF using units with safer alternatives.
4. Pilot Test Alternative Solutions.
5. Share Lessons to Speed Effective Transition. Share lessons learned from these pilot operations across the industry with workers, their unions and with surrounding communities. The entire industry is needed to help move development of these alternatives forward across U.S. refining.
6. Make Existing Operations Much Safer Until HF alkylation processes are replaced: Work with workers and their unions and apply all necessary corporate resources to ensure that all alkylation unit process and mitigation systems are in optimal working order, regularly inspected and tested, and subjected to rigorous audits and preventative maintenance.
7. Make sure refinery staffing is adequate to do this important work.

The report concludes that the potential impact of a large-scale HF release in a heavily populated area is so great that it may be impossible for any refiner or community to be fully prepared. Even highly effective systems sometimes fail. It would take multiple failures to trigger a major release, but the lesson of catastrophic accidents can occur and the risks are too great.

The following quote from the report is persuasive.

> *Yet it should not take compulsion for the industry to do the right thing. Company profits may vary, but overall the oil companies are the richest in the history of the world. They maintain large research operations. An industry that can design and operate equipment*

to drill five miles into the earth under more than a mile of seawater can surely design and operate safe alkylation units. All that is lacking is the will.

Please ban the use of HF at the refineries and do it in the shortest time possible.

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Del Amo Action Committee

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