Presentation Regarding EPA's Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act; Safer Communities by Chemical Accident Prevention, Docket No. EPA-HQ-OLEM 2022 0174

October 30, 2023

American Fuel & Petrochemical Manufacturers

American Petroleum Institute

Who We Are

We represent and promote the interests of the entire United States petroleum and chemical manufacturing industries.

- Our members are committed to providing a safe work environment for its employees, contractors, and the community. The industries we represent are leaders in safety and are always looking for opportunities to continuously improve and reduce risks.
- As a result of this commitment, the refining and chemical industries continuously have some of the lowest OSHA recordable rate in the entire manufacturing sector according to the Bureau of Labor Statistics (BLS).

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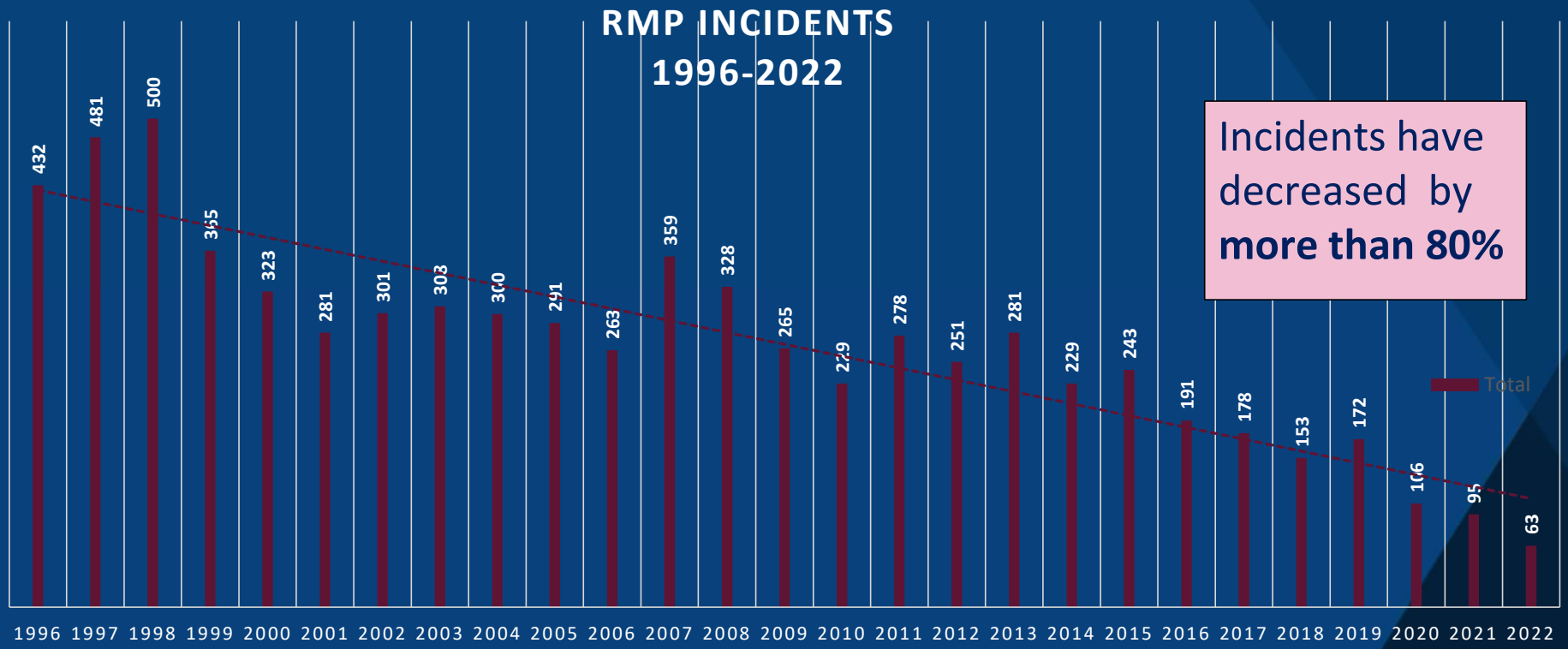
Our Record



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The RPM/STAA Proposal Targets Refineries with Hydrofluoric Acid

- EPA's September 2023 presentation on the Final Rule for the Risk Management Program, *Safer Communities by Chemical Accident Prevention,* states that safer technologies and alternatives analysis (STAA) applies *only* to chemical manufacturing and refineries.
  - EPA is targeting NAICS 324 facilities (refineries) with hydrofluoric acid (HF) alkylation processes and NAICS 325 (chemical) and 324 facilities within 1 mile of each other
- The Proposal is unwarranted, prohibitively expensive, and will not improve safety.
  - RMP should remain performance based.

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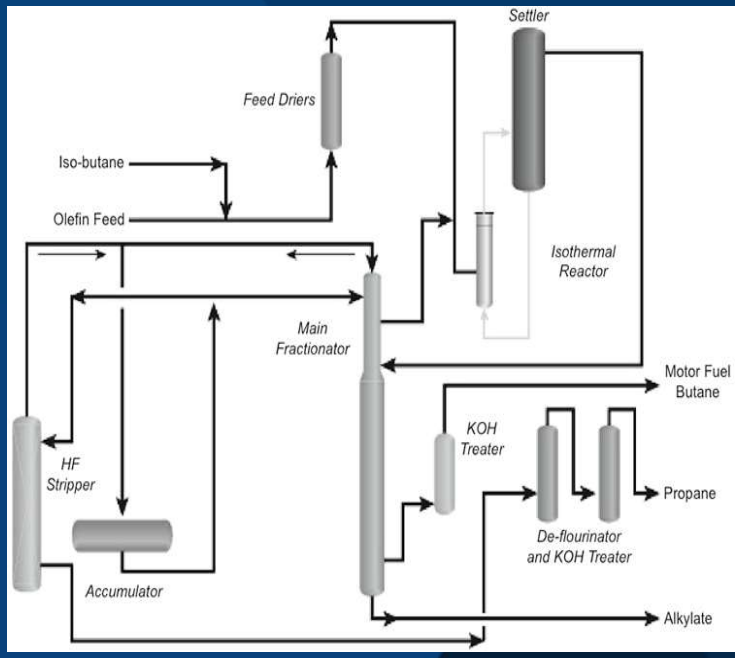
What is Hydrofluoric Acid and Where is it Used?

- Hydrofluoric acid (HF) is used in refineries as a catalyst in the alkylation process to form alkylate.
  - Alkylate is ideal blend stock for gasoline to meet clean fuel regulations and to reduce emissions.
- Approximately 42 of the 129 refineries (32%) in the U.S. use HF acid in their alkylation unit, totaling 42% of U.S. refining capacity. However, only 2% of HF acid in the U.S. is used in refinery alkylation.
- HF alkylation is not interchangeable with other refinery process technologies.
  - Moving away from HF acid as a catalyst would cost up to $800 million to rebuild a single new unit and decommission the existing unit.



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Environmental Advantages of HF

- Gasoline with the most stringent environmental specification, such as California Reformulated Gasoline Blendstock for Oxygenate Blending (CARBOB) require alkylate.
  - Alkylate has high-octane (92-97 RON) and low Reid Vapor Pressure.
  - Alkylate's low sulfur and benzene content helps reduce vehicle emissions.
- Although EPA proposed three alternatives, only sulfuric acid alkylation is a proven viable alternative to produce alkylate. However, HF alkylation technology is not interchangeable with sulfuric acid alkylation technologies.
  - A facility will have to demolish an HF unit and build a sulfuric acid process unit
  - Sulfuric acid requires refrigeration and produces SO_2/SO_3 emissions.
  - Aggregate risks between sulfuric acid and HF alkylation are equal given safety and mitigation measures.

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HF Safety Programs

- HF has been safely used in refineries since World War II.
- There have been few HF releases, with no off-site fatalities.
- Since 1992, refineries with HF alkylation units followed API RP 751
  - RP 751, recognized by OSHA and CSB, is the most rigorous and exhaustive standard for HF management in existence. Considered RAGAGEP by OSHA.
  - RP 751 provides guidance on incident prevention, detection, and containment applicable and adaptable for every refinery with an HF unit.
- RP 751 requires multiple levels of mitigation technologies and emergency procedures that keep the acid contained and thus people safe.

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Why Existing Programs are Effective

- EPA's proposal diverts facility and team resources from existing, well-established, accident prevention initiatives and will be counterproductive to safety.
  - The Process Hazard Analysis (PHA) process addresses HF safety.
- On-going PHA studies, other risk assessments, and 3-year HF alkylation unit audits have identified improvement opportunities based on current technologies and industry knowledge that led to safer HF alkylation processes.

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Why Applying STAA is Unjustified

- EPA lacks authority over covered process design and imposing inherently safer technology.
- EPA previously acknowledged no risk reduction from mandating STAA, finding states with STAA-like programs had higher accident rates.
    - EPA ignored HF alkylation safety performance and overstated risks.
- EPA failed to identify viable alternatives.
- Infeasibility of STAA to HF alkylation units
    - Alternative technologies are not feasible after a unit is operational.
    - New technology cannot be applied without restructuring units and potentially reconfiguring and re-building entire sections of the facility.
- The Proposed Rule is not cost-justified.
- The compliance deadline to implement STAA within three years disrupts PHA cycles.

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EPA Didn't Identify Viable Alternatives

- EPA identified potentially "safer" alternatives to HF (*e.g.*, sulfuric acid, ionic liquid alkylation, or solid acid catalyst alkylation).
  - While sulfuric acid is a viable alternative, it is cost prohibitive and its use switches one set of risks for another.
  - Alkylation units are designed and built to a specific catalyst; therefore, they are not interchangeable.
  - Selection of an alkylation catalyst impacts configuration of the entire refinery and other process units – where a facility is located impacts which catalyst they use.
- New technologies will be considered viable after at least 2 turnaround periods to identify the risks introduced into the process and the risks of scaling up.
- The three technologies identified by EPA are in infancy or demonstrated at small-scale demonstration.
  - EPA disregarded feasibility and risks at existing facilities.

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Switching One Set of Risks for Another

- EPA failed to consider differences between HF and sulfuric acid alkylation units.
- Sulfuric acid is a hazardous chemical that has a different set of risks.
- Switching to sulfuric acid alkylation requires continuous shipments of fresh sulfuric acid or constructing an on-site acid regeneration plant.
    - Sulfuric acid alkylation units use 200 times *more* acid than HF units, requiring more tankage for fresh and spent acid.
    - Facilities will have significant rail and truck traffic to deliver new sulfuric acid and take away spent acid for disposal.
        - This risk, which was not evaluated by EPA, is not covered by RMP.
- Because the aggregate risks between the two are comparable with safety mitigation, there are no benefits attributed to EPA's proposed requirement to switch.

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Switching Technologies is Cost Prohibitive

- The Agency's estimates of costs and benefits are inaccurate and incomplete.
  - According to the RIA, a new sulfuric acid alkylation facility is estimated to cost between $45 to $300 million.
- Replacing 100% of existing HF alkylation capacity with sulfuric acid across 41 refineries requires a capital investment of $15 to $45 billion.
  - Per facility costs would range from $200 to $850 million, depending on size.
- Replacing the catalyst requires modifications throughout the facility.
  - The per facility capital costs for EPA's proposal increases by an estimated $131 million if HF alkylation unit replacement includes adding capacity to process spent sulfuric acid.
- By not conducting a fresh analysis of costs, EPA violated EO 12866's requirement to generate "useful estimates" of the costs of its proposal.

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Application of STAA to HF Units will Impact U.S. Fuel Supplies

- U.S. gasoline production could be severely curtailed, subjecting the U.S. to higher imports.
  - The number of facilities that might be shutdown or the cost to build a new unit.
  - The impact on gasoline supplies if several refineries shutdown while changing alkylation technology.
  - Current sulfuric alkylation units are running at full capacity and could not make up lost production from closing HF units.

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The STAA Requirement is Vague and Unreasonable

- It is unclear if refineries with an HF alkylation unit must conduct a STAA for every process unit or just the HF unit.
  - Some refineries have more than 25 process units, making the cost and burden prohibitive.
  - EPA offered no discussion of the benefit of conducting a STAA on other process units.

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Recommendations

- Withdraw the STAA requirement from the existing PHA.
  - EPA's estimation of risks from HF units and the refining industry as a whole is unfounded and unsupported, as indicated by years of operating and RMP reportable incident data,
  - STAA analysis on HF alkylation units would be ineffective.
- Apply performance-based requirements through the PHA process.
  - The PHA process allows for continuous improvement of operations and opportunities for risk reduction.
- If implemented, the effective date should allow facilities to perform a STAA as part of the next-scheduled PHA update and re-validation that occurs any time after 3 years from EPA's issuance of the intended STAA guidance or the final rule's effective date, whichever is later.

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