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EPA's RMP Rule: Failures to Protect the American People and American Manufacturing.

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Thank you, Chairman Carter, Ranking Member Tonko, and members of the House Committee on Energy and Commerce Subcommittee on Environment, Manufacturing, and Critical Materials for allowing me to submit this testimony on the impacts of the Environmental Protection Agency's (EPA or "the Agency") Risk Management Program (RMP) changes, known as the Safer Communities by Chemical Accident Prevention (SCCAP) rule. My name is Jatin Shah, and I am a Senior Principal Consultant with Baker Engineering and Risk Consultants, Inc. (BakerRisk). BakerRisk was established in 1984 by Dr. Wilfred Baker and has evolved into a globally recognized engineering consultancy. With more than 175 experts across eight offices globally in the U.S., U.K., Middle East, and Canada, BakerRisk offers internationally renowned risk management services that prioritize hazard analysis, risk mitigation, and regulatory compliance. BakerRisk works with facilities to identify and implement risk mitigation measures that reduce risk at countless facilities and transportation networks.

I have more than 35 years of experience specializing in risk management services for the chemical, petroleum, oil, and gas industries providing consulting services in six continents. I provide facilities with

a variety of services including Risk Management Process Improvement, Decision Analysis, Decision Criteria/Guideline Development, Risk Analysis and Quantification, and development of conceptual layout and equipment specification for risk mitigation. I also served on three committees for the development of American Petroleum Institute's Recommended Practice 751 (API RP 751), which is a refining industry standard that provides specialized guidance for mitigating risk for facilities utilizing Hydrofluoric (HF) Acid Alkylation. I serve on the project planning board of the Center for Chemical Process Safety (CCPS) and am a CCPS fellow. CCPS is a not-for-profit corporate membership organization within the American Institute of Chemical Engineers (AIChE), with over 250 global members, that identifies and addresses process safety needs in the chemical, pharmaceutical, and petroleum industries. I have led or been involved in hundreds of quantitative risk assessment (QRA) studies, numerous process hazards analysis (PHA) studies, as well as provided risk management and risk-based decision support to many of the facilities now subject to EPA's new SCCAP rule. As an external party providing risk analysis and mitigation strategy consultation to facilities, including those using HF Alkylation, I can provide the committee with a critical perspective on the subject of this hearing.

Like the clients I work with, BakerRisk considers ensuring safety at a facility to be the top priority. Nothing is more important than protecting the well-being of employees and surrounding communities. Facilities in the chemical, petroleum, oil, and gas industries regularly choose to work with a risk management engineering firm because they have an inherent interest in minimizing risk and maximizing safety. In this cooperative partnership, our role is to identify any potential hazards associated with their operations, evaluate the associated risks of these hazards, and help develop practical pragmatic risk reduction solutions to assist clients in achieving their safety goals. We also help our client's risk management strategies to comply with regulations from EPA, Occupational Safety and Health Administration (OSHA), or any other Agency with regulatory jurisdiction.

Minimizing risks at facilities has been a key part of the harmonized public-private partnership that existed between facilities and EPA's RMP before the SCCAP rule's finalization. Prior to these changes, these facilities complied with industry standards like API RP 751 and cooperated with state and national regulatory entities to ensure safety. That ecosystem produced outstanding improvements in risk mitigation and overall safety records. RMP regulated facilities reduced incidents by more than 80 percent between the creation of the RMP in 1996 and 2022. Between 2016 and 2020, 97 percent of facilities had no reportable incidents.[1] This is because RMP-regulated facilities were already conducting multiple risk studies and audits on a periodic basis to manage risk. Existing analyses, such as Process Hazards Analyses (PHAs), Layers of Protection Analyses (LOPAs), Quantitative Risk Analysis (QRA), Job Safety Analysis (JSA) studies, OSHA PSM audits, environmental health and safety (EHS) audits have been taking place for decades. Rather than build on what delivered exceptional results, the Agency unfortunately may have undermined this progress with SCCAP by increasing bureaucratic obstacles that are unlikely to produce tangible safety improvements.

The 2024 finalized regulatory changes (i.e., SCCAP) jeopardize the collaborative nature of the RMP. Facilities are now forced to repetitively analyze and reconsider impractical mitigation systems that were previously determined to only increase compliance work and cost without actually reducing risk. In the past, the RMP program allowed each facility to build its own risk mitigation strategy based on an on-the-ground analysis of its unique circumstances and structure. The RMP utilized a performance-based standard that ensured that the small fraction of facilities with the most incidents were the ones that received the most attention from EPA. Now, the new SCCAP regulatory requirements implement a "one-size-fits-all" approach to risk analysis and mitigation that is unnecessary, an overly complex

[1] EPA-HQ-OLEM-2022-0174 at 80.

exercise that consumes valuable time and resources that could be used for more meaningful risk mitigation strategies.

I. Background

RMP was created as part of the Clean Air Act Amendments of 1990 (CAAA). Under Clean Air Act Section 112(r), EPA was required to publish regulations and guidance on chemical accident prevention for facilities that use certain hazardous chemicals.[2] An RMP-regulated facility is required to submit a summary, or "risk management plan," of the potential effects of a chemical-related accident, the steps to avoid such an accident, and the emergency procedures in place if an accident occurs. There has been a long history of the Agency working directly with industry to ensure program elements are aligned with industry standards and practices. Agency regulators built RMP requirements to be in line with the OSHA Process Safety Management Standard (PSM) and industry recommended practices, such as API RP 751 which is a well-established industry standard that provides guidance to refiners on the safe operations of hydrofluoric acid (HF) alkylation units.[3] EPA regulators also aligned RMP with other agency regulations to limit unnecessary regulatory overlap, regulatory inconsistencies, and costly redundancies. For example, if a facility complied with API RP 751, they were also compliant with OSHA's PSM standards for hazardous chemicals and with the RMP. This long-standing regulatory alignment with strong industry standards is partially responsible for the low RMP-reportable incident rate achieved in recent years.

On February 27, 2024, the Agency finalized the SCCAP rule, which implemented unprecedented changes to the way RMP functions. While there are numerous concerning aspects of the SCCAP rule, my

[2] https://www.epa.gov/sites/default/files/2020-03/documents/caa112_rmp_factsheet_march_2020_final.pdf
[3] 29 CFR 1910.119

testimony will focus on the risk mitigation and process hazard analysis (PHA) components of the rule. First, the EPA added a new requirement for RMP-regulated facilities to integrate a Safer Technology and Alternatives Analysis (STAA) into their existing PHAs. The STAA is intended to analyze alternative design and technologies that may reduce risk and explore the feasibility of these changes. This additional requirement will dramatically increase costs and compliance workload for facilities with minimal, if any, safety improvements.

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The SCCAP rule also targets a group of 1) refinery facilities that utilize HF alkylation; 2) refineries and chemical manufacturing facilities that had one reportable incident since their most recent PHA; and 3) facilities within one mile of another such facility with an RMP-covered process. These targeted facilities are forced to conduct yet another unnecessary bureaucratic exercise through a practicability assessment known as inherently safer technologies and designs (IST/ISD) for all covered processes. Every five years at a minimum, these facilities are also forced to implement new costly measures, regardless of safety measures already in place, based on the rule's established hierarchy of controls:

1) First, a facility must implement at least <u>one passive measure</u> (e.g., pressure vessel designs, dikes, berms, and blast walls)
2) If no passive measures are identified or are not practicable, the facility shall implement an equally protective <u>active measure</u> (e.g., alarms, safety instrumented systems, and detection hardware)
3) If no active measures are identified or are practicable, the facility must implement <u>one procedural measure.</u> (e.g., policies, operating procedures, training, administrative controls, and emergency response actions)

II. <u>The RMP's new PHA and STAA Requirements force facilities to undergo a repetitive and costly bureaucratic exercise that may not improve risk prevention and mitigation, especially when existing mitigation measures have already reduced the risks to a very low level. The requirement to document why a potential mitigation is not practical can increase the costs of a PHA alone by 20-50% above what it currently costs. Forcing the facility to implement at least one measure even if it produces no quantifiable benefit can produce many unintended consequences.</u>

The SCCAP fundamentally alters how a facility conducts a PHA, which is an evaluation of potential hazards associated with a covered process. A PHA can identify, assess, and mitigate any risks. A full PHA is conducted at the start-up a "process unit" and is re-evaluated on a five-year cycle.[4] Prior to the SCCAP rule, conducting and reevaluating a PHA could satisfy requirements for both OSHA PSM and EPA RMP; this is no longer the case under SCCAP. EPA's new requirements require RMP-regulated facilities to integrate additional prescriptive requirements, including a STAA, into each PHA.

Requiring a facility to conduct a STAA for each PHA is an unnecessary, time-consuming, and costly exercise. EPA acknowledges that a STAA is an extremely expensive study process that requires time from multiple engineers and external risk analysts. The Agency estimates that more than 80% of the final rule's $256 million annual estimated cost originates from the STAA provisions. An STAA is typically conducted during the design stage before a process unit is built because it allows for engineers to determine which measures are the most effective before any construction takes place. Establishing process unit designs per inherently safer design early in the process maximizes safety while minimizing unnecessary costs. Making design changes after the process is in operation will cost many millions of dollars and might introduce new hazards into the process. Under SCCAP, EPA is now requiring these facilities to reconduct the analysis throughout a unit's life, even if implementing alternative designs or new technologies was previously shown to not significantly improve safety, decrease risk below existing levels, or to be impractical.

The STAA requirement to mandate the consideration of new, unverified technologies is misguided because new technologies are not necessarily safer technologies. Redesigning components of a production process to implement a new, unproven technology is not always the safest measure, nor is it

[4] A process unit is an independent set of equipment that produces any intermediate component or final product.

guaranteed to be the most effective way to decrease risk. The time to develop a new technology through large scale operation can take upwards of 50 years to ensure it is both feasible and can operate safely without introducing new risks to the facility. New technologies can introduce new and unknown risks into a process, and it is incredibly difficult to identify such risks, especially in extremely complicated systems. The lifecycle of a new technology in these types of facilities is lengthy, which avoids inadvertently increasing unknown risks. Under SCCAP, RMP-regulated facilities must now conduct analyses that are not appropriate or necessary under current conditions. At best, this approach will marginally impact risk and it may trade existing risks for unknown, and potentially greater, risks. It is also important that the risk of the full supply chain is considered when new technologies are introduced to avoid the situation where the risk is simply transferred to another part of the supply chain.

III. The SCCAP requirement for certain industry facilities to implement a mitigation measure every PHA cycle does not account for existing measures, and may not yield risk reduction benefits.

This rule goes even further to unfairly penalize facilities that have already implemented significant mitigation measures and have proven themselves to be safe through numerous existing risk analyses. Counterintuitively, under the SCCAP rule, the Agency now arbitrarily treats all facilities as unsafe by default and creates a one-size-fits-all regulation. SCCAP penalizes refining and chemical manufacturing facilities that have high levels of safety, as it fails to account for the numerous safety measures that have been deployed throughout the industry. Rather than recognizing what safety measures a facility may already have in place, the rule ignores the safety levels of these facilities by assuming they have not already implemented extensive prevention and mitigation measures. The rule requires implementation of a new mitigation or prevention measures in each PHA study, even if no new practical measures are identified. As stated previously, there are few facilities that ever have an RMP reportable event, and an even smaller number with more than one event. EPA reported that between 2016 and 2020, RMP-

reportable accidents occurred at only 3% of all RMP covered facilities (i.e., 97% of facilities had zero reportable incidents). This is because these RMP-regulated facilities already conduct multiple risk studies and audits on a periodic basis to minimize risks. These include Process Hazards Analysis (PHA), Layers of Protection Analysis (LOPA), Quantitative Risk Analysis (QRA) studies, audits for industry standards like API RP 751, OSHA PSM audits, environmental health and safety (EHS) audits, job safety analyses (JSA), and other studies to identify hazards and the optimal measures to minimize risks. In my career I have personally seen the implementation of numerous mitigation measures by industry. For example, in the early 90s very few HF Alkylation units had chemical detection, water mitigation, or a means to manage the duration of a release. Today every operating HF alkylation unit in the US has detection, water mitigation, and a means to manage release duration.

This mandate for a chemical plant or refinery to implement new requirements without consideration of preexisting safety measures is unprecedented in the history of RMP. Many facilities have already analyzed and implemented the best and most practicable safety measures for their unique situations, which was an extremely costly process. The benefits of implementing a new measure on top of what has already been implemented will be increasingly marginal, and for many facilities there may be no more feasible measures left to implement.

In practice, a one-size-fits-all mandate for chemical manufacturers and refineries may not meaningfully increase safety, but it will impose significant costs and increase the regulatory compliance workload. The result of SCCAP is creating an unnecessary compliance burden that is unlikely to produce effective risk reduction. The optimal time to conduct an STAA is at the design stage. Facilities conduct PHA studies during the process unit design phase, at which point the project team identifies and implements the optimal amount of passive, active, and procedural measures. SCCAP's new requirements would force these facilities to implement options that were already ruled out as inefficient

in previous hazard assessments. Requiring facilities to add specific categories of additional mitigation measures, which may be the costliest and least practicable options, will likely produce only diminishing risk reduction benefits. Since these facilities have already implemented numerous prevention and mitigation measures, requiring additional mitigation measures has diminishing return in safety improvement and will significantly increase costs. The previous RMP rules have historically been site specific and performance-based for this exact reason; the site evaluates the risk and identifies what measures need to be in place to reduce that risk. Under SCCAP, existing mitigation is not recognized, and the facility will be required to implement another measure, which may or may not further reduce the risk. This will clearly increase costs and compliance work to achieve the same goal.

For facilities, complying with these requirements is far more intensive than merely conducting a "thought exercise" and then filing additional paperwork; they produce significant regulatory burden for an industry that already has an exemplary safety record. Yet, under the SCCAP rule, facilities with proven safety records will be forced to consider previously determined unpractical mitigation measures solely to comply with unnecessary new requirements every five years for each facility. For some facilities, this raises costs not just for analysis and implementation, but also due to lost revenue from a production shutdown during implementation or additional training needed for the unnecessary new measure.

IV. <u>This regulation unfairly targets refineries that utilize HF alkylation, even though HF alkylation with existing layers of mitigation is safe or safer than many of the commercially available alternatives.</u>

SCCAP unjustifiably singles out refineries that utilize hydrofluoric acid, even though risk from these processes are extremely low in the US. HF alkylation is a critical intermediary process to produce alkylate a component in gasoline Americans rely on every day. This fuel component is critical for high-octane, low-emission transportation fuels that contribute to addressing climate impacts. HF alkylation is

a critical component of the US energy supply chain; about 40% of refining capacity in the US utilizes HF as their primary catalyst.[5] While HF is critical for refining capacity, it is unclear why EPA has chosen this sector for increased regulation, as the refining industry accounts for only 2% of global HF demand.[6] Under the SCCAP rule, critical US refineries with HF alkylation units are being forced to implement more unnecessary measures than any other RMP-regulated industry.

HF alkylation represents a fraction of incidents involving HF because facilities are generally already utilizing the best available controls and mitigation measures to minimize risk. EPA's RMP data indicates that the refining industry accounted for less than 25% of the RMP-reportable incidents involving HF between 2016 and 2020. These reported incidents include many precautionary actions that result in no injury, such as evacuations and shelter-in-places. When these precautionary reports are excluded, the HF mass released by the refining industry accounts for less than 1% of total mass of HF released.[7] This safety record reflects the substantial industry coordination and resources devoted to ensuring refinery workers within, and communities around, facilities with HF alkylation units are safe. The industry standard API RP 751 provides consistently updated guidance for hazards management, operating procedures, inspection, and maintenance of HF units.[8] After implementing measures in alignment with API RP 751, these refineries are audited for compliance every three years. API RP 751 has gone through five revisions since its original publication, updated each time to reflect technological advancements and the growing expertise of more than 100 of the world's top safety and risk professionals, chemical

[5] https://www.realclearenergy.org/articles/2023/03/30/refinery_provision_in_house_energy_bill_makes_good_safety_sense_890230.html

[6] https://www.instituteforenergyresearch.org/regulation/epa-finalizes-sweeping-changes-to-the-risk-management-program-of-the-clean-air-act/

[7] https://www.regulations.gov/comment/EPA-HQ-OLEM-2022-0174-0268

[8] https://www.api.org/oil-and-natural-gas/health-and-safety/refinery-and-plant-safety/process-safety/process-safety-standards/rp-751

engineers, and alkylation unit operators.[9] Unfortunately, as stated previously, the SCCAP rule does not recognize or consider API RP 751 or any other pre-existing mitigation measures and instead creates a one-size-fits-all approach to risk reduction at facilities with HF alkylation units.

As shown in the 1990's to a California court, utilizing HF for alkylation can be as safe, if not safer, than some of the alternatives when risk is holistically evaluated. Industry has continually innovated to make HF units safer over the years. All HF units in the US have already implemented multiple layers of safety systems to protect workers and communities, including HF detecting paint, water mitigation, isolation valves, physical barriers, and release duration management systems, among other strategies. The result of this private-sector innovation is that the US has not experienced a single offsite fatality from a release of HF. Our team at BakerRisk has extensively studied the likelihood of the general public sustaining a life-threatening injury from the use of HF at US refineries. Using the National Safety Council's methodology, we found that the chances of sustaining a life-threatening injury from the use of HF at U.S. refineries is one in 52 million. That is less likely than experiencing a life-threatening injury from a bee sting (800+ times higher), a sharp object (1700+ times higher), a bicycle accident (13,000+ times higher) or a car wreck (480,000+ times higher). A lightning strike poses 375 times the public risk as HF in a refining unit.[10] Regardless of this low likelihood of injury, the SCCAP rule unfairly requires these facilities to conduct costly studies and justify their use of HF over an alternative. Implementing an alternative for HF, such as sulfuric acid, is an extremely costly undertaking which is not guaranteed to decrease risk. When the risk of the full supply chain is considered (e.g., transportation), the risk of using sulfuric acid alkylation could actually be higher. Even EPA recognizes that implementing an alternative

[9] https://www.realclearenergy.org/articles/2023/03/30/refinery_provision_in_house_energy_bill_makes_good_safety_sense_890230.html

[10] https://www.realclearenergy.org/articles/2023/03/30/refinery_provision_in_house_energy_bill_makes_good_safety_sense_890230.html

can cost a single refinery up to $900 million, which is a cost that would most likely result in closure of the facility.[11] Ultimately, such a high-cost decision would simply shift the current known risk level for other, potentially greater risks. These new requirements for facilities that utilize HF alkylation therefore amount to little more than a bureaucratic exercise and an unnecessary expense.

V. Long-term Impacts and Conclusion

Unfortunately, the regulatory ramifications of these mandated analyses and disclosures could reach far beyond the risk management plans and PHA reports that facilities must regularly submit to EPA. The broad group of RMP-regulated facilities that are not subject to the implementation of additional mitigation measures every PHA are still required to submit a written justification every time they choose not to adopt a particular alternative technology or a safety measure. A facility may choose not to adopt a mitigation measure for a multitude of reasons, such as it not being applicable for a particular processing unit, shifting risks, or a measure having an unreasonably high implementation cost for only marginal risk reduction. These measures may have been already deemed infeasible in an earlier practicability assessment, but facilities must now reanalyze and submit a justification. EPA may not be able to use RMP to force these particular facilities to adopt a measure the facility deems unreasonable, but the Agency will maintain a record of these disclosures for later use. Facilities have expressed a concern that EPA can use these disclosures against a facility in a consent agreement to force adoption of measures beyond the authority of the RMP. These concerned parties view this requirement as the Agency collecting evidence against a facility, even though the facility has not had any major infractions or incidents. In the long-term, these disclosures force facilities that are critical to US economic and energy security to operate under untenable conditions where a small level of risk may result in facing regulatory costs so great that they must cease operations.

[11] https://www.govinfo.gov/content/pkg/FR-2022-08-31/pdf/2022-18249.pdf

The SCCAP rule's new requirements are not designed to significantly improve safety. The unintentional consequence is rather the imposition of unnecessary, costly, and time-consuming analyses and studies for RMP-regulated facilities, and mandating the consideration of unnecessary mitigation measure for specific industries. Unfortunately, the rule fails to consider the idea that overburdensome compliance requirements do not guarantee increased safety. By contrast, it could actually deprive facilities of critical resources that could be used to implement performance-based and site-specific measures that produce tangible risk reduction. Instead the new provisions require a one-size-fits-all approach plagued by repetitive analysis and vague regulatory requirements.

In my role at BakerRisk, I have worked with facilities to identify and mitigate risk for over 35 years. Since the creation of the RMP, these facilities have maintained record levels of safety and risk mitigation while navigating through extensive regulations from multiple Federal agencies such as OSHA and EPA, local and state regulations, and industry-established recommended practices. Prior to the SCCAP rule, all of these considerations harmonized into a productive public-private partnership that was focused on maximizing safety and practicability. The recent changes to the RMP program undermine this harmonization, creating regulatory uncertainty, unnecessary bureaucratic hurdles, and unreasonable costs for facilities. In the end, this regulatory chaos will not yield the progress it seeks to deliver and may force some facilities to cease operations.