PUBLIC ENGAGEMENT WEBINARS; PRE-PRIORITIZATION AND CONSIDERATION OF EXISTING CHEMICAL SUBSTANCES FOR FUTURE PRIORITIZATION UNDER THE TOXIC SUBSTANCES CONTROL ACT (TSCA)

Office of Pollution Prevention and Toxics
United States Environmental Protection Agency

AMERICAN FUEL & PETROCHEMICAL MANUFACTURERS COMMENTS

Attention: EPA–HQ–OPPT–2023-0606

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I. Introduction

The American Fuel & Petrochemical Manufacturers ("AFPM") respectfully submits these comments on the Environmental Protection Agency's ("EPA" or "Agency") Federal Register notice titled, "Public Engagement Webinars; Pre-Prioritization and Consideration of Existing Chemical Substances for Future Prioritization Under the Toxic Substances Control Act (TSCA); Notice of Availability" ("Proposed Pre-Prioritization" or "Proposal"). EPA is seeking comment on a list of 27 chemical substances for consideration as candidates for prioritization and subsequent risk evaluation and risk management.[1] These comments address a subset of the list of 27 chemicals, nine of which are petrochemicals (aka "petrochemical intermediates") and one, hydrogen fluoride ("HF"), a critical catalyst used in the manufacture of high-octane gasoline.

Specifically, these comments address consideration of the following from the perspective of AFPM's members and considering the chemicals' conditions of use by refiners and petrochemical producers: petrochemical intermediates (benzene, bisphenol A, ethylbenzene, naphthalene, styrene, m-xylene, o-xylene, p-xylene, bisphenol S) as well as the catalyst critical to the high-octane component of gasoline (HF). AFPM urges EPA to consider that:

- The nine chemicals listed above, and HF are primarily used as petrochemical intermediates and HF catalysts that are manufactured or used in closed systems by chemical companies and petroleum refineries subject to comprehensive regulations under the Occupational Safety and Health Administration ("OSHA"), Department of Transportation ("DOT"), Department of Homeland Security ("DHS"), and other EPA offices;
- Petrochemical intermediates are consumed in closed processes through chemical reactions and those intermediate molecules do not exist in any appreciable amount in downstream products;
- HF is used in closed systems by petroleum refineries and subject to comprehensive regulations under the OSHA, DOT, DHS, and other EPA offices;
- The 2014 TSCA Work Plan, High Priority Chemicals Data System ("HPCDS") and other data sources that EPA relies upon for use information are technically flawed and incorrect.

Based on these considerations, EPA should consider these ten chemicals as low priorities for risk evaluation.

II. AFPM Interest in the Proposal

AFPM is the leading trade association representing the manufacturers of the fuels that keep America moving and petrochemicals that are the essential building blocks for organic chemistry, including plastic products that improve the health, safety, and living conditions of humankind and make modern life possible. AFPM members are committed to sustainably

[1] *See 89 Fed. Reg. 68894*, "Public Engagement Webinars; Pre-Prioritization and Consideration of Existing Chemical Substances for Future Prioritization Under the Toxic Substances Control Act (TSCA)." EPA–HQ–OPPT–2023–0606; FRL–11581–04–OCSPP, published August 28, 2024.

manufacturing safe, high-performing fuels and the petrochemicals and derivatives that growing global populations and economies need to thrive.

AFPM member companies are regulated under TSCA, and their products have been and will continue to be subject to TSCA risk evaluations. If properly implemented, TSCA can be a critical statute to ensure sound chemicals management. It is essential that EPA analyze the prioritization criteria and use the most accurate information regarding the uses of and potential exposures to chemicals it considers during the pre-prioritization process. If this fundamental information is flawed, then any derivative analyses, such as exposure assessments, will also be flawed. EPA cannot meet its statutory obligations for using the best available science if it uses flawed information as the basis of its exposure assessments in risk evaluations.

EPA must also consider and acknowledge the fundamental chemistry involved with petrochemical intermediates. Petrochemical intermediates are building block substances used to make other chemicals and are consumed in the process. That means that the petrochemical intermediates do not exist in any appreciable amount after processing and do not present a significant potential for exposure and, therefore, do not pose an unreasonable risk to human health or the environment.

III. Comments on the Pre-Prioritization for the Petrochemical Intermediates

A. Chemical intermediates and refinery catalysts generally do not meet the statutory criteria for prioritization.

TSCA requires EPA to consider both the hazard and exposure potential as well as the conditions of use of a chemical substance.[2] High-priority chemical designations require an "unreasonable risk of injury to health or the environment because of a potential hazard and a potential route of exposure under the conditions of use."[3] In turn, TSCA defines "conditions of use" to include the "circumstances, as determined by the Administrator, under which a chemical substance is intended, known, or reasonably foreseen to be manufactured, processed, distributed in commerce, used, or disposed of."[4]

As discussed further below, in the cases of manufacturing petrochemical intermediates and using HF in refining, there are no unreasonable risks because there are no reasonably foreseeable routes of exposure. Intermediate chemicals are used in closed processes and consumed when transformed into another chemical substance through the manufacturing process. In all cases, these chemicals should be considered low-priority under the statute.

B. Petrochemical intermediates are critical to American manufacturing.

Petrochemical intermediates are near the top of the manufacturing supply chain for thousands of different products. Most manufacturing processes depend on chemical reactions and start with one or more of a very small number of chemical substances called base

[2] 15 USC § 2605(b)(1)(A).and 15 USC § 2605(b)(2)(D)
[3] 15 USC § 2605(b)(1)(B)(i).
[4] 15 USC § 2602.

petrochemicals. AFPM members manufacture six base chemicals, including: ethylene, propylene, butylenes (also known as olefins) and benzene, toluene, xylenes (also known as aromatics).

From these base petrochemicals, literally thousands of products can be made through a series of chemical reactions. For example, take p-xylene (a base petrochemical) and add oxygen to make terephthalic acid. Mix that terephthalic acid with ethylene glycol (made from ethylene and water) and the resulting product is polyethylene terephthalate ("PET"). PET is a polyester, like the fiber found in fleece jackets and golf shirts. PET is also used to make water bottles. Of course, the chemistry is technically more complex than this simplified version, but it all starts with base petrochemicals that serve as the building blocks to make thousands of products we see and use every day. Just about everything that isn't glass, rock, or steel starts with one or more of these six base petrochemicals.

C. Intermediates and catalysts are not ingredients or material components used in products and there is negligible risk of exposure.

Chemical substances that are the result of chemical reactions involving base petrochemicals are referred to as petrochemical derivatives. Petrochemical derivatives are categorized according to the number of chemical reactions it takes to make that particular derivative. For instance, in our example above, adding oxygen to p-xylene makes terephthalic acid. Terephthalic acid is considered a first derivative because it takes one chemical reaction to make it from the base petrochemical (i.e., p-xylene). Reacting that first derivative (i.e., terephthalic acid) with the ethylene glycol makes PET, which is a second derivative because it takes two chemical reactions to get to the PET.

Base petrochemicals and their first derivatives are primarily used as petrochemical intermediates (or just plain "intermediates") to make other chemical substances and are typically not seen outside of a closed container or process in a tightly controlled manufacturing facility. Many second derivatives are also intermediates. Some base petrochemicals and derivatives may have other uses, but those uses represent fractions of the production volumes.

Intermediates are used in chemical reactions to attach functional groups of atoms to another molecule, or they serve as monomers (molecules that can link up like a chain) to make a polymer (*i.e.*, plastic material). In either case, the original intermediate is consumed in the process to make the other molecule or to make the polymer. The intermediate no longer exists when it is transformed into the new substance, so it is only present in trace amounts in any of the subsequent chemical substances, polymers, or downstream products that result from the chemical reactions or other manufacturing processes. These concentration levels are negligible in terms of risk, which is why EPA has traditionally provided exemptions for *de minimis* levels. The term "intermediate" does not apply to ingredients or material components of products because only trace amounts of the original molecule (*i.e.*, the intermediate) exist after it is transformed during the chemical reaction.

As stated above, intermediates are only used to make other chemical substances. They are stored in closed containers and transferred by attached hoses or pipes from the closed container to a closed process unit. This creates a closed system, so in these scenarios the intermediates are also referred to as "closed-system" intermediates. The only way that a person could be exposed to a closed-system intermediate is from an accidental release.

Accidental releases should not be considered in TSCA risk evaluations, let alone prioritizations, because the risk equation under TSCA does not contain the required probability and magnitude functions (*i.e.*, frequency and magnitude of accidental release). Risk under TSCA is derived from the margin of exposure ("MOE"), expressed as the ratio of the no-observed-adverse-effect level ("NOAEL") obtained from animal toxicology studies to the estimated exposure level or dose. There is no probability function in the exposure component of the risk equation; rather, it is derived from the dose used in a toxicity study, from air or water sampling, or from an exposure model. Additionally, the magnitude of exposure in accident scenarios varies from scenario to scenario and is not predictable without a rigorous analysis of past releases that are germane to the scenario under study. The MOE equation does not contain these functions.

D. *The sources EPA depends on for exposure information during pre-prioritization and prioritization are flawed and incorrect.*

EPA depends on two primary sources of use information for pre-prioritization and prioritization of chemicals for risk evaluation under TSCA: data reported under the Chemical Data Reporting ("CDR") regulations, which forms the basis of the uses identified in the 2014 TSCA Work Plan, and the HPCDS. Both of these sources are flawed when applied to petrochemical intermediates because they do not discern between an intermediate used to **make** a product and an ingredient or material component **used in** a product. There are also many cases where those sources do not distinguish between a monomer and a polymer.

For example, the 2020 CDR data reports styrene in the following manner:[5]

- Type of Process or Use Operation: Processing-incorporation into formulation, mixture, or reaction product
- Industrial Sector: Adhesive Manufacturing
- Industrial Function Category: Adhesives and sealant chemicals

Styrene block copolymers are used in adhesives, not styrene itself. Styrene is very reactive and is only used as a monomer to make the block copolymers found in adhesives. Styrene block copolymers are not styrene.

The 2020 CDR data also reports styrene in the following manner:[6]

- Type of Process or Use Operation: Processing-incorporation into formulation, mixture, or reaction product
- Industrial Sector: Plastics Material and Resin Manufacturing

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[5] *See* EPA's ChemView database for CDR information.
[6] *Id.*

- Industrial Function Category: Paint additives and coating additives not described by other categories

This example also demonstrates the limitations of CDR information because styrene is used to make styrene/acrylic copolymer binders for paint. Styrene/acrylic copolymers are not styrene.

To further highlight the limitations of CDR information used for the most recent prioritization designations, below is an example found in EPA's supporting document for the designation of vinyl chloride as a high-priority substance:

> "*It is difficult to discern whether there are significant changes in conditions of use for vinyl chloride based on reported information to CDR in 2016 and 2020 because guidance regarding the reporting of categories and subcategory information was updated between these periods. This update may have resulted in the use information being reported differently in 2020 compared to 2016, possibly leading to inaccurate implications that some uses may have commenced or ceased in recent years.*"[7]

The CDR lists a category of use for vinyl chloride as "Incorporating into formulation, mixture or reaction product" and the corresponding subcategory as "Binder in plastics material and resin manufacturing."[8] Vinyl chloride is a gaseous substance and does not "bind" anything. Vinyl chloride is a monomer used to **make** copolymer binders. Those binders are not vinyl chloride. The vinyl chloride is polymerized with another monomer (hence, the term "copolymer"). The copolymers have totally different molecular structures than vinyl chloride.

The CDR also lists a category of "Incorporating into articles" with a subcategory of "Wire and cable in primary metal manufacturing."[9] In addition, the CDR has a category of "Building/construction materials not covered elsewhere" and subcategory of "Cable and wire manufacturing."[10] Polyvinyl chloride ("PVC") is used in coatings for wire and cable, not vinyl chloride. Vinyl chloride is a gas and will not coat metal. The CDR lists vinyl chloride as a binder under the category "Plastic and rubber products not covered elsewhere."[11] As mentioned above, vinyl chloride is used to **make** binders, but it is not a binder itself.

Another example can be found in EPA's supporting document for designation of acetaldehyde as a high-priority substance.[12] In the case of acetaldehyde's relationship to glue and adhesives highlighted in the document, it is an intermediate used to make polyvinyl acetate ("PVA"). PVA is what is used in glue and adhesives CDR category, not acetaldehyde. The

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[7] *See* "Proposed Designation of Vinyl Chloride as a High-Priority Substance for Risk Evaluation." EPA Document # EPA-740-P-24-002, published July 2024. p. 17.
[8] *Id.* at 18.
[9] *Id.*
[10] *Id.*
[11] *Id.*
[12] *See* "Proposed Designation of Acetaldehyde as a High-Priority Substance for Risk Evaluation." EPA-740-P-24-003, July 2024.

acetaldehyde is consumed in the process that makes the PVA, so acetaldehyde is not "used" in the glue and adhesives. To further complicate the matter, polyvinyl acetate is used to make polyvinyl alcohol (via hydrolysis of the acetate), both of which use "PVA" as an acronym. Polyvinyl alcohol is what is used in certain paper manufacturing processes, not polyvinyl acetate, and certainly not acetaldehyde.[13]

As with vinyl chloride, EPA also acknowledges the shortcomings of CDR data for designation of acetaldehyde as a high-priority chemical. In the Agency's supporting document, EPA acknowledges that the functional use of a chemical wasn't even reported to the CDR until 2020.[14]

EPA did incorporate subcategories of use (*i.e.*, functions) and revise its CDR reporting guidance between the 2016 and 2020 reporting periods, but it appears that the guidance is still confusing to some reporters because instead of acetaldehyde being "used" in "paint and coatings," as reported in 2016, it is now reportedly being "used" in "construction and building materials covering large surfaces" (*i.e.*, paint and coatings).[15] The CDR also lists acetaldehyde as an "intermediate in single component glue and adhesives," in "food, beverage, and tobacco product manufacturing," and in "packaging…including paper articles."[16] The intermediate is not found in those products in any appreciable amounts because it is transformed into PVA, which is a totally different chemical substance. Acetaldehyde is consumed in the process to make PVA. In other words, PVA is used in those products, not acetaldehyde.

These are just two examples that demonstrate the inaccuracy and limitations of the CDR as a source of exposure information that the Agency used to create its 2014 TSCA Work Plan and currently uses to designate chemicals as high priorities for risk evaluation under TSCA. These same limitations would apply to the ten chemicals AFPM has identified as essential intermediates for petrochemicals and the critical catalyst, HF.

The HPCDS is a database of children's products that purportedly "contain" chemicals reported by manufacturers of children's products to the states Oregon and Washington. The HPCDS does not distinguish between ingredients and intermediates. It is not a reliable source for information on materials or the chemicals that make those materials because the use categories are vague. For example, the HPCDS categorizes Acrylonitrile among "Synthetic Polymers" and "Textiles." Acrylonitrile is not a synthetic polymer; in fact, it is not a polymer at all. Similarly, in EPA's supporting document for designation of acrylonitrile as a high-priority chemical, the Agency relied on the HPCDS to claim that acrylonitrile is used in consumer products, including those intended for children.[17] One of the categories of uses for acetaldehyde that the HPCDS lists is "toys, games, blankets, jewelry, and clothing."[18] Again, the HPCDS uses generic descriptions for acetaldehyde, such as "Synthetic Polymers" or "Textiles." Acetaldehyde is not a synthetic or any other kind of polymer either.

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[13] *Id.* at 15.
[14] *Id.* at 16.
[15] *Id.*
[16] *Id.* at 17.
[17] *See* "Proposed Designation of Acrylonitrile as a High-Priority Substance for Risk Evaluation." EPA Document # EPA-740-P-24-004, July 2024. p. 17.
[18] *Id.*

The HPCDS does not acknowledge the difference between a monomer and polymer or intermediate and ingredient. Therefore, the HPCDS should not be considered a valid source for chemicals found in any products, let alone children's products. These same limitations would apply to the ten chemicals AFPM has identified as essential intermediates for petrochemicals and the critical catalyst, hydrogen fluoride.

IV. Comments on Hydrogen Fluoride

HF is used as a catalyst in alkylation processes at petroleum refineries. Alkylation processes make the high-octane components of gasoline. The alkylation processing units, storage units, and transfer units are a closed system, so there is negligible potential for exposure under its normal and foreseeable conditions of use. Due to its inherent hazards, HF exposure has immediate adverse effects, which is why it is used in closed systems that are tightly regulated under EPA, OSHA, DHS, and DOT. In fact, EPA revised its Risk Management Program (RMP) requirements in February 2024 to explicitly reduce the risk of accidental release.[19]

Baker Risk recently quantified the lifetime risk of sustaining a life-threatening injury from HF use at refineries at 1 in 52 million, utilizing a similar methodology to the National Safety Council.[20] In the comment period to EPA's proposed requirements on the RMP revisions, AFPM also argued that the requirements were unnecessary because industry properly manages the risk of HF acid through industry recommended practices such as API 751. After the publication of the 4th edition in 2013, which required that mitigation systems capable of continuous HF release detection, remotely activated/controlled water mitigation, and an event management system shall be provided,[21] the number of HF incidents decreased by a third of the previous rate, from 4.0 accidents per year in 2008 – 2013 to 1.3 accidents/year in 2014 -2020. The latest edition of API 751, published in 2021, added additional safeguards to protect against the accidental release of HF by requiring refiners to develop a special emphasis inspection program to inspect all carbon steel components for five HF corrosion zones.[22] Although AFPM disagrees with EPA's conclusion that additional regulation was necessary and lawful, EPA determined that the RMP requirements reduce the risk of accidental release to a reasonable degree.[23]

Due to its conditions of use and the comprehensive regulatory regime that prevents exposure (and reduces the risk of accidental release), EPA should categorize HF as a low priority for risk evaluation under TSCA.

V. Comments on Benzene

[19] 40 CFR Part 68.
[20] Refinery Provision in House Energy Bill Makes Good Safety Sense | RealClearEnergy
[21] API 751 – 4th Edition (2013) – Safe Operation of Hydrofluoric Acid Alkylation Units, Section 6.2 Mitigation Systems.
[22] API 751 – 5th Edition (2021) – Safe Operation of Hydrofluoric Acid Alkylation Units, Section 6.4.2.3.3 Special Emphasis Piping Inspection Programs and Annex G. The special emphasis inspection program addresses the direct cause of the June 2019 event at Philadelphia Energy Solutions.
[23] 89 Fed. Reg. 17632 ("…EPA is authorized to promulgate regulations that provide for the prevention and detection of accidental releases to the greatest extent practicable, so too must these regulations be reasonable.")

EPA comprehensively regulates benzene in industrial and mobile sources through interlocking Clean Air Act authorities. At the facility level, the 2015 refinery sector rule established fence line monitoring requirements for benzene emissions,[24] while the National Emissions Standards for Benzene Emissions from Coke By-Product Recovery Plants and Benzene Storage Vessels set benzene emissions standards for those operations.[25] Bulk terminals receiving liquids containing benzene are subject to a separate set of standards to control benzene emissions.[26] Moreover, a facility's equipment in benzene service is subject to a separate set of emissions standards for leaks of benzene.[27] In addition, chemical manufacturing plants and refineries are subject to the benzene wastewater operations NESHAP.[28] Benzene in gasoline is subject to limits through the mobile source air toxics (MSAT) standards on both the vehicle and fuel.[29] Moreover, the OSHA has standards to mitigate occupational exposure to benzene.[30]

VI. Conclusion

AFPM appreciates the opportunity to comment on this Proposed Pre-Prioritization. Petrochemical intermediates are not ingredients or material components of products; rather, they are used in closed systems to make other chemicals and are consumed in the process when they are transformed into another chemical substance. There is negligible potential for exposure. HF is also a chemical used in closed systems with negligible potential for exposure. AFPM strongly urges EPA to designate petrochemical intermediates and HF as low priorities for risk evaluation under TSCA.

Sincerely,

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[24] 40 CFR § § 63.658 (Refinery sector fence line monitoring provisions for benzene).
[25] 40 CFR Part 61, subparts L and Y, respectively.
[26] 40 CFR Part 61, subparts BB.
[27] 40 CFR Part 61, subparts J.
[28] 40 CFR Part 61, subpart FF.
[29] E7-2667.pdf See e.g., 40 CFR Parts 80 and 86, et. Seq.
[30] 29 CFR § 1910.1028.