CARBON TETRACHLORIDE(CTC); REGULATION UNDER THE TOXIC SUBSTANCES CONTROL ACT (TSCA)

Office of Pollution Prevention and Toxics
Environmental Protection Agency

AMERICAN FUEL & PETROCHEMICAL MANUFACTURERS COMMENTS

Attention: EPA–HQ–OPPT–2020-0592; FRL-8206-01-OCSPP

September 11, 2023
Michael S. Regan
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20004

I. Introduction

The American Fuel & Petrochemical Manufacturers ("AFPM") respectfully submits these comments on the Environmental Protection Agency's ("EPA" or "the Agency") Federal Register notice titled, "Carbon Tetrachloride (CTC); Regulation Under the Toxic Substances Control Act (TSCA)" ("Proposed Rule" or "Proposal"). In its Federal Register notice, EPA is proposing to ban the use of CTC "as a processing aid in the manufacture of petrochemical-derived products."[1] AFPM's comments highlight the following concerns with the Proposed Rule:

- The Proposal does not consider how chlorinated hydrocarbons are produced or the potential of CTC as an impurity,
- The Proposal does not identify a relationship between CTC (as an impurity) and perchloroethylene,
- With no de minimis exemption for CTC as an impurity, the proposal effectively eliminates AFPM members ability to use perchloroethylene as a catalyst regenerator at petroleum refineries; and,
- The proposal does not include any TSCA Sec. 6(g) exemptions that will allow for continued use of perchloroethylene if it has CTC as an impurity.

II. AFPM Interest in the Proposed Rule

AFPM is the leading trade association representing the manufacturers of the fuels that keep America moving and base 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 manufacturing safe, high-performing fuels and the petrochemicals and derivatives that growing global populations and economies need to thrive.

CTC is an impurity in perchloroethylene. AFPM members use perchloroethylene as a chloriding agent to regenerate catalysts used to make EPA-compliant fuels. Because EPA does not have a de minimis exemption in the Proposed Rule and is not considering exemptions under TSCA 6(g), AFPM members will no longer be allowed to use perchloroethylene as a catalyst regenerator at petroleum refineries. The alternative chloriding agents, with the exception of chlorine gas, are also TSCA high-priority chemicals that EPA has determined present an unreasonable risk using the Agency's Whole Chemical Approach.

III. Production of Perchloroethylene

In general, the production of chlorinated light hydrocarbons (those with only one or two carbons in the molecule, also referred to as chlorinated C1 – C2) is primarily through chlorination (reacted with chlorine gas) or oxychlorination (reacted with hydrochloric acid and oxygen). To minimize hazardous wastes, the residues from chlorinated light hydrocarbon

[1] See *88 Fed. Reg. 49180*, "Carbon Tetrachloride (CTC); Regulation Under the Toxic Substances Control Act (TSCA)." EPA-HQ-OPPT-2020-0592; FRL-8206-01-OCSPP, published July 28, 2023.

production processes are recycled and used as feedstocks (inputs) for other chlorinated C1 – C2 processes. That is the case with all perchloroethylene produced in the United States.[2]

Perchloroethylene was initially produced as a byproduct of carbon tetrachloride manufacturing in the early 1900s.[3] The current production methods are chlorination of C1 – C3 recycled chlorinated residues from other hydrocarbon chlorination processes and oxychlorination of ethylene dichloride and recycled C2 chlorinated residues.[4] The resulting product stream in the perchloroethylene production unit is a mixture of various chlorinated C1 – C2 substances, such as methylene chloride, carbon tetrachloride, ethylene dichloride, etc., the individual components of which are separated. The separated individual component substances usually contain trace amounts of the other chlorinated substances found in that particular mixture.

IV. Perchloroethylene Use in Refining Processes

As stated in the previous section, all domestically produced perchloroethylene contains trace amounts of CTC. Perchloroethylene is used as a catalyst regenerator in isomerization and catalytic reforming processes at petroleum refineries. The resulting products from these processes, called isomerate and reformate, go into gasoline blends that make up approximately 45% of the gasoline pool in the United States.[5] The catalyst is critical to process safety because it allows the processes to run at lower reaction temperatures, which is an engineering control to lower the overall safety risk and reduce carbon dioxide emissions from the process. The catalysts also promote the formation of desirable products for EPA-compliant fuels.

Alternatives to perchloroethylene as a catalyst regenerator are all TSCA high-priority chemicals and have all been determined by EPA to have an unreasonable risk. The only other alternative, chlorine gas, is regulated under Department of Homeland Security and United States Coast Guard security regulations and switching to that substance would increase the overall security risk of the facility. Furthermore, switching from perchloroethylene, a liquid substance, to chlorine, a toxic gaseous substance, would also increase overall process safety risks.

Perchloroethylene must be replenished on a periodic basis and is transported to the facility by suppliers who take responsibility for their own employees, especially in the areas of training and personal protection. Transfer operations from containers to processing units are subject to Department of Transportation ("DOT") and Occupational Safety and Health Administration ("OSHA") regulations. The predominant transportation method is by tote or tank truck. If delivered by tank truck, the perchloroethylene is transferred from the truck into a storage tank that is directly hooked up to the processing unit for direct injection in a closed system. If by tote, then the tote is directly hooked up for direct injection in a closed system. The totes and tank trucks are returned to the supplier and are maintained by the supplier. Refinery workers do not clean or service the totes and tank trucks. Cleaning and servicing are performed

---

[2] *Directory of Chemical Producers*, S&P Global Commodity Insight, accessed August 30, 2023.
[3] C. Barton, in *Encyclopedia of Toxicology* (Third Edition), 2014. Accessed through ScienceDirect.com on August 30, 2023.
[4] *Directory of Chemical Producers*, S&P Global Commodity Insight, accessed August 30, 2023.
[5] From Honeywell UOP (UOP) technical presentation to EPA on isomerization and reforming processes, and the use of PCE as a catalyst regenerator.

by the supplier and those conditions of use are accounted for in other sections of the risk evaluation.

Perchloroethylene is used in continuous, closed processes, subject to multiple engineering controls to prevent exposures. As mentioned above, perchloroethylene is directly injected from a tote or storage tank into the closed processing unit. The tanks and totes are clearly labelled in accordance with OSHA hazard communications standards. Transfers of perchloroethylene from tank trucks to storage tanks and changeout of totes are performed pursuant to comprehensive written procedures under strict personal protective equipment ("PPE") guidelines that include hardhats, gloves, goggles and/or face shields, and when appropriate, respirators. Both OSHA and DOT prescribe material handling requirements, including the requirement to wear PPE and train employees on the safe handling of hazardous substances/materials. Those requirements are typically fulfilled by owner/operators for refinery personnel and by employers (e.g., contractors, vendors, etc.) for those who are not direct employees of the owner/operator. These regulations function effectively to mitigate the risks of exposure to perchloroethylene in refineries and it is inappropriate for EPA to assume noncompliance with these existing regulations.

Hoses to transfer perchloroethylene from the tank truck to the storage tank are sealed, creating a closed system for the transfer. The storage tank has a sealed pipe or hose that directly injects the perchloroethylene into the processing unit. Likewise, hoses that transfer perchloroethylene from totes to processing units are sealed, creating a closed system. The only way a worker could be exposed to perchloroethylene during transfer is from an accidental spill or leak from a hose, which is very unlikely and not considered a normal condition of use. Accident scenarios are covered under other OSHA, DOT, and EPA laws and should not be considered in a risk evaluation under TSCA § 6.

Data on perchloroethylene changeout confirms that EPA's exposure estimates are clearly erroneous. For example, EPA exposure models assume that changeout occurs 250 times per year; however, real world changeouts and potential exposure opportunities are significantly lower. Consider, per AFPM members that use perchloroethylene, on average, the frequency that totes are switched out is 10 to 35 times per year. The duration of each changeout is approximately 15 minutes. The frequency of tank truck changeouts is anywhere from 2 to 12 times per year, with an average duration between 30 and 60 minutes each time. The variability in frequencies is due to each refinery being different in design, layout, and processing capacity. The actual frequency of perchloroethylene replenishment shows how unrealistic EPA's use and exposure assumptions are for perchloroethylene as a catalyst regenerator at petroleum refineries. Since CTC is an impurity found in perchloroethylene in trace amounts, the risk to human health and the environment is negligible.

V. EPA Risk Evaluations of Perchloroethylene

EPA's final risk evaluation for PCE did not take into account the unique conditions of use in petroleum refineries; rather, it generalized the use as a processing aid and not specifically as a catalyst regenerator. In its exposure models, EPA assumed that spills from hoses resulting in splashes to the skin occur 250 days per year (with one exposure event per workday). In EPA's modeling scenario that means a spill occurs every day that PCE is used, and the exposed workers

just leave it on their skin without washing it off. The Agency's assumptions ignore fundamental industrial hygiene practices and procedures required by OSHA to protect workers. EPA's modeling assumptions have no basis in reality and are arbitrary and capricious. AFPM, in joint comments with the American Petroleum Institute ("API"), expressed these and other concerns with the risk evaluation for perchloroethylene.[6]

VI. EPA Proposed Regulation of CTC

Unit IV.A.3 of the Proposed Rule would prohibit the use of CTC "as a processing aid in the manufacture of petrochemical-derived products."[7] EPA did attempt to identify current users of CTC as a processing aid for petrochemical-derived products and found none; however, because there is no de minimis exemption in the Proposal, other substances that contain trace amounts of CTC would now be subject to the prohibition. Furthermore, in Unit V.A.6 of the Proposed Rule, EPA "has found that a TSCA section 6(g) exemption is not warranted" and that the Agency will not "grant exemptions from the rule requirements."[8]

The lack of exemptions will have a dramatic impact on isomerate and reformate, which go into blends that make up 45 % of the gasoline pool, because perchloroethylene that contains trace amounts of CTC as an impurity would be banned from use.

AFPM strongly urges EPA to establish a de minimis exemption for CTC to avoid the unintended consequence of duplicative and unnecessary regulation of an impurity in catalyst regenerators for which the Agency has already proposed significant risk management regulations, or worse, a significant disruption in the gasoline supply chain nationwide. AFPM and its members offer to work with EPA to identify an appropriate de minimis threshold level.

VII. Conclusion

AFPM appreciates the opportunity to comment on the proposed risk management rule for CTC. AFPM does not believe that the conditions of use from CTC as an impurity in catalyst regenerators pose an unreasonable risk. AFPM respectfully requests to work with EPA to establish an appropriate de minimis level for CTC. AFPM looks forward to further dialog.

Sincerely,

James Cooper
Senior Petrochemical Advisor

---

[6] See Comments of AFPM and API on EPA's "Perchloroethylene (PCE); Draft Revision to Toxic Substances Control Act (TSCA) Risk Determination; Notice of Availability and Request for Comment." AFPM incorporates these comments by reference hereto.
[7] See *88 Fed. Reg. 49180*, "Carbon Tetrachloride (CTC); Regulation Under the Toxic Substances Control Act (TSCA)." EPA-HQ-OPPT-2020-0592; FRL-8206-01-OCSPP, p. 49202.
[8] *Id.* at 29208.