1,3-BUTADIENE; DRAFT RISK EVALUATION UNDER THE TOXIC SUBSTANCES CONTROL ACT (TSCA); SCIENCE ADVISORY COMMITTEE ON CHEMICALS (SACC) PEER REVIEW; NOTICE OF SACC MEETING, AVAILABILITY OF DRAFT DOCUMENTS AND REQUEST FOR COMMENT

Office of Pollution Prevention and Toxics
United States Environmental Protection Agency

AMERICAN FUEL & PETROCHEMICAL MANUFACTURERS COMMENTS

Attention: EPA–HQ–OPPT–2024–0425; FRL–12241–02–OCSPP

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I. Introduction

The American Fuel & Petrochemical Manufacturers ("AFPM") respectfully submits these comments to the Environmental Protection Agency ("EPA" or "the Agency") on its Federal Register notice titled, "1,3-Butadiene; Draft Risk Evaluation Under the Toxic Substances Control Act (TSCA); Science Advisory Committee on Chemicals (SACC) Peer Review; Notice of SACC Meeting, Availability of Draft Documents and Request for Comment" ("Draft Risk Evaluation" or "Draft"). EPA is seeking comment on its Draft Risk Evaluation for 1,3-butadiene ("butadiene") as well as its supporting documents and analyses.[1] These comments address the Draft Risk Evaluation and its supporting documents and assumptions. AFPM is concerned that:

- Butadiene, a chemical intermediate, which is used in closed systems and consumed in those processes (i.e., with little chance for exposure), was selected as a high-priority chemical;
- EPA has mischaracterized the uses of butadiene and the exposure estimates derived from those errors result in a flawed risk evaluation; and,
- EPA's use of task-based exposures to represent 8-hour shift exposures is unrealistic and vastly overestimates exposure.

Based on the concerns raised in these comments, EPA should repropose the Draft Risk Evaluation and incorporate the toxicity and mechanistic data supplied to the docket by butadiene manufacturers and users that were ignored. EPA should also delete all emissions related to sealants and adhesives, paints and coatings, recycling, and plastic and rubber compounding and converting from the exposure assessment because butadiene copolymers are ingredients in those products and not butadiene itself. And lastly, EPA should prioritize and use measured data first and only resort to using modeled data when there is an absence of measured data and when the data are appropriately representative of the condition of use.

II. AFPM Interest in the Proposed Risk Evaluation

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

AFPM member companies are among the most highly regulated facilities in all manufacturing, and their products have been and will continue to be subject to TSCA. AFPM believes TSCA can be a critical statute to ensure sound chemical management. Unfortunately, in this case, EPA's misunderstanding of butadiene's primary use as an intermediate (i.e., the chemical substance is consumed in a closed-loop process) and failing to acknowledge the

[1] *See 89 Fed. Reg.* 95779, "1,3-Butadiene; Draft Risk Evaluation Under the Toxic Substances Control Act (TSCA); Science Advisory Committee on Chemicals (SACC) Peer Review; Notice of SACC Meeting, Availability of Draft Documents and Request for Comment." EPA–HQ–OPPT–2024–0425; FRL–12241–02–OCSPP, published December 3, 2024.

minimal exposure potential associated with closed-system intermediates (i.e., limited risk presented), diverts EPA resources away from evaluating substances with greater potential for exposure. Furthermore, as detailed in these comments, EPA's Draft Risk Evaluation does not "use scientific information, technical procedures, measures, methods, protocols, methodologies, or models, employed in a manner consistent with the best available science."[2]

Butadiene is a base petrochemical building block used in the production of synthetic rubber and engineered plastics. Butadiene is also an intermediate used to make other chemical intermediates, such as chloroprene for neoprene gloves, and adiponitrile, which is converted to hexamethylenediamine for nylon.[3] It is critical to myriad manufacturing supply chains for aerospace, automotive, electronics, textiles, and even toys.

AFPM members manufacture butadiene. Butadiene is used to make polybutadiene and butadiene copolymers, such as styrene-butadiene copolymer ("SBC"), acrylonitrile-butadiene-styrene terpolymer ("ABS plastic"), and acrylonitrile-butadiene copolymer ("nitrile rubber"). To be clear, SBC, ABS, and other butadiene copolymers are not butadiene. Butadiene is a gas. Butadiene copolymers are solids.

A flawed Draft Risk Evaluation that wrongly labels butadiene as an unreasonable risk will result in inappropriate regulations that will disrupt the essential supply chains listed above. Butadiene is used in industrial settings and in closed processes at highly regulated facilities. It is transported by truck, rail, and barge at different frequencies and with different engineering controls, depending on each company's production processes. The workspaces and loading/unloading areas at petrochemical facilities and refineries are regulated by the Occupational Safety and Health Administration ("OSHA"), International Maritime Dangerous Goods ("IMDG"), and Department of Transportation ("DOT"), so exposures during everyday use are rare.

III. AFPM General Comments on the Prioritization of 1,3-Butadiene

EPA established the Science Advisory Committee on Chemicals ("SACC") in 2017 in accordance with TSCA section 26(o), to provide independent advice and expert consultation with respect to the scientific and technical aspects of issues relating to the implementation of TSCA. The SACC also operates in accordance with the Federal Advisory Committee Act (FACA), (5 U.S.C. 10), and supports activities such as reviews of Draft Risk Evaluations under TSCA. AFPM appreciates the opportunity to provide comments as part of this process and provides these comments on the Draft Risk Evaluation of 1,3-Butadiene.

[2] *See* 15 U.S. Code § 2625(h).

[3] The term "intermediate" describes a chemical substance that is used to make another chemical substance and is consumed in the process. Monomers are intermediates, but not all intermediates are monomers, so there tends to be a distinction between the two.

A. The physical properties, sources, and expected environmental fate of butadiene make it difficult to discern where the molecules originate.

Butadiene is a colorless, flammable, highly reactive gas at ambient temperatures. It is not expected to settle into soil or water. When released, it is primarily partitioned to the atmosphere where, according to EPA, it "will degrade in air rapidly (half-life of 1.6–2.6 hours) by reaction with photochemically produced hydroxyl radicals" and "is not expected to persist or undergo long-range transport."[4]

Butadiene is a product of combustion and has many natural sources. The highest concentrations, however, can be attributed to mobile sources such as forest fires, automobile exhaust, and cigarette smoke. Because of these myriad sources, butadiene is ubiquitous in the atmosphere, especially during the daytime. It is very difficult to discern the sources of butadiene because industrial areas tend to have a lot of combustion processes, both stationary and mobile, and the Volatile Organic Chemical emissions are regulated under other federal laws.

B. EPA's prioritization of butadiene does not meet the statutory requirements of TSCA Sec 6(b) for preferred high-priority chemical substances.

TSCA Sec. 6(b)(2)(D) directs the Agency, when designating high-priority substances, to give preference to chemicals "that are listed in the 2014 update of the TSCA Work Plan for Chemical Assessments ("2014 TSCA Work Plan") as having a Persistence and Bioaccumulation Score of 3," ***and*** "are known human carcinogens ***and*** have high acute ***and*** chronic toxicity (emphasis added)."[5] Butadiene has a persistence and bioaccumulation score of only 1, well below the score of 3 referenced in TSCA Sec. 6(b)(2)(D)(i).[6] Butadiene also does not have high acute toxicity; in fact, according to the National Institute for Occupational Safety and Health ("NIOSH"), it has very low acute toxicity with LC_{50} values for mice and rats at 122,000 ppm and 129,000 ppm, respectively and an LC_{100} of 250,000 ppm for rabbits.[7] The primary reason butadiene is on the 2014 TSCA Work Plan is because it is a known human carcinogen. This fact, along with its flammability, is why exposures to butadiene are tightly controlled in petrochemical and plastics and rubber processing plants through advanced engineering.[8] Yet, EPA chose to designate butadiene as a high priority anyway, even though it did not meet the criteria of Sec. 6(b)(2)(D)(ii).

TSCA Sec. 6(b)(1)(A) stipulates that the "process to designate the priority of chemical substances shall include a consideration of the hazard and exposure potential" as well as the chemical's conditions of use and volumes manufactured or processed, or significant changes in uses or volumes.[9] Sec. 6(b)(1)(B)(i) reiterates this congressional direction when it requires EPA to designate as high-priority substances that "may present an unreasonable risk of injury to health or the environment because of a potential hazard and a potential route of exposure under the

[4] See Draft Risk Evaluation for 1,3-Butadiene. EPA Document# EPA-740-D-24-016, November 2024. p. 30.
[5] *See* 15 U.S. Code § 2605(b)(2)(D).
[6] *See* 2014 update of the TSCA Work Plan for Chemical Assessments.
[7] *See* NIOSH Current Intelligence Bulletin 41, DHHS (NIOSH) PUBLICATION NUMBER 84-105.
[8] For example, systems designed to be closed-loop and self-contained, emissions controls, advanced gasket material, scrubbers, etc.
[9] *See* 15 U.S. Code § 2605(b)(1)(A).

conditions of use."[10] Yet, in the 2014 TSCA Work Plan, the Agency mistakenly concluded that butadiene is used in consumer products.[11] Butadiene is not an ingredient in consumer or commercial products. Again, it is a flammable, highly reactive gas. Butadiene, like other intermediates, is used in closed systems where the chemical reaction consumes the substance. Any residual butadiene in polybutadiene or butadiene copolymers is negligible, measuring in the range of micrograms per gram and nanograms per milliliter, and bound in the polymer matrices by atomic and molecular forces, so it presents no exposure pathway that would affect overall risk.[12]

Lastly, EPA acknowledges that butadiene "has been assessed by multiple national and international governmental organizations and is broadly regulated by EPA, various states, and other countries," so AFPM questions why the Agency would designate butadiene as a high priority in the first place.[13] Moreover, TSCA Sec. 9 requires EPA to consult with other Federal agencies -- and within itself -- to analyze the laws applying to these risks and to assess the utility of using TSCA -- there is nothing in the public record verifying that EPA has met this statutory requirement.

IV. AFPM Comments on the Draft Environmental Release and Occupational Exposure Assessment for 1,3-Butadiene ("Exposure Assessment")

A. EPA distorts the exposure picture in its treatment of workplace monitoring samples below the limit of detection.

As required by TSCA section 6(b)(4)(F)(iv) EPA must take into account, where relevant, the likely duration, intensity, frequency, and number of exposures to a chemical under the conditions of use.[14] This exposure assessment also includes worker populations that are potentially exposed to the chemical. In Section 2.4.3.1 of the Exposure Assessment, though, EPA explains how it either disregards samples below the limit of detection ("LOD") or assigns an estimated value.[15] AFPM not only believes this practice does not comply with the statute, but distorts the analysis of worker exposures, arbitrarily increasing them and adding unnecessary uncertainty.

B. EPA incorrectly assumes accidental releases are frequent at manufacturing sites and considers those accident scenarios a condition of use.

In Section 3.1.4.1 of the Exposure Assessment, EPA states that "workers are potentially exposed to 1,3-butadiene via inhalation of vapors during equipment cleaning, container cleaning,

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[10] *See* 15 U.S. Code § 2605(b)(1)(B)(i).
[11] *See* 2014 update of the TSCA Work Plan for Chemical Assessments.
[12] Abe, Y. , Yamaguchi, M. , Mutsuga, M. , Akiyama, H. and Kawamura, Y. (2013) Volatile Substances in Polymer Toys Made from Butadiene and Styrene. American Journal of Analytical Chemistry, 4, 229-237. doi: 10.4236/ajac.2013.45029.
[13] See Draft Risk Evaluation for 1,3-Butadiene. EPA Document# EPA-740-D-24-016, November 2024. p. 8 and Appendix B p. 138.
[14] *See* 15 U.S. Code § 2605(b)(4)(F)(iv).
[15] *See Draft Environmental Release and Occupational Exposure Assessment for 1,3-Butadiene*, U.S. EPA Office of Pollution Prevention and Chemical Safety. Published November 2024. p.40.

and packaging and loading of 1,3-butadiene into transport containers" and assumes no Personal Protective Equipment ("PPE") is worn.[16] In its Occupational Exposure Scenarios ("OESs"), EPA assumes that butadiene remains in a liquid state in containers prior to cleaning and then volatilizes or that it is accidentally released during each transfer. Both assumptions are incorrect and inappropriate for a TSCA risk evaluation.

The methodology for risk assessment of accident scenarios is different than TSCA risk evaluations. Accident scenarios employ a probabilistic risk assessment methodology based on the frequency of a given type of event and each event is treated separately. Risk evaluations under TSCA use a margin of exposure, which is a simple ratio of a chemical's toxicity to its dose from an experiment or its estimated exposure concentration.

EPA exposure models are not appropriate for probabilistic risk assessments. The models assume that every time a chemical is transferred from a shipping container to a storage container, or from a storage container to a processing unit, that an accidental release occurs and that a worker gets splashed with the chemical. For processing aids, the models assume that transfers occur 250 times per year, 8 hours per day, and that releases and exposures occur with each transfer. Not only are these purely hypothetical transfer scenarios wrong, but the assumption that an accidental release also occurs each time is flawed and results in an exposure assessment that is not accurate, which in turn skews the Draft Risk Evaluation.

C. AFPM supports EPA's use of appropriate monitoring data for OESs specific to manufacturing.

Stakeholders play an active and critical role in the TSCA risk evaluation process by providing EPA information under TSCA sections 4 and 8, and input to EPA per paragraphs (1)(C) and(4)(H) of TSCA section 6(b). Additionally, it is a common practice for impacted stakeholders to form consortia to share costs, promote efficiency, collaborate on the development of comments, and generate relevant data and information to inform the EPA TSCA risk evaluation. To inform EPA's efforts related to 1,3-butadiene, the American Chemistry Council ("ACC") formed a 1,3-Butadiene TSCA Risk Evaluation Consortium ("The Consortium"). The Consortium provided EPA with monitoring data for manufacturing sites and EPA used that data in the Draft Risk Evaluation for both manufacturing and as an analog for some processing scenarios.[17] AFPM supports EPA's decision to use monitoring data supplied by The Consortium for those OESs specific to manufacturing.

D. EPA makes several errors and draws flawed conclusions regarding repackaging.

In Section 3.2.2 of the Exposure Assessment, EPA "identified 115 facilities that potentially repackaged" butadiene.[18] EPA includes "Other Chemical and Allied Products Merchant Wholesalers," "Petroleum Bulk Stations and Terminals," and "Pipeline Transportation

[16] *See* *Draft Environmental Release and Occupational Exposure Assessment for 1,3-Butadiene*, U.S. EPA Office of Pollution Prevention and Chemical Safety. Published November 2024. p. 47.
[17] *Id.* at p. 49.
[18] *Id.* at p. 53.

of Refined Petroleum Products" as repackaging facilities.[19] EPA also included facilities that had the words "tank farm" or "terminal" in their name. In its exposure calculations, EPA assumes repackaging occurs 350 times per year at each facility and that there are releases each day.[20]

Because of its reactivity and potential for polymerization, and its use as a feedstock for synthetic rubber and polymers, butadiene is shipped by pipelines, rail cars, and barges. Butadiene is rarely repackaged into smaller containers because it is shipped as a liquid with a stabilizer to prevent polymerization. To further complicate the issue, EPA uses data provided by The Consortium for manufacturing as an analog for repackaging; however, those data are not appropriate for repackaging -- those use scenarios involve transfers between containers during transportation and assume accidental releases during each transfer.

EPA erroneously assumes releases from solids at repackaging facilities. Figure 3-2 of the Exposure Assessment lists EPA's assumptions of releases. The list includes releases to "air, water, incineration, or landfill from unloading solids from transport containers."[21] Table 3.5 assumes releases from repackaging facilities 350 days per year.[22] The list also includes loading of solids. Butadiene is a gas and is not released anywhere from the loading or unloading of solids. These data should be excluded from EPA's analysis.

EPA also uses inappropriate NAICS codes for repackaging. Table 3.6 lists NAICS codes the Agency uses to estimate the number of workers potentially exposed under the OES of repackaging:

- 424610 Plastics Materials and Basic Forms and Shapes Merchant Wholesalers
- 424690 Other Chemical and Allied Products Merchant Wholesalers
- 424710 Petroleum Bulk Stations and Terminals
- 424720 Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)
- 486910 Pipeline Transportation of Refined Petroleum Products [23]

Plastic materials are **not** butadiene; rather, butadiene is used to make plastic materials. Petroleum products do not contain butadiene. Butadiene can be an impurity in the C4 streams from Fluidized Catalytic Cracker and Catalytic Cracking units at petroleum refineries. The C4 streams can be a feedstock along with C3 streams for alkylation units; however, the trace amounts of butadiene are routinely reacted out before the C4 stream is sent to the alkylation unit. In addition, alkylation units convert the C3 and C4 streams into different molecules (branched molecules, mostly C7s and C8s, with high octane ratings) and the C3s and C4s are consumed in the process.[24] Butadiene is a gas and is not an ingredient in liquid fuels. Therefore, EPA should update their evaluation and assessment and only include the appropriate NAICS codes.

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[19] *Id.*
[20] *Id.*
[21] *Id.*
[22] *Id.* at 54.
[23] *Id.* at 55.
[24] See Patent 3,160,674, Lawrence 'G. Cannell and George Holzman, assignors to Shell Oil Company, New York, NY. . United States Patent US 3,160,674, filed Aug. 11, 1964.

E. EPA disregards task-based exposure scenarios by mistreating measured data from workplace sampling.

Per the Exposure Assessment, sampling durations during transfers of butadiene can result in an exposure range from 15 to 239 minutes.[25] Despite these data, EPA assumes "that the task-based samples are representative of a full-shift exposure."[26] For an 8-hour shift this would be a 2X (480 minute) overestimate of even the highest range. This vastly distorts the exposure profile for repackaging, manufacturing, processing, and any other OESs that include product transfers, and leads to an unreasonable risk of injury determination for certain workers in the Draft Risk Evaluation.[27] AFPM adamantly opposes the assumption that task-based exposure is representative of an 8-hour or 12-hour workday.

To be compliant with TSCA section 26(h), AFPM strongly urges EPA to redo the exposure assessment and subsequent risk evaluation for the above-mentioned OESs, using measured data that accurately represents the OES instead of inappropriately extrapolating from task-based exposures to entire work shifts.

F. EPA uses flawed data and makes critical errors regarding the processing of 1,3-butadiene.

In Section 3.4 of the Exposure Assessment, EPA has mischaracterized how butadiene "is used in adhesive manufacturing, paints and coatings manufacturing, and oil and grease lubricant manufacturing," implying that butadiene is an ingredient in those products. [28] The Agency incorrectly relied on 2016 data from the Chemical Data Reporting ("CDR") database. Prior to 2020, the format and nature of CDR information collection did not distinguish between monomers and polymers. This fact left reporters no choice but to imprecisely report butadiene as being used to make those finished goods. This connection, though, would be false, because butadiene is used as a monomer to make polymers or an intermediate to make other chemicals that are subsequently deployed to manufacture finished goods.

Butadiene is consumed in the processes that make those other chemicals. To reiterate, the ingredients in formulations and finished goods are polymers, not butadiene. Therefore, the entire OES of Processing – Incorporation into Formulation, Mixture or Reaction Product is invalid (unless the finished good is a gaseous substance) and should not be used in the Draft Risk Evaluation for butadiene.

G. The Exposure Assessment incorrectly attributes plastic and rubber compounding scenarios to butadiene.

Section 3.5 of the Exposure Assessment on plastic and rubber compounding and converting correctly describes the processes and the polymers involved, but those polymers

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[25] *Id.*
[26] *Id.*
[27] *See* Draft Risk Evaluation for 1,3-Butadiene. EPA Document# EPA-740-D-24-016, November 2024. p. 64.
[28] *See Draft Environmental Release and Occupational Exposure Assessment for 1,3-Butadiene*, U.S. EPA Office of Pollution Prevention and Chemical Safety. Published November 2024. p. 64.

should not be part of the Draft Risk Evaluation. The Draft Risk Evaluation is for butadiene, not butadiene copolymers. In Section 3.5.1 and 3.6.1 of the Exposure Assessment, EPA provides descriptions for compounding and converting processes from a variety of sources.[29] These sections describe various polymers and how they are compounded; however, the exposure assessment incorrectly attributes those scenarios to butadiene. Butadiene itself is **not** in plastic or rubber; those are polymers made from butadiene. Both OESs should be removed in their entirety from both the hazard assessment and the Draft Risk Evaluation because they are not pertinent to butadiene.

H. EPA's assumption regarding laboratory use of butadiene is unrealistic.

In Unit 3.8.1 of the Exposure Assessment, EPA attempts to describe how butadiene would be used in a laboratory. The Agency acknowledges they do not have information on laboratory use but then assumes that butadiene would arrive "as a pressurized liquid in drums or smaller containers."[30] The most likely containers will be small cylinders that allow for butadiene to be released as a gas, even if in liquid phase inside the cylinder. EPA claims that the unconsumed butadiene will be "disposed of with other laboratory wastes." This scenario, though, is unrealistic in any type of industrial or academic laboratory setting.

Fume hoods are employed for the handling of flammable and reactive gases. Lab workers use hoses to transfer butadiene from cylinders to lab-scale reaction chambers or analytical equipment to create a closed system. Moreover, EPA should not speculate how butadiene may be used in laboratory settings. Rather, as TSCA provides robust information collection authority, the Agency should obtain this information from chemists experienced with handling butadiene and redo the entire OES based on accurate information.

I. EPA's consideration of other OESs in the Exposure Assessment are misinformed.

Throughout the Exposure Assessment, EPA points to other products, such as paints and coatings, adhesives and sealants, fuels, etc. If environmental releases from any facility in those manufacturing sectors were used in the overall exposure estimates to the general population, then those estimates would be invalid because those manufacturing scenarios pertain to polymers made from butadiene and not butadiene itself. As mentioned previously, butadiene is chemically changed in the process of creating copolymers, so butadiene is not present in anything but trace amounts under these OESs. Even in aggregate, those few molecules are meaningless in terms of overall risk.

The assumptions for the recycling OES, too, are as specious as the others. Unit 3.12.1 discusses the process description for recycling, which includes combining recycled butadiene with crude streams for energy recovery; incorporating it as a feedstock for ethylene production; using unreacted butadiene-containing monomers to recycle back to the reactors to improve the

[29] *Id.* at 73.
[30] *Id.* at 87.

process yield; and "recycling of plastic and rubber products." Those recycling processes are assumed to take place 350 days per year at each facility.[31]

As discussed previously, butadiene is not an ingredient in fuels. It can be found as a byproduct in trace amounts of the C4 stream, which is "reacted out" before the C4 stream is fed into an alkylation unit, consuming the C4s to make branched hydrocarbons in the C7 and C8 range. Therefore, releases and exposures to any appreciable amount of butadiene is unrealistic.

Ethylene production also takes place in closed systems at highly regulated facilities, so any butadiene recycled as feedstock to those units will be consumed just like the other feedstock components. The same holds true for converting butadiene to polymers and intermediates. All of those employ closed systems and take place under rigorous regulatory controls. Again, the likelihood of exposure is remote.

Lastly, EPA assumes that the recycling of solid materials, which involves shredding tires and plastic goods, will somehow result in release of a gas (i.e., butadiene) to which people will be exposed. This scenario is not realistic for two reasons; first, the butadiene has been transformed into solid co-polymers and is consumed in the process; and secondly, shredding would not result in the release of a gas because it takes energy in the form of heat to turn a solid into a gas.

V. AFPM Comments on the Draft Risk Evaluation of 1,3-Butadiene

J. EPA makes several critical errors regarding how 1,3-butadiene is used, and this undermines the Draft Risk Evaluation findings.

Throughout the Draft Risk Evaluation EPA makes several errors regarding the uses of 1,3-butadiene. These errors described below undermine the validity of the findings and highlight the need for EPA to revisit and update the evaluation.

- The Life Cycle Diagram ("LCD") in the Draft Risk Evaluation mischaracterizes how butadiene is used. In Table 2.1, EPA claims that under the "processing" category of use, butadiene is incorporated into formulations, mixtures, or reaction products, implying that butadiene is an ingredient.[32] This same table also claims that butadiene is incorporated into articles.
- The LCD has processing categories feeding directly into industrial and commercial uses, such as adhesives and sealants, automotive care products, fuel and related products, laboratory chemicals, lubricants and lubricant additives, paints and coatings, and plastic and rubber products.
- In Section 2.1 of the Draft, EPA claims that a general "Other" category of uses "may include use in formulations."[33]

[31] *Id.* at 105.
[32] *See* Draft Risk Evaluation for 1,3-Butadiene. EPA Document# EPA-740-D-24-016, November 2024. p. 8.
[33] *Id.* at 14.

Butadiene is not an ingredient in any of the products listed in the LCD or in commercial formulations in general. Butadiene is a gas. None of those products are gases.

EPA also incorrectly claims butadiene is used in fuels. As explained in Section "V" subsection "E" of these comments, butadiene is a gas and is not an ingredient in gasoline or other liquid fuels. Yet, in Table 2.1 of the Draft, under the "Distribution in Commerce" lifecycle stage, EPA claims butadiene is "sold to re-sellers for petroleum fuel"[34] and under the lifecycle stage of Commercial Use, the Agency lists butadiene as being used in "fuels and related products."[35] This OES should be removed altogether because it does not involve butadiene.

The Draft Risk Evaluation inaccurately includes "routine direct contact" with butadiene through the use of rubber and plastic articles (See e.g. Table 2.1).[36] Even EPA acknowledges that butadiene "does not exist at concentrations above 6.6 ppm in rubber products or above quantifiable levels in lubricants and greases."[37]

Table 2.2 of the Draft goes on to list butadiene under the lifecycle stage of Consumer Use, listing many of the same categories and subcategories.[38] The actual butadiene derivatives that are in those products are polymers and copolymers. They are not butadiene. AFPM supports EPA's decision not to quantify consumer uses in the Draft Risk Evaluation.

Table 2.3 of the Draft lists OESs and states butadiene "may be used during lubricant manufacturing as a viscosity improver, as well as in paints, coatings, and adhesive manufacturing as a binder."[39] All of the viscosity agents and binders in those products are copolymers of butadiene. They are not 1,3-butadiene. With respect to lubricants, EPA corrects itself in Section 4.1.1.1 when it explains that "any 1,3-butadiene indicated in SDSs or other product reports referred either to upstream steps or to reacted polymeric forms" of butadiene and that butadiene concentrations in lubricants are below quantifiable levels.[40] This OES should be removed altogether because it does not involve butadiene.

K. The conceptual model for inhalation exposures relies on flawed assumptions about use and exposure scenarios.

According to the Agency's conceptual model for inhalation exposures to workers and the general public, the vast majority of exposures are due to fugitive emissions from manufacturing and processing, and from the manufacture of adhesives and sealants, automotive care products, fuel and related products, lubricants and lubricant additives, paints and coatings, plastic and rubber products, and recycling.[41] As stated repeatedly, butadiene is manufactured and processed in closed systems and consumed in those processes.

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[34] *Id.* at 15.
[35] *Id.*
[36] *Id.*
[37] *Id.*at 34.
[38] *Id.* at 16-17.
[39] *Id.* at 22.
[40] *Id.* at 35.
[41] *Id.* at 25.

Butadiene is not an ingredient in any of the commercial products listed. Butadiene is a flammable, highly reactive gas. The conceptual model for inhalation exposure, upon which most of the Draft Risk Evaluation findings are based, is fundamentally flawed and, therefore, the entire exposure assessment and Draft Risk Evaluation are suspect and do not meet the requirements on TSCA Sec. 26(h)(1).[42] Unless EPA can provide measured data to quantify actual releases of butadiene from any of those products, it should delete those emissions from the exposure assessment.

L. The Draft Risk Evaluation includes critical mistakes regarding environmental releases of butadiene.

The Draft includes releases of butadiene based on National Emissions Inventory ("NEI") data from sources not relevant to TSCA Conditions of Use for butadiene. Table 4.1 of the Draft lists releases from a variety of OESs, which includes NEI data.[43] The NEI database is not an appropriate source of information because the interpretation of reportable butadiene is left up to submitters, many of which are not chemists or engineers and may not be able to discern butadiene from its polymers or from natural sources. For example, the NEI database used in the Draft Risk Evaluation includes many landfills, paper companies, tire companies, users of paints and coatings, and others that manufacture or handle synthetic rubber, plastics, and polymer coatings, all of which are made from butadiene derivatives, but none of which are butadiene itself.[44]Additionally, the NEI data include incomplete combustion from a variety of sources including furnaces, which are outside the scope of TSCA.

The emissions for certain OESs used in the Draft Risk Evaluation are not valid. For example, butadiene is not an ingredient in paints and coatings. Butadiene is a gas. The actual ingredient used as a binder in paint is a copolymer made from butadiene, which is not butadiene.

Another OES listed in the table is emissions from the application of adhesives and sealants.[45] Setting aside that those estimated releases are based on modeling, butadiene is not an ingredient in adhesives or sealants. The actual ingredient is a copolymer made from butadiene, which is not butadiene itself. Emissions from plastic and rubber compounding and converting are also included in the table. Plastic and rubber are not butadiene.

The Draft Risk Evaluation also includes recycling as an OES. AFPM acknowledges that butadiene-derived products are recycled but butadiene, a flammable and reactive gas, is not." Waste-handling, disposal, and treatment are also listed. AFPM finds it hard to believe that anyone disposes of butadiene as a waste. To reiterate, butadiene is a reactive and flammable gas. It is not an ingredient in finished products.

[42] See 15 U.S. Code § 2625(h)(1).
[43] *Id.* at 36.
[44] *See* National Emissions Inventory for details and access to data.
[45] *Id.* at 37.

M. EPA uses erroneous OESs to estimate worker exposure resulting in an overestimate of risk.

Regarding workers, Table 5.4 of the Draft Risk Evaluation lists OESs, the types of workers who could be exposed for each OES, and exposure estimates.[46] The table lists many of the problematic OESs found in the Exposure Assessment, such as repackaging, manufacturing of adhesives and sealants, paints and coatings, solid rocket fuels, synthetic fibers, plastics, etc., none of which pertain to butadiene. Polymers made from butadiene are used to manufacture those products. It also mistakenly lists butadiene incorporation into formulations and mixtures, as well as articles. Again, polymeric substances are incorporated into those products, not butadiene. Because of these errors, AFPM calls into question the entire table and the basis for the occupational exposure findings in the Draft Risk Evaluation. Unless EPA can demonstrate quantitatively that butadiene is released from those products, those OESs and contributions to the exposure estimates should be removed from the occupational exposure assessment.

EPA uses inaccurate OESs to estimate cancer risks to the general public. Tables 5.5 and 5.6 summarize cancer risks to the general population based on the same problematic OESs as the risk to workers.[47] For the same reasons as outlined in the previous section, these estimates are invalid and so is the basis for EPA's unreasonable risk finding for the general public and any sensitive subpopulations.

EPA uses incorrect OESs to determine unreasonable risk. Unit 7 of the Draft Risk Assessment incorporates the same unsound OESs used to estimate worker exposures and cancer risks to the general public and states that whether they are "considered singularly or in combination with other exposures, significantly contribute to the unreasonable risk."[48] AFPM absolutely and unequivocally disputes this assertion because most of those OESs pertain to polymers made from butadiene and not butadiene itself.

VI. Conclusion

Butadiene is the first fundamental petrochemical building block to undergo risk evaluation under TSCA. AFPM has serious concerns about EPA selecting butadiene for consideration as a high priority in the first place given its role as a chemical intermediate used in closed systems. In addition, EPA's Draft Risk Evaluation has elevated our concerns given the many incorrect and unscientific assumptions it makes. Butadiene does not meet the statutory requirements for selection in TSCA Sec 6(b).

The exposure assessment for butadiene mistakenly depends on scenarios that involve polymers rather than the actual chemical substance, butadiene. The Draft Risk Evaluation derives its findings from inappropriate or incorrect exposure estimates and does not meet the scientific standards outlined in TSCA Sec. 26. Considering these errors,

[46] *Id.* at pp.59 – 80.
[47] *Id.* at pp.83 – 84 and pp.89 – 95.
[48] *Id.* at p. 109.

AFPM strongly urges EPA to discard the OESs that feature polymers and do not pertain directly to butadiene, redo the exposure estimates based on correct OESs, utilize data provided by the 1,3-butadiene Risk Evaluation Consortium, and repropose the risk evaluation.

Sincerely,

James Cooper
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