March 20, 2025

Comments from Scientists, Academics, and Clinicians on the Draft Risk Evaluation for 1,3-Butadiene Under TSCA

Submitted online via Regulations.gov to docket EPA-HQ-OPPT-2024-0425-0071

We appreciate the opportunity to provide written comments on the supplement to EPA's Draft Risk Evaluation for 1,3-Butadiene, (hereafter referred to as the *1,3-Butadiene Draft Risk Evaluation*) conducted under the Toxic Substances Control Act (TSCA), which requires EPA to evaluate chemical risks based on the "best available science."[1] In the 1,3-Butadiene Draft Risk Evaluation, EPA appropriately determined that air emissions of 1,3-butadiene pose an unreasonable risk of cancer to the general public, with fenceline communities exposed to risks greater than 1-in-a million. EPA's previous analysis was based on emissions data from the Toxics Release Inventory (TRI). EPA's new supplement uses emissions data from the National Emissions Inventory (NEI) to estimate cancer risk, but only for 9 facilities with previous risk estimates greater than 1-in-100,000. The supplement does not present risk estimates for approximately 700 other facilities with data on 1,3-butadiene emissions in NEI, including the facilities with the highest emissions.

EPA reports that the cancer risks for the 9 facilities modeled are lower when using NEI data as compared with risk estimates derived with TRI data, but it provides no explanation for this result. EPA compared the TRI and NEI-based estimates at census block centroids, when a more appropriate comparison would be at the fenceline for each facility, approximated as 100 meters from the release point. In the case of at least one out of the 9 facilities, the estimate of 2017 1,3-butadiene emissions in the NEI is approximately 300-fold lower than the TRI value; EPA does not discuss why it has 2 emissions estimates for the same facility in the same year that are so drastically different. In the absence of a concrete explanation based on strong and verifiable evidence, EPA should base any conclusions on the higher emissions estimate to ensure protection of fenceline communities. In addition, the EPA supplement estimates risk based only on emissions from single facilities in isolation rather than aggregate ambient concentrations resulting from combined emissions of multiple facilities. Two out of the 9 facilities modeled by EPA in the supplement are both located in Orange, TX, but EPA's analysis does not recognize that the air inhaled by community residents will have 1,3-butadiene from both facilities, as well as emissions of the chemical from numerous additional facilities in Orange and other nearby cities. As a result, EPA's supplement fails to apply the best available science and underestimates real-world cancer risks to the most-burdened fenceline communities.

EPA's supplement is too limited to inform any conclusions regarding general population risk from 1,3-butadiene emissions. Any analysis EPA conducts of cancer risk using NEI emissions should incorporate data for all facilities, model risks at the fenceline, and model combined risks of 1,3-butadiene in all locations where two or more facilities are within 50 km of each other. To ensure fenceline communities are adequately protected, where there are important differences

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[1] 15 USC §2625(h).

between TRI and NEI-based risk estimates, EPA should seek to determine the reason for these differences and, in the absence of compelling evidence to the contrary, should always use the higher risk estimate in drawing any conclusions and in determination of unreasonable risk.

Our detailed comments on the supplement to the 1,3-Butadiene Draft Risk Evaluation address the following issues:

1. **EPA's Draft Risk Evaluation appropriately determined that air emissions of 1,3-butadiene pose an unreasonable risk of cancer to the general public. EPA's limited and flawed supplement analyzing a small subset of emitting facilities should have no impact on this conclusion and is not an adequate basis for decision-making.**

2. **EPA's supplement significantly underestimates risk by disregarding the aggregate exposures of the general public to 1,3-butadiene in communities located near multiple emitting facilities.**

3. **EPA's supplement underestimates risk by disregarding many of the facilities with the largest emissions reported in the NEI.**

We appreciate the opportunity to provide public input. Please do not hesitate to contact us with any questions regarding these comments.

Sincerely,

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Detailed Comments:

1. **EPA's Draft Risk Evaluation appropriately determined that air emissions of 1,3-butadiene pose an unreasonable risk of cancer to the general public. EPA's limited and flawed supplement analyzing a small subset of emitting facilities should have no impact on this conclusion and is not an adequate basis for decision-making.**

In the draft risk evaluation, EPA concluded that the general population is at unreasonable risk from air exposures to 1,3-butadiene based on exposed populations with cancer risks greater than the 1-in-a-million benchmark. EPA's draft risk evaluation shows that 47 facilities pose cancer risks greater than 1-in-a-million to nearby residents.[2] These risk estimates were derived using data from the Toxics Release Inventory (TRI).

In the draft risk evaluation, EPA stated its intent to conduct further modeling using data from the National Emissions Inventory (NEI):

> EPA intends to incorporate exposures and risks analyses based on the 2017 and 2020 NEI reported releases for the finalized draft risk evaluation.[3]

We support EPA's intent to incorporate analysis using NEI data alongside the TRI estimates in the final risk evaluation, however EPA's supplementary analysis using only a small amount of NEI data does not satisfy TSCA's requirement for using the best available science. EPA has released for comment a very limited analysis using NEI data for only 9 facilities – or roughly 1% of the more than 700 facilities with 2020 data in the NEI. No firm conclusions can be drawn from such a limited analysis, and the purpose of this analysis in unclear.

EPA's supplement compares the original TRI-based risk estimates for each of the 9 facilities alone to NEI-based estimates and concludes that use of the NEI data results in lower cancer risks at each site. However, the scope of the supplementary analysis is much narrower than the previous analysis conducted using TRI data. EPA described its analysis of risks from 1,3-butadiene air emissions using TRI data in the 1,3-Butadiene Draft Risk Evaluation as follows:

> For general population exposures, including exposures to fenceline communities, EPA modeled air concentrations from facilities, focusing on the distances of 100 m, 100 to 1,000 m, and 1,000 m from release points, and aggregated exposures from multiple facilities from all releasing facilities within a 50,000-meter radius to the general population within a given census block based on 2020 census data.[4]

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[2] U.S. EPA (2024). Draft Human Exposure Model (HEM) TRI 2016 to 2021 Exposure and Risk Analysis for 1,3-Butadiene, "Population Risk" tab.

[3] U.S. EPA (2024). Draft General Population Exposure for 1,3-Butadiene, p. 8.

[4] U.S. EPA (2024). Draft Risk Evaluation for 1,3-Butadiene, p. 112.

The supplement did not conduct the same modeling. In contrast to the draft risk evaluation, EPA's conclusion in the supplementary analysis is based on inappropriate comparisons of the estimated "census block with the highest risk" from TRI and NEI for each facility,[5] instead of comparing risks at 100 meters. Census block centroids can be located far from the fenceline, and thus the cancer risk estimates being compared may substantially understate the risk to community residents exposed to the highest concentrations of 1,3-butadiene. EPA's analysis using NEI data should instead be assessing 1,3-butadiene concentrations and risks within 100 meters of the release point at each facility.

In addition, the supplemental analysis using NEI data considers risks only from individual facilities, and not aggregate exposures to community residents from all facilities within 50 km (see further comment below).

Further, it is not clear that EPA has modeled each site with all relevant NEI data. For example, EPA provides the identifier for the Shell Norco plant as EISD 8239511.[6] However, the Excel file presenting the NEI data reports emissions from this plant with both EISD 8239511 and an additional identifier of EISD 8018911.[7] It appears that EPA's modeling excluded the emissions from Shell Norco reported in the NEI for EISD 8018911, and therefore has underestimated the population risk from Shell Norco emissions.

EPA makes no attempt to determine the reasons for any discrepancies between the TRI-based and NEI-based risk estimates. For the Total Energies facility in Port Arthur, TX, EPA reports a 2000-fold lower risk when using the NEI: 7.4E-05 risk based on TRI and 3.7E-08 risk based on NEI.[8] EPA should not report such large differences in risk without some effort to determine the underlying reasons. In this case, it appears that the TRI and NEI have vastly different emissions estimates for this facility; for 2017, TRI emissions (TRI ID 77640FNLNDHIGHW) are reported as 143,508 pounds[9] (equal to 65,231 kg) and NEI emissions (EISD 4863111) are 223 kg,[10] or 300-fold lower. The NEI value seems implausible and could be an error; until a reason for the discrepancy is determined, the NEI-based risk estimate for this facility should be regarded as highly unreliable and should be disregarded.

EPA should proceed with a thorough analysis making use of NEI data, as it previously indicated. This analysis may be useful in identifying additional locations at high risk that were not identified by the TRI analysis. To ensure protection of fenceline communities, in any instance where there are significant differences between TRI-based and NEI-based estimates, EPA should use the higher risk for risk characterization and unreasonable risk determination unless it has detailed and thorough documentation of facility-specific evidence to substantiate that erroneous data were used to develop that estimate.

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[5] U.S. EPA (2025). 1,3-Butadiene TRI and NEI Risk Estimate Comparison Analysis, Table 1.
[6] U.S. EPA (2025). 1,3-Butadiene TRI and NEI Risk Estimate Comparison Analysis, Table 1.
[7] U.S. EPA (2024). Draft Air Releases (NEI 2017) for 1,3-Butadiene, "2017 & 2020 Summary_Point" tab.
[8] U.S. EPA (2025). 1,3-Butadiene TRI and NEI Risk Estimate Comparison Analysis, Table 1.
[9] U.S. EPA (2024). Draft Air Releases (TRI) for 1,3-Butadiene, "2016-2021 TRI" tab.
[10] U.S. EPA (2024). Draft Air Releases (NEI 2017) for 1,3-Butadiene, "2017 & 2020 Summary_Point" tab.

2. **EPA's supplement significantly underestimates risk by disregarding the aggregate exposures of the general public to 1,3-butadiene in communities located near multiple emitting facilities.**

EPA's supplement reports cancer risk estimates for each of 9 facilities considered in isolation, without assessing the combined community exposures to 1,3-butadiene emitted from multiple neighboring sources. Two out of the 9 facilities that EPA modeled with NEI data are located in Orange, TX: Lion Elastomers (EISD 5780411, zip code 77630) and Arlanxeo (EISD 3961411, zip code 77630). Residents living near one of these plants are also very likely to be exposed to emissions from the other plant. EPA's approach treats each facility as if they are hundreds of miles apart rather than in close proximity to one another, and thus significantly underestimates the risk.

For 1,3-butadiene, this issue is much more extensive than just 2 neighboring plants. In addition to Lion Elastomers and Arlanxeo, at least three other large 1,3-butadiene emitters are found in Orange (EISDs 4190211, 5780411, 10678011, zip codes 77630 and 77631) and at least 13 more emitting facilities are located in the neighboring Golden Triangle cities of Beaumont, Port Neches, and Port Arthur, TX (zip codes 77640, 77643, 77651, 77701, 77704, 77705) – a total of at least 18 facilities in the 2020 NEI.[11] Other communities outside of the Golden Triangle also are exposed to 1,3-butadiene emitted by multiple facilities.

Any determination of risk to fenceline communities or the general population that does not consider the combined air concentrations of 1,3-butadiene from multiple emitters will understate risk. The risk estimates presented in EPA's supplement are not consistent with the best available science because they disregard how the close proximity of multiple facilities results in greater concentrations of 1,3-butadiene in neighboring comunities.

3. **EPA's supplement underestimates risk by disregarding many of the facilities with the largest emissions reported in the NEI.**

EPA's supplement presents risk estimates for only 9 facilities – only a small portion of the 47 facilities found to exceed 1-in-a-million risk using TRI data, and a smaller portion of the more than 700 facilities with 2020 data in the NEI. The 9 facilities addressed in the supplement are also not the sites with the greatest emissions in the NEI, and therefore are unlikely to present the greatest risks when modeling with NEI data.

Table 1 presents NEI emissions estimates for all facilities with emissions greater than 5,000 kg in either 2017 or 2020. The facility with the greatest emissions is the Channelview complex in Channelview, TX, with 77,032 kg emitted in 2020 – approximately 2.5 times the emissions of the highest-emitting plant that was modeled (the Arlanxeo facility in Orange, TX – 31,345 kg in 2020). The Chocolate Bayou Plant in Alvin, TX, with 47,617 kg emitted in 2017 also has greater emissions than any one of the 9 facilities modeled by EPA, and 3 additional facilities have emissions greater than 20,000 kg in 2017 and/or 2020.

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[11] U.S. EPA (2024). Draft Air Releases (NEI 2017) for 1,3-Butadiene, "2017 & 2020 Summary_Point" tab.

EPA should use NEI data for all facilities and not a small, selective subset. If EPA's intent is to provide an illustrative analysis of what NEI-based results might look like using only a small number of facilities, it should focus that analysis on the highest-emitting facilities while also examining locations where multiple 1,3-butadiene emitters are located in close proximity to one another.

Table 1. Emissions of 1,3-butadiene reported in EPA's National Emissions Inventory (NEI) for 2017-2020: Facilities with emissions of 5,000 kg/yr or more.

Facility Name	City	State	Zip	EIS Facility Identifier	Year	NEI Emissions (kg/yr)	Included in EPA supplement?
CHANNELVIEW COMPLEX	CHANNELVIEW	TX	77530	4925111	2020	77,032	NO
CHANNELVIEW COMPLEX	CHANNELVIEW	TX	77530	4925111	2017	48,514	NO
CHOCOLATE BAYOU PLANT	ALVIN	TX	77512	5632411	2017	47,617	NO
ORANGE PLANT (Arlanxeo)	**ORANGE**	**TX**	**77630**	**3961411**	**2020**	**31,345**	**Yes**
DEER PARK PLANT	DEER PARK	TX	77536	4168511	2017	29,450	NO
SABIC Innovative Plastics US LLC	Ottawa	IL	61350	7339111	2020	28,810	NO
CHOCOLATE BAYOU PLANT	ALVIN	TX	77512	5632411	2020	27,326	NO
SABIC Innovative Plastics US LLC	Ottawa	IL	61350	7339111	2017	24,949	NO
ORANGE PLANT (Arlanxeo)	**ORANGE**	**TX**	**77630**	**3961411**	**2017**	**23,681**	**Yes**
BAYTOWN OLEFINS PLANT	BAYTOWN	TX	77520	4056511	2017	22,630	NO
BAYTOWN OLEFINS PLANT	BAYTOWN	TX	77520	4056511	2020	20,134	NO
PORT NECHES OPERATIONS C4 PLANT (TPC Group)	**PORT NECHES**	**TX**	**77651**	**13407911**	**2017**	**19,169**	**Yes**
DEER PARK CHEMICALS	DEER PARK	TX	77536	4168511	2020	15,219	NO
HOUSTON CHEMICAL PLANT	HOUSTON	TX	77017	4941211	2020	14,652	NO

Facility Name	City	State	Zip	EIS Facility Identifier	Year	NEI Emissions (kg/yr)	Included in EPA supplement?
BEAUMONT CHEMICAL PLANT (Goodyear)	**BEAUMONT**	**TX**	**77704**	**5653011**	**2017**	**13,560**	**Yes**
FORMOSA POINT COMFORT PLANT	POINT COMFORT	TX	77978	5633411	2017	13,381	NO
Shell Chemical LP - Norco Chemical Plant - East Site	**Norco**	**LA**	**70079**	**8239511**	**2017**	**12,268**	**Yes**
BORGER PLANT	BORGER	TX	79007	6157311	2020	11,977	NO
BASF TOTAL NAFTA REGION OLEFINS COMPLEX	PORT ARTHUR	TX	77640	6445411	2017	11,256	NO
VICTORIA SITE	VICTORIA	TX	77901	5679711	2020	10,908	NO
BEAUMONT CHEMICAL PLANT	BEAUMONT	TX	77704	4930211	2017	10,735	NO
ORANGE SITE	ORANGE	TX	77631	10678011	2020	10,702	NO
BEAUMONT CHEMICAL PLANT (Goodyear)	**BEAUMONT**	**TX**	**77705**	**5653011**	**2020**	**9,959**	**Yes**
PHILTEX RYTON PLANT	BORGER	TX	79007	6157311	2017	9,282	NO
VICTORIA SITE	VICTORIA	TX	77901	5679711	2017	9,275	NO
PORT NECHES OPERATIONS C4 PLANT (TPC Group)	**PORT NECHES**	**TX**	**77651**	**13407911**	**2020**	**9,142**	**Yes**
GALENA PARK TERMINAL	GALENA PARK	TX	77547	6533811	2017	8,955	NO
TEXAS OPERATIONS	LONGVIEW	TX	75607	4941511	2017	7,545	NO
BASF TOTAL NAFTA REGION OLEFINS COMPLEX	PORT ARTHUR	TX	77640	6445411	2020	7,436	NO

Facility Name	City	State	Zip	EIS Facility Identifier	Year	NEI Emissions (kg/yr)	Included in EPA supplement?
Union Carbide Corp - St Charles Plant	Hahnville	LA	70057	7202911	2020	7,369	NO
BAYPORT FACILITY (Dixie Chemical)	**LA PORTE**	**TX**	**77571**	**4862611**	**2020**	**7,353**	**Yes**
Firestone Polymers LLC - Lake Charles Facility	**Sulphur**	**LA**	**70665**	**8465911**	**2017**	**7,307**	**Yes**
INVISTA SARL SABINE RIVER SITE	ORANGE	TX	77631	10678011	2017	7,303	NO
PORT NECHES SYNTHETIC RUBBER PLANT	PORT NECHES	TX	77651	5651611	2020	6,411	NO
EQUISTAR CHEMICALS, LP	CLINTON	IA	52732	5509711	2020	6,159	NO
HOUSTON PLANT	HOUSTON	TX	77017	4168611	2020	6,106	NO
Sasol Chemicals (USA) LLC - Lake Charles Chemical Complex	**Westlake**	**LA**	**70669**	**8468011**	**2020**	**6,030**	**Yes**
HOUSTON PLANT	HOUSTON	TX	77017	4168611	2017	6,029	NO
GALENA PARK TERMINAL	GALENA PARK	TX	77547	6533811	2020	5,948	NO
Westlake Chemical OpCo LP	Calvert City	KY	42029	18100711	2020	5,836	NO
CEDAR BAYOU PLANT	HOUSTON	TX	77029	4056411	2020	5,591	NO
HOUSTON CHEMICAL PLANT	HOUSTON	TX	77017	4941211	2017	5,265	NO
NOVA Chemicals Olefins LLC - Geismar Ethylene Plant	Geismar	LA	70734	7445911	2020	5,083	NO

Source: U.S. EPA (2024). Draft Air Releases (NEI 2017) for 1,3-Butadiene, "2017 & 2020 Summary_Point" tab. Facility names shown in parentheses obtained from U.S. EPA (2025). 1,3-Butadiene TRI and NEI Risk Estimate Comparison Analysis, Table 1.

Facility Name	City	State	Zip	EIS Facility Identifier	Year	NEI Emissions (kg/yr)	Included in EPA supplement?
Facilities shown in **bold** were modeled in EPA's 1,3-butadiene supplementary analysis.							