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17 October 2024

Weihseh Chiu, Chair
Committee on the State-of-the-Science and Future of Cumulative Impact Assessment
National Academies of Science, Engineering and Medicine
Washington, DC

Re: Public Comment at Your Committee Workshop on October 15, 2024

Dear Dr. Chiu, Committee Members, and Community-Liaisons,

I'm pleased to share below a written version of the public comments that I made at the end of the workshop you held on October 15, 2024.

My name is Michael Belliveau. I am the director of Bend the Curve, a non-governmental organization (NGO) that works to transform the petrochemical industry so that its cumulative impacts no longer harm people and the planet. I previously served as Executive Director of Communities for a Better Environment (CBE) in California, a leading urban environmental justice organization focused on preventing industrial pollution. I recently served as Executive Director of Defend Our Health based in Maine, another NGO that's worked for two decades to reduce the cumulative impacts of chemical exposures from consumer products on environmental health. I'm a graduate of the Massachusetts Institute of Technology where I was trained in environmental science.

Thank you for your presentations today and for the critically important work of this Committee on advancing the methods and application of cumulative impact assessment.

My one contribution to your work is to ask you to apply life cycle thinking when assessing the cumulative impacts of hazardous chemical use and exposure from various sources.

Ten years ago, another NAS panel urged consideration of the “**synthetic history**” of chemicals when assessing hazards and alternatives. They defined the term synthetic history as “[T]he sequence of unit operations that proceed from acquisition of raw materials to production of chemical intermediates to production of the chemical of concern (or possible alternative).”¹

In other words, assess the upstream exposures as part of the cumulative impact of a chemical. The cumulative impacts of every product or package, every chemical or plastic, every manufacturing process, include more than just the direct emissions or exposures

¹ National Research Council. 2014. *A Framework to Guide Selection of Chemical Alternatives*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/18872>.

attributable at the point of use or release.

Assessment of the cumulative impacts also include the “embedded hazards,” and even the “embedded racism,” that reflect its “synthetic history,” that is, all its impacts across all the supply chains leading to that moment.

By way of example, let’s consider the cumulative impacts of polystyrene plastic or foam. Those impacts include much more than persistent litter, microplastics, and about 30 petrochemicals present at a few hundred parts per million that migrate from the plastic itself during consumer use and disposal.²

The **embedded hazards** of polystyrene plastic also include unsafe exposures to three carcinogens - styrene, ethylbenzene and benzene – to workers and frontline communities along the chemical manufacturing supply chain of polystyrene plastic. About 60% all styrene and 30% of all benzene supply the production of polystyrene plastic and foam.³

The **embedded racism** of polystyrene plastic must account for the excessive benzene exposures that persisted until recently and seriously impacted the 900 citizens of the Aamjiwnaang First Nation in the Chemical Valley of present-day Sarnia, Ontario, Canada. And for the predominantly Brown and Black residents and low-income communities still adversely impacted by the six styrene manufacturing plants located in Cancer Alley, Louisiana and along the Gulf Coast of Texas.⁴

In conclusion, in your assessment of cumulative impacts, please include these concepts of “synthetic history,” “embedded hazards,” and “embedded racism.” They epitomize the challenge and necessity of addressing and reducing the cumulative impacts of our fossil carbon economy that remains unnecessarily reliant on harmful petrochemicals.

Thank you so much for your work. I look forward to your final report.

Respectively submitted,

Michael Belliveau
Director and Founder
Bend the Curve
<https://bendthecurve.org/>



² Keller & Heckman, “First Report on the Novel Technology: INEOS STYROLUTION Twin Screw Degassing Extrusion,” 10 October 2023, [https://www.ineos-styrolution.com/INTERSHOP/static/WFS/Styrolution-Portal-Site/-/Styrolution-Portal/en_US/Sustainability/2023/FINAL%20rPS%20-%20Novel%20Technology%20Report%201%20\(October%202023\).pdf](https://www.ineos-styrolution.com/INTERSHOP/static/WFS/Styrolution-Portal-Site/-/Styrolution-Portal/en_US/Sustainability/2023/FINAL%20rPS%20-%20Novel%20Technology%20Report%201%20(October%202023).pdf) (accessed 17 October 2024).

³ Belliveau M, “Bending the Curve on Polystyrene – Another Poison Plastic,” (blog), 19 July 2024, <https://bendthecurve.org/bending-the-curve-on-polystyrene-another-poison-plastic/>

⁴ Belliveau M, “Major Environmental Justice Victory on Plastics!” (blog), 19 July 2024, <https://bendthecurve.org/major-environmental-justice-victory-against-plastics/>