American Chemistry Council | Center for the Polyurethanes Industry

Submitted via email

December 30, 2024

Ms. Kim Morley
Safer Products for Washington Project Manager
Washington Department of Ecology
P.O. Box 47600
Olympia, WA 98504

Re: Center for the Polyurethanes Industry comments on the *Draft Identification of Priority Products Report to the Legislature: Safer Products for Washington Cycle 2 Implementation Phase 2*

Dear Ms. Morley:

The American Chemistry Council's (ACC) Center for the Polyurethanes Industry[1] (CPI) appreciates the opportunity to provide comment on the Washington Department of Ecology's (Ecology) *Draft Identification of Priority Products Report to the Legislature: Safer Products for Washington Cycle 2* (Draft Report)[2] and associated Draft Technical Supporting Documentation for Priority Products: Safer Products for Washington Cycle 2 Implementation Phase 2.[3] The Draft Report identifies insulation products with organohalogen flame retardants (OFRs) as a priority for regulation under the Safer Products for Washington program. CPI's members are leading North American manufacturers of polyurethane raw materials, additives, and products, including polyurethane foam insulation, which is being considered within the scope of insulation products that use OFRs to meet public safety standards.

CPI's comments highlight concerns with the proposed selection of polyurethane foam insulation as a priority product under the Safer Products for Washington Program, and we urge the Department to withdraw insulation as a potential priority product category. As a complex chemistry, the raw materials used to create polyurethane products are already strictly managed, subject to regulations for manufacturing, handling, and installation. These comments also provide needed clarification and information to improve Ecology's understanding of polyurethane foam insulation products as well as accompanying chemical management and product stewardship procedures. CPI is committed to an

[1] The Center for the Polyurethanes Industry (CPI) of the American Chemistry Council serves as the voice of the polyurethanes industry in North America, promoting its development and coordinating with polyurethane trade associations across the globe. CPI members are companies that produce and sell the raw materials and additives that are used to make polyurethane products, equipment used in the manufacture of polyurethanes, and companies engaged in end-use applications and the manufacture of polyurethane products. The polyurethane industry supports research and initiatives that serve its communities and customers.

[2] Washington State Department of Ecology, *Draft Identification of Priority Products Report to the Legislature: Safer Products for Washington Cycle 2 Implementation Phase 2*, November 1, 2024.

[3] Washington State Department of Ecology, Draft Technical Supporting Documentation for Priority Products: Safer Products for Washington Cycle 2 Implementation Phase 2, November 1, 2024.

ongoing dialogue with the Department to help ensure that any regulatory actions are both practical and based on science.

Comments from ACC and NAMBA

CPI supports comments from the ACC that address key underlying issues and possible improvements to implementation of the Safer Products for Washington program. Regulatory actions under the program can broadly and adversely impact access to important products, limit consumer choice, and have unintended economic consequences. Consideration of these changes and engagement with industry can better ensure that regulations are appropriately informed, helping the program meet its goals for consumer products using priority chemical classes.

CPI is a member of the ACC's North American Modern Building Alliance (NAMBA) and similarly supports the Alliance's comments on the Draft Report. Flame retardants improve the fire safety performance of foam plastic insulation, which provides important benefits for residential and commercial buildings. Importantly, different insulation products are used for differing — sometimes specific — applications that meet a variety of modern construction demands. Spray polyurethane foam (SPF), for example, is used as a sealant, air barrier, to prevent moisture intrusion, and to significantly improve energy efficiency, thus reducing greenhouse gas (GHG) emissions.

As the Department of Ecology indicates in the technical supporting documentation, "residential and commercial buildings in Washington must meet both energy and fire safety requirements in the Washington State Building Code and that this is directly relevant to the selection of insulation materials for building projects."[4] CPI recommends consideration of these requirements alongside the full range of product benefits, including contributions to Washington State's broader public policy objectives.

Organohalogen Flame Retardants (OFRs) in Building Materials

Foam insulation manufacturers add flame retardants, including OFRs, to products to meet fire and safety standards that are designed to protect the public. Flame retardants are incorporated into polyurethane foams to delay ignition, mitigate combustion, limit fire spread, and minimize fire damage. Critically, these attributes can increase escape time, helping protect building occupants, construction workers, and first responders from fire-related death and injury, and owners and occupants from property loss.

Additionally, foam insulation products are chemically complex, formulated to balance several factors. These products undergo rigorous testing in multiple assembly applications to make sure that the product will perform as expected and be considered commercially viable. Replacing integral chemistries like flame retardants in insulation requires engineering new product formulations that can meet necessary specifications, which can be particularly difficult and time-intensive if viable alternatives are not widely available or accessible.

In the Draft Report and supporting documentation, OFRs are treated as a singular chemical class used in insulation products. This creates a challenge for evaluating within the context of the product category and is not consistent with other expert analyses and conclusions. For example, the National Academies of Sciences, Engineering, and Medicine determined in a Consensus Study Report that the "broad class [of

[4] Washington State Department of Ecology, Draft Technical Supporting Documentation for Priority Products: Safer Products for Washington Cycle 2 Implementation Phase 2, November 1, 2024.

OFRs] needs to be divided into subclasses to support a regulatory hazard assessment."[5] When undertaking a screening assessment for tris(chloropropyl) phosphate (TCPP), Environment and Climate Change Canada and Health Canada mirrored this approach, recognizing that its chemical structure is different from other OFRs.[6]

As Ecology continues to evaluate products for Cycle 2, strong consideration should be given to taking this regulatory hazard assessment approach to reflect the current science. This approach would also provide clarity to manufacturers and stakeholders as they seek to work proactively with the Department.

Use of TCPP in Spray Polyurethane Foam (SPF)

Ecology specifically identifies TCPP as an OFR used in polyurethane foam insulation in the Draft Report and supporting documentation. Ecology states that "While TCPP has other uses it has been estimated that over 80% of TCPP is used in rigid polyurethane foams, primarily for construction,"[7] and details possible chemical volumes in the manufacture of spray polyurethane foam (SPF). In general, the Department suggests that TCPP migrates directly from insulation due to evidence of in-house concentrations. CPI has identified several issues and clarifications, outlined below:

> ***Sources of TCPP*** – TCPP is the primary flame retardant used in the manufacture of SPF. As Ecology recognizes, TCPP is also used in a number of other applications and products, including other building materials and consumer goods, meaning that there is minimal likelihood of a single source in a residential or commercial setting. A 2014 literature review on the state of the science by the Battelle Memorial Institute found that "Variation of [organophosphate flame retardant] concentrations between rooms or residences of the same building suggest that indoor [OFRs] are not present as a result of building material emissions (e.g., wall insulation) but rather due to releases from furnishings and consumer products."[8]
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> ***Characterizing SPF Emissions*** – Ecology cites a National Institute of Standards and Technology (NIST) report on TCPP concentrations in a test building insulated with SPF. Scientific understanding of SPF emissions has progressed significantly since the test building was constructed in November 2013. Since 2010, CPI has undertaken multiple research projects that have resulted in ASTM International test methods to measure emissions from SPF insulation products.[9] These methods provide a standardized approach for manufacturers to evaluate volatile organic compound (VOC) emissions from their products to inform reentry and reoccupancy times. Data from chamber studies in support of these standards show that concentrations of TCPP decrease significantly in hours post-application.[10]

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[5] National Academies of Sciences, Engineering, and Medicine, *A Class Approach to Hazard Assessment of Organohalogen Flame Retardants*, 2019.
[6] Environment and Climate Change Canada, "Updated Risk Management Scope for TCPP and TDCPP," October 2020.
[7] Washington State Department of Ecology, Draft Technical Supporting Documentation for Priority Products: Safer Products for Washington Cycle 2 Implementation Phase 2, November 1, 2024.
[8] Battelle Memorial Institute, *Potential Exposure to Flame Retardants such as TCPP Emitted from Polyurethane and Polyisocyanurate Foam Insulation: Literature Evaluation Results*, February 14, 2014.
[9] ASTM D7859-19; ASTM D8445-22a; ASTM D8142-23. See also: ASTM C1848-17a.
[10] Sebroski, J., Tian, S., Wood, R., "Status Report for Developing Consensus Methods at ASTM International for Measuring Emissions from Spray Polyurethane Foam (SPF) Insulation," 2018.

It should also be noted that the SPF insulation in the test building studied by NIST was not installed to code and pre-dated multiple ASTM International standards that are now applicable to spray foam. As the building was designed for testing, the insulation product was not covered by wallboard, an important barrier required by code above a certain SPF thickness. Further, ASTM International first published C1848, *Standard Practice for Installation of High-Pressure Spray Polyurethane Foam Insulation for the Building Enclosure*, in November 2017.[11] Since the construction and analysis by NIST, ASTM International has also published D8142, *Standard Test Method for Determining Chemical Emissions from Spray Polyurethane Foam (SPF) Insulation using Micro-Scale Environmental Test Chambers* (February 2020), and D8445, *Standard Practice for Measuring Chemical Emissions from Spray Polyurethane Foam (SPF) Insulation Samples in a Large-scale Ventilated Enclosure* (September 2022).[12,13]

Occupational Safety and Health – Robust workplace standards are in place to protect workers during and after installation. Use of proper personal protective equipment (PPE), jobsite ventilation, and adherence to reentry times can reduce the potential for worker exposure to SPF chemical ingredients:

- The Occupational Safety and Health Administration (OSHA) has multiple regulations relating to SPF application, including hazard communication, respiratory protection, and PPE.[14]
- Based on ASTM International standards, SPF manufacturers set recommended reentry times, which is the time elapsed after the installation of SPF in a building when it is deemed safe for applicators, helpers, and other trade workers to enter the building and resume operations without the need for PPE. Reentry times are dependent on a number of factors, including SPF formulation, the amount of foam applied per volume of space, temperature, humidity, the degree of ventilation and other variables.
- In support of SPF safety and product stewardship, CPI maintains an SPF Health and Safety website with details on health and safety practices for professional and weatherization contractors, do-it-yourselfers, and homeowners. The website also houses SPF Chemical Health and Safety Training Courses with information about the use, handling and disposal of SPF, potential health hazards and control measures, including engineering controls and PPE.[15]

Occupant Exposure – SPF manufacturers also set reoccupancy times, which is the time elapsed after the installation of SPF insulation in a building when it is deemed safe for building occupants or residents to resume normal building operations and activities. Reoccupancy times can also be supported using the suite of ASTM International standards (ASTM D7859-19; ASTM D8445-22a; ASTM D8142-23).

When installed and used properly and following manufacturer-recommended reoccupancy times, there is low likelihood of exposure routes for occupants. Generally, as an insulation and air barrier product, SPF is installed in walls behind drywall and in roofing framing and cavities, covered with interior and exterior sheathing. In a finished structure, the potential for direct contact by

[11] https://www.astm.org/c1848-17.html.
[12] https://www.astm.org/Standards/D8142.htm.
[13] https://www.astm.org/d8445-22.html.
[14] OSHA Regulations Relating to Spray Polyurethane Foam (SPF) Application.
[15] www.spraypolyurethane.org.

> occupants is limited. Further, literature reviewed by the Battelle Memorial Institute found that "estimated indoor exposures to TCPP by inhalation, ingestion, and dermal absorption are lower than applicable reference doses (RfDs) or threshold daily intake (TDI) values, or to other applicable health-risk based values."[16]

Evaluation of priority products under the Safer Products for Washington program should reflect the current science and data. CPI encourages the Department of Ecology to engage industry to fill information gaps that would improve the product prioritization process.

Alternatives Analyses

Ecology suggests in the technical support documentation that "Replacing plastic foam insulation with other alternative materials such as fiberglass, mineral wool, cellulose, natural fibers, etc. could reduce the significant use of OFR chemicals" and indicates that "availability, feasibility, and safety of these alternative materials and chemical alternatives will be further evaluated in Phase 3."[17] This approach assumes that insulation products without OFRs are inherently safer or can achieve the same energy efficiency and air sealing functions. Ecology's evaluation of each product should be comprehensive, including risk profile, application limitations, market impacts, and product and technology availability.

As stated, OFRs are a critical chemistry in the manufacture of plastic foam insulation that help the products meet stringent code and regulatory standards for public safety. Restricting or eliminating access to OFRs, such as TCPP, will adversely affect market access to important products like SPF. Any regulatory action by Ecology should not hinder manufacturers' ability to meet fire and safety requirements as well as societal demands for cost effectiveness while protecting human health and the environment.

Relatedly, Ecology labels foam insulation products as "highly flammable." CPI would like to clarify that all organic building materials are combustible and engineered to meet specific building standards or performance requirements. Like other building products, foam insulation is designed to meet building safety standards, is "fit for purpose," and provides builders and building owners with choices.

Conclusion

In evaluating the Draft Report and supporting technical documentation, CPI identified multiple data and information gaps that would bring needed clarification about OFRs as a vital chemistry in insulation. Plastic foam insulation products like SPF provide important, sometimes application-specific, benefits for residential and commercial buildings. As with other modern building products, they are designed to meet code and regulatory requirements to protect the public, including being formulated using specific chemicals like OFRs that are rigorously tested, well-understood, and strictly managed. Applied in accordance with workplace safety standards and adhering to recommended reentry and reoccupancy times can reduce direct exposure potential during and after installation, with scientific data suggesting that indoor presence of OFRs is not due to building materials.

For these reasons, CPI believes the Washington Department of Ecology should withdraw the proposal to include insulation products with OFRs as a priority product for the Safer Products for Washington program.

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[16] Battelle Memorial Institute, *Potential Exposure to Flame Retardants such as TCPP Emitted from Polyurethane and Polyisocyanurate Foam Insulation: Literature Evaluation Results*, February 14, 2014.
[17] Washington State Department of Ecology, Draft Technical Supporting Documentation for Priority Products: Safer Products for Washington Cycle 2 Implementation Phase 2, November 1, 2024.

Thank you for your consideration of these comments. CPI looks forward to continued dialogue with the Washington Department of Ecology. If you have any questions regarding CPI's comments, please contact me at Jason_Sloan@americanchemistry.com or (202) 249-6105.

Respectfully submitted,

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American Chemistry Council