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Dr. Meredith Williams
California Department of Toxic Substances Control
Deputy Director
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**COMMENTS ON THE DRAFT INITIAL LIST OF PRIORITY PRODUCTS AND SPRAY POLYURETHANE FOAM SYSTEMS CONTAINING UNREACTED DIISOCYANATES (JUNE 30, 2014)**

Dear Dr. Williams:

The Polyurethanes and Building and Construction businesses of The Dow Chemical Company ("Dow") are writing to provide comments to the California Environmental Protection Agency's Department of Toxic Substances Control (hereinafter referred to as "DTSC" or "the Department") regarding the nomination of Spray Polyurethane Foam Systems ("SPF Systems") Containing Unreacted Diisocyanates as an initial priority product pursuant to the Safer Consumer Products Regulations (the "Regulations").

Since the announcement of the draft initial list of Priority Products, there have been several public workshops and industry consultations with DTSC where additional information has been provided on SPF Systems including data on the Systems chemistry, application methods, exposure potential, and safe handling. During these exchanges, several inaccuracies within the Priority Product Profile for SPF Systems Containing Unreacted Diisocyanates were also presented. Dow expects that DTSC will use this information and continue to engage with industry stakeholders to ensure a clear and accurate understanding of SPF Systems as the Department continues to move forward with the program.

The following comments are submitted in response to the Department's request for written public comments as part of the consultation process for the program.[1] In addition to these comments, Dow fully supports the comments provided by the American Chemistry Council ("ACC") Diisocyanates Panel and the Center for Polyurethanes Industry Spray Foam Coalition[2]. ACC's comments highlight several concerns with the nomination of SPF Systems Containing Unreacted Diisocyanates including the lack of a systematic and transparent selection process, the use of inaccurate and unreliable data in the Product Profile and the concern for the appropriateness and overall viability of SPF Systems as a Priority Product. In addition, the ACC comments provide important information on product characteristics and uses, including distinctions between different SPF Systems and safe handling and use practices. The comments below further support and expand on the points raised by ACC, with specific discussion on Dow's concerns with the lack of transparency in the SPF Priority Product selection process, the use of inaccurate and misleading information in Priority Product Profile for SPF Systems, and the inappropriate generalization of SPF Systems in Priority Product Profile.

## I. Lack of Transparency in the SPF Priority Product Selection Process

A key concern with the draft listing of SPF Systems Containing Unreacted Diisocyanates as a Priority Product includes the lack of transparency in the decision-making process for the product nomination. The Priority Product Profile must clearly state which factors the Department applied in its selection process and how those factors satisfy the key prioritization principles for the listing. According to the Regulation, any product-chemical combination identified and listed as a Priority Product must meet **both** of the following criteria:

> (1) There must be potential public and/or aquatic, avian, or terrestrial animal or plant organism exposure to the Candidate Chemical(s) in the product; **and**

(2) There must be the potential for one or more exposures to contribute to or cause significant or widespread adverse impacts (emphasis added).

It is important to highlight that both factors must be met for a product to be considered a Priority Product. In addition, each criterion incorporates the concept of exposure. The first criterion indicates that there must be potential for exposure to the Candidate Chemical contained in the product. The second criterion indicates that if there is potential exposure, such exposure must be of a level sufficient to result in significant or widespread adverse impacts that may be understood for the chemical of concern. Therefore, the hazard trait of the Candidate Chemical alone and its presence in the product are not sufficient for inclusion as a Priority Product. Exposure to the chemical via the product and the level of such exposure in the context of the potential adverse impacts are critical considerations in the analysis as mandated by the Regulation. Therefore, the Priority Product Profile must clearly state how the Department weighed the nature of the Candidate Chemical in the Priority Product and the potential exposure to the Candidate Chemical in order to inform all stakeholders of how the Priority Product meets both of these criteria. As part of this evaluation, it is critical that the Department also provide appropriate definitions for and linkages between the phrases "potential public/aquatic exposure," and "the potential for one or more exposures to contribute to or cause significant or widespread adverse impacts." Establishing linkages between these factors is critical and if such linkages are not appropriately defined, the Priority Product identification process is not sufficiently transparent. Ultimately, Dow urges DTSC to be comprehensive and transparent in its assessment of potential product hazards and exposures as part of the assessment and inclusion of products in the program. Furthermore, Dow believes a more transparent and detailed account of the selection process for SPF Systems should be provided in order to allow for appropriate input from interested parties and to provide clarity to the general public regarding SPF Systems.

## II. Inaccurate and Misleading Information in Priority Product Profile

The Regulations require DTSC "to consider the extent and quality of information available" as a factor to identify and prioritize product-chemical combinations. The ACC has already highlighted extensive inaccuracies in the Product Profile for SPF Systems Containing Unreacted Diisocyanates (Memo, Osman-Sypher/Salamone to Williams, April 29, 2014[3]). ACC's comments highlight inaccuracies in the product chemistries used in SPF Systems, inaccuracies in evidence presented for significant adverse effects and exposures and the use of inappropriate or unreliable information as part of the Priority Product Profile. Dow urges DTSC to correct these inaccuracies and use additionally provided information as part of further evaluations to ensure an accurate and reliable assessment of SPF Systems Containing Unreacted Diisocyanates.

The extensive inaccuracies within the Priority Product Profile for SPF Systems Containing Unreacted Diisocyanates also emphasize concerns for the process by which DTSC has developed the profile. To minimize the potential for inaccuracies, DTSC should consider examining the robustness of the Department's internal peer review process and consider an external peer-review component. Product Profiles should be accurate, reasonable, and data-based. When released in draft form, it should be clear that Product Profiles are subject to change.

As part of the assessment process, DTSC must conduct thorough research on potential Priority Products and such products' chemistries. In this connection, DTSC should conduct research that leverages the primary sources of the data and avoid the use of secondary or tertiary references in such data collection as this could lead to inaccurate interpretations. In addition, the Department should engage industry stakeholders directly, especially product manufacturers, to review and improve upon product-specific hazard and exposure and composition information prior to the release of the draft Priority Products. Such engagement will allow for the use of actual hazard and exposure data for the product as opposed to reliance on surrogate approaches for assessing these endpoints. In the case of SPF Systems Containing Unreacted Diisocyanates, such an approach would have resulted in the generation of a more accurate and reliable Priority Product Profile. In addition, DTSC should have considered and leveraged existing data and conclusions from research conducted by State and Federal agencies and coordinated with these agencies as part of its assessment of SPF Systems Containing Unreacted Diisocyanates. The SPF industry has worked closely with the US Environmental Protection Agency (EPA) to continue to improve the understanding and management of SPF Systems. EPA also has a Chemical Action Plan for methylene diphenyl diisocyanate ("MDI") (the isocyanate contained in SPF Systems.) As part of this program, industry provided extensive information to the EPA including data on the exposure potential and the safe handling and use practices for SPF Systems. These data are readily available and should be used as information to inform the DTSC in their decision making (EPA Docket: EPA-HQ-OPPT-2011-0182[4]).

Overall, we do not believe the Department has appropriately considered the extent and quality of information available on SPF Systems Containing Unreacted Diisocyanate and has not used accurate and reliable information in its Priority Product Profile. The Department should remove all inaccurate information from the assessment and update with reliable information on the uses, hazards and exposures that are understood for SPF Systems. Dow believes the evaluation of the complete set of reliable information regarding potential exposure to the isocyanate used in SPF systems will demonstrate no potential for significant or widespread adverse impacts as required by the Regulations.

## III. Inappropriate Generalization of SPF Systems in Product Profile Assessment

The scope of the SPF Systems Priority Product Profile is overly broad and the Department must provide greater clarity in its product assessment for how different SPF Systems meet the criteria for inclusion in the program (as defined above in Section I). SPF insulation is available in a number of products types (i.e., high-pressure two-component SPF, low-pressure two-component SPF, and one component foams for sealing) with significant differences across the systems. Each of the types requires distinct analysis for product profile assessment purposes. Importantly, all references to other polyurethane applications that are not a specific SPF product are outside of the scope of the Priority Product Profile and should be removed, including all associated or leveraged information on hazard and exposure potential for these products.

The Department has stated in public workshops and comments that DTSC is concerned with the potential exposure to unreacted MDI during and after the SPF application process. Extensive industry product stewardship efforts are in place to address the safe handling and use of SPF application. Importantly, the distribution methods, uses, application methods and exposure potential to unreacted diisocyantaes are different across the distinct SPF Systems. In addition, the exposure potential to MDI is well understood for each SPF System and forms the basis for safe handling practices which may vary across the Systems.

*High Pressure 2-component SPF Systems*

High-Pressure SPF Systems are sold to and used by professional insulation contractors only. Such Systems require extensive professional equipment, including rigging, and adequate facilities to store and maintain the equipment. Chemical suppliers and systems houses[5] offer comprehensive chemical handling and product training to insulation contractor businesses. High-Pressure SPF Systems are used for large-scale wall insulation, commercial roofing projects, insulated commercial storage tanks, insulated food storage facilities in the agricultural industries, and other commercial applications that include the space, aeronautical and marine industries. Personnel involved in application of High-Pressure SPF Systems may have the potential to be exposed to airborne concentrations of MDI during application. These exposures are well understood and extensive training and guidance has been implemented to ensure safe handling and use before, during, and after product application. Practices that are in place to minimize exposures include engineering controls, Safety Data Sheets, site preparation, occupant outreach, and personal protective equipment ("PPE"). In addition extensive monitoring data has shown that airborne concentrations of MDI are non-detectable within thirty (30) minutes to two (2) hours after application, and therefore, there is no potential for MDI exposure beyond this timeframe. In addition, certification programs are in place for SPF professionals along with online training courses that provide appropriate training for SPF applicators and helpers. Complete information on these programs and more detailed information on safe handling and use is provided in the ACC comments to DTSC[2] and at www.polyurethane.org, at spraypolyurethane.org, and at http://www.sprayfoam.org/. For these reasons, Dow respectfully submits that High-Pressure SPF Systems do not meet the criteria for listing as a Priority Product.

*Low-Pressure 2-component SPF Systems*

As with High-Pressure Systems, Low-Pressure two-component SPF products are designed by Dow for professional use only and are made available through professional distribution channels and professional/contractor desks. Low-Pressure two-component SPF products deliver a smaller volume of foam compared to High-Pressure two-component SPF products, and typically are used to cover smaller surface areas. In addition, Low-Pressure foams do not aerosolize the two primary chemicals (A and B sides; isocyanate and polyol, respectively), but instead the chemicals are combined in a small mixing chamber before release. These systems are also delivered at low pressure and lower

temperatures which further reduce the potential for exposure to airborne unreacted diisocyantes. These application factors combine to result in a significantly lower inhalation exposure potential than is typically associated with the High-Pressure SPF Systems. Extensive exposure monitoring data are available that have defined the exposure potential to MDI during application of SPF with Low-Pressure Systems and demonstrate that the levels are below occupational exposure guidelines and are non-detectable within 30 minutes following application (Fishback, 2012[6]; Summary of Industry Industrial Hygiene on MDI Exposure during use of 2-Component Low Pressure Spray Polyurethane Foam Products and Insulating Foam Sealants[7]; Massaro, 2013[8]; EPA Docket: EPA-HQ-OPPT-2011-0182[4]). While these exposures are well-understood, industry recommendations still emphasize the importance of using appropriate PPE to protect for respiratory exposure and to minimizing skin and eye exposures. As with High-Pressure SPF Systems, training and certification programs are also available for Low-Pressure two-component SPF Systems. Comprehensive labeling, information documents on safety and PPE, Safety Data Sheets, and directed access to training and certification programs are also provided with each product to ensure safe handling and use of the products. Complete information on these programs and more detailed information on safe handling and use is provided in the ACC comments to DTSC[2] and at www.polyurethane.org, and spraypolyurethane.org. Ultimately, the product chemistry and application method, along with safe handling and use practices result in controlled exposures and no indications of significant or widespread adverse impacts. For these reasons, Dow respectfully submits that Low-Pressure SPF Systems do not meet the criteria for listing as a Priority Product.

*One component SPF systems*

One component foams (specifically foams in a can) are available to the general public through construction and retail stores. The product is sold and marketed with comprehensive product use instructions. One component foam products deliver a smaller volume of foam compared to high- and low-pressure two-component SFP products, and typically are used to cover smaller areas such as gaps and cracks. In one component systems, the A and B side (isocyanate and polyol blend, respectively) of the product are combined at the manufacturing site and reactions occur in the container prior to use forming pre-polymers and thereby reducing the level of unreacted isocyanates in the can when compared to two component systems. These materials react upon discharge from the can and cure very quickly, thus post application chemical exposure potential is extremely low. Furthermore, the application of these materials does not involve actual spraying but instead the material is delivered as a foam bead which reduces any potential for aerosolization and airborne exposure to unreacted isocyanates. Monitoring data on exposure potential show that during application of one component foam, MDI levels are non-detectable with testing detection limits well below the OSHA PEL of 0.20 mg/m3 (Fishback, 2012[6], Summary of Industry Industrial Hygiene on MDI Exposure during use of 2-Component Low Pressure Spray Polyurethane Foam Products and Insulating Foam Sealants[7]; EPA Docket: EPA-HQ-OPPT-2011-0182[4]). Therefore, the application and use factors are such that there is no exposure that would result in the potential for significant adverse effects. This lack of exposure and associated effects is supported by the long history of safe use for these products. Collectively, these data confirm that one component SPF Systems do not result in exposures to unreacted diisocyanates and that the use of such products do not indicate any potential for significant or widespread adverse health effects. Importantly, industry recommendations emphasize the importance of safe handling and use practices. To protect consumers, these products have precautionary labeling in accordance with Federal Trade Commission (FTC)/Consumer Products Safety Commission (CPSC) and the Federal Hazardous Substances Act (FHSA) requirements. For these reasons, Dow respectfully submits that one component SPF Systems do not meet the criteria for listing as a Priority Product.

Overall, the above analyses highlight that the distribution markets, uses, application methods and exposure potential to unreacted diisocyanates differ across the distinct SPF Systems. In addition, the exposure potential to isocyanates is well understood for each SPF System and forms the basis for safe handling practices which may vary across the Systems. Data demonstrate that unreacted MDI is non-detectable within thirty (30) minutes to two (2) hours after application of SPF with two component systems. In the case of one component SPF Systems, MDI is non-detectable at the time of application. As exposures are well controlled for 2-component Systems and are non-detectable for one component systems, SPF Systems do not present the potential for significant or widespread adverse impacts.

**Conclusion**

In summary, we do not believe that the available accurate and reliable scientific information support that SPF Systems Containing Unreacted Diisocyanates meet the criteria for inclusion as a Priority Product under the Safer Consumer Products Regulations. In the above comments, Dow has highlighted concerns with the lack of transparency in the SPF Priority Product selection process, the use of inaccurate and misleading information in the Priority Product Profile for SPF Systems, and the inappropriate generalization of SPF Systems in the Priority Product Profile. In addition to these comments, we fully support the comments provided by the ACC Diisocyanates Panel and the Center for Polyurethanes Industry Spray Foam Coalition[2]. Dow urges DTSC to give careful consideration to all of these comments as part of its final assessment. We remain committed to work with DTSC and urge the Department to reach out to industry stakeholders to ensure a clear understanding of SPF Systems and an accurate assessment as part of this program.

Respectfully submitted,

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[1] Simultaneously herewith Dow is submitting more general comments regarding the overall process undertaken by DTSC.

[2] The American Chemistry Council's DII Panel and ADI Panel, and CPI's Spray Foam Coalition- Supplemental Comments on the Draft Initial List of Priority Products and *Spray Polyurethane Foam Systems Containing Unreacted Diisocyanates*

[3] Memo, Osman-Sypher/Salamone to Williams, April 29, 2014- AMERICAN CHEMISTRY COUNCIL'S CRITIQUE OF CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY DEPARTMENT OF TOXIC SUBSTANCES CONTROL PRIORITY PRODUCT PROFILE SPRAY POLYURETHANE FOAM SYSTEMS CONTAINING UNREACTED DIISOCYANATES MARCH 2014

[4] EPA Docket: EPA-HQ-OPPT-2011-0182.
http://www.regulations.gov/#!docketDetail;rpp=10;po=0;D=EPA-HQ-OPPT-2011-0182

[5] A Systems house is a manufacturer that produces fully formulated systems (A & B side) for use by its customers.

[6] Fishback, T. (2012). Polyurethane Foam Sealants. Presented at ACC Workshop on TDI/MDI for EPA Staff. ACC headquarters, Washington, DC. February 15. Available on the EPA MDI Chemical Action Plan Docket: EPA-HQ-OPPT-2011-0182.

[7] Summary of Industry Industrial Hygiene on MDI Exposure during use of 2-Component Low Pressure Spray Polyurethane Foam Products and Insulating Foam Sealants (document submitted as appendix to The American Chemistry Council's DII Panel and ADI Panel, and CPI's Spray Foam Coalition- Supplemental Comments on the Draft Initial List of Priority Products and *Spray Polyurethane Foam Systems Containing Unreacted Diisocyanate)*

[8] Massaro, L., Residential Home Re-Occupancy and Ventilation After Crawl Space Sprayed with Low Pressure Polyurethane Foam. Presented at ACC-CPI Polyurethanes Conference EH&S (SPF) Workshop.