american cleaning institute®

submitted electronically to JEEP@ostp.eop.gov

Dr. Alondra Nelson
Office of Science and Technology Policy
The White House
1600 Pennsylvania Ave NW
Washington, DC 20005

Subject: Sustainable Chemistry RFI
87 Fed. Reg. 19539 (April 4, 2022)

Dear Dr. Nelson,

I write on behalf of The American Cleaning Institute® (ACI)[1] regarding the request for information on federal programs and activities in support of sustainable chemistry. ACI's member companies represent manufacturers, formulators, and distributors of cleaning products in the United States. Member companies are continually striving to bring to market more sustainable products, both to lower their overall environmental impact, and to meet consumer demand for such products. ACI commends the Office of Science and Technology Policy (OSTP) in its effort to define "sustainable chemistry" and to better understand the role government plays in fostering innovation in this space. The outcomes of this exercise will directly impact ACI member companies, as it is sure to inform the direction and approach that the federal government takes on sustainable chemistry. ACI supports this effort to build consensus around a definition for "sustainable chemistry" and encourages the use of the definition developed to promote and invest in the technologies to advance sustainable chemistries as well as foster a regulatory structure that supports innovation and speed to market in this space. Our comments below address each of the areas of interest enumerated in OSTP's April 4, 2022 Federal Register notice.

[1]ACI represents the $60 billion U.S. cleaning product supply chain. ACI members include the manufacturers and formulators of soaps, detergents, and general cleaning products used in household, commercial, industrial and institutional settings; companies that supply ingredients and finished packaging for these products; and chemical distributors. ACI serves the growth and innovation of the U.S. cleaning products industry by advancing the health and quality of life of people and protecting our planet. ACI achieves this through a continuous commitment to sound science and being a credible voice for the cleaning products industry.

Definition of Sustainable Chemistry:

To avoid disparate definitions of sustainable chemistry, ACI suggests that if OSTP does choose to recognize a specific definition, that it aligns with other existing definitions such as that of the Organization for Economic Cooperation and Development (OECD). The current OECD definition reads as follows:

> Sustainable chemistry is a scientific concept that seeks to improve the efficiency with which natural resources are used to meet human needs for chemical products and services. Sustainable Chemistry encompasses the design, manufacture and use of efficient, effective, safe and more environmentally benign chemical products and processes.
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> Sustainable chemistry is also a process that stimulates innovation across all sectors to design and discover new chemicals, production processes, and product stewardship practices that will provide increased performance and increased value while meeting the goals of protecting and enhancing human health and the environment.[2]

As OSTP develops a definition, it should consider that an appropriate balance needs to be struck; it must be broad enough to encompass the variety of factors, inputs, technologies, and strategies that can make a chemistry "sustainable," while being strict enough as to avoid any potential discrepancy on whether a particular chemistry can be categorized as such.

A sustainable chemistry definition should consider a life cycle approach, understanding the chemistry source and whether it is renewable or not, the impact of development and use, and the end of life, or reuse/recyclability of a chemistry. Understanding the life cycle of a chemistry can provide greater information on where the benefits of a chemistry may lie. Certain aspects of sustainability, such as being renewable, could be outweighed by non-sustainable issues in the lifecycle, such as a lack of degradability or comparatively high energy requirements in chemical synthesis or product use. Alternatively, it could be argued that a non-renewable chemistry with low climate impact that is readily reused or recycled could be considered sustainable. Understanding where the overall benefits lie will help determine whether there are sustainable chemistry alternatives when compared to more traditional chemistries.

Technologies that would benefit from federal attention to move society toward sustainable chemistry:

Emerging technologies often need federal attention to become viable in the market, especially on the scale necessary to impact sustainability challenges like the climate crisis. Some of the areas that would specifically benefit from federal attention include electrification of chemical processes that are traditionally powered by fossil fuels. Electrifying these processes allows them to be potentially powered by renewable sources, ultimately significantly reducing the greenhouse gas footprint of the downstream products.

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[2] https://www.oecd.org/chemicalsafety/risk-management/sustainablechemistry.htm#:~:text=A%20Definition%20of%20Sustainable%20Chemistry,for%20chemical%20products%20and%20services.

Advanced recycling (also called chemical recycling) is another area that has great potential in helping to reduce plastic waste, create demand for such waste, and increase the supply of post-consumer recycled materials that can be used as feedstocks for chemical products used in specific industries. Advanced recycling is an essential piece of the circular economy and can take post-consumer waste and create material that can be used in place of virgin fossil materials in the chemical industry. Facilitating the growth of technologies that enable a circular economy is an essential piece of enhancing the adoption of sustainable chemistries throughout the supply chain.

There is an overall trend in the chemical industry to move to biobased chemistries that can provide significant sustainability benefits, the primary one being that they can be derived from renewable resources. Biobased chemistries tend to offer better greenhouse gas profiles than their petrochemical counterparts and are typically biodegradable. Attention in this area is essential for its growth. Additionally, better understanding of non-food sources for biobased chemistries is an area that will also be of great importance in the coming years, to help ensure that the needs of the chemical industry do not compete with the food supply chain.

Fundamental research areas:

In addition to federal attention, the above technology areas also require additional research to improve upon or expand their capabilities. Research areas in sustainable chemistries are ever evolving and a federal initiative should have the ability to identify emerging research areas and the ability to support them. This could include machine learning and artificial intelligence (AI) which could accelerate materials discovery as well as identify inherent properties such as hazard potential. Research should focus on the identification of alternative chemistries that provide sustainability benefits and can be substituted for other traditional chemistries. Advancing novel innovation in key areas will support the development of sustainable products.

Potential outcome and output metrics based on the definition of sustainable chemistry:

Metrics are an essential part of categorizing any potentially “sustainable” product or chemistry. Understanding where sustainability benefits are derived throughout a product life cycle begins with quantifying the various impacts a chemistry may have. Possible metrics for sustainable chemistries can be, but should not necessarily be limited to, greenhouse gas emissions; renewable resources; toxicity profile; biodegradability; ability to be reused/recycled; and other life cycle considerations. Such metrics should be measurable and repeatable and could comply with either an existing sustainability standard or possibly a federal standard that has yet to be developed.

Financial and economic considerations for advancing sustainable chemistry:

Transitioning today’s chemical industry to an industry with a greater focus on sustainability will take time. Nevertheless, consumer demand for more sustainable products is beginning to push the market in this direction. Companies dedicated to reducing their carbon footprints are seeking to develop sustainable chemistries to ratchet down the emissions in their value chain. However, driving the development of sustainable chemistries requires both investment and demand for

such products. Considerations should not only be made in terms of economic investment and subsidies for these types of products, but also in procurement. The Federal Government has a great role to play with its procurement policies, and it is clear that developing a definition for "sustainable chemistry" lends itself to incorporation into such policies. As demand increases for products made using sustainable chemistry, such products displace other traditionally developed products in the market resulting in greater environmental benefits.

Policy considerations for advancing sustainable chemistry:

With the growth and emphasis on sustainable chemistries, we can expect many more new chemicals to be developed, and such substances will require EPA approval under pertinent regulatory requirements. Currently, one of the greatest roadblocks to innovation in sustainable chemistry is the Toxic Substances Control Act (TSCA) Premanufacture Notification (PMN) process at the Environmental Protection Agency (EPA). Congress expects the new chemical review and authorization process to generally require only a 90-day timeline. Nevertheless, PMN submitters continue to experience great delays far exceeding this length of time and with no certainty in the review timelines or regulatory outcomes. The result is that more sustainable chemistries are being prevented from entering the market in a timely manner. This "slow down" effectively stifles innovation and prevents sustainable alternatives from entering the U.S. market where they could make a great difference in the overall sustainability profile of the chemical industry. The U.S. is missing out on many of these products as a result, and companies are prioritizing other markets, including the European Union (EU), where it is possible to get these chemistries to market in a predictable timeline. To be competitive and to enhance the sustainability of the U.S. chemical supply chain, the EPA must have its activities in the Office of Chemical Safety and Pollution Prevention (OCSPP) fully funded and have processes in place that allow for regulatory certainty in the PMN new chemical review process. Considerations should be given to seeking ways to fast track the authorization of new chemistries and products that meet the definition of sustainable.[3] Doing so would provide a tool to both incentivize the development of such products and speed their entry to the market.

Investment considerations when prioritizing federal initiatives for study:

As described in the above sections, investment in sustainable chemistry must be made to advance the development of new technologies and move them to market. By developing metrics to identify sustainable chemistries, OSTP should also consider that the sustainability of a product may require use of a comparative spectrum. Utilizing a definition and metrics program, prioritization should be given to chemistries that show the greatest sustainability benefits, as well as the greatest possible impact to the supply chain. This might require encouraging product substitutions based on comparable improvements that might be achieved over existing chemistries using a comparative scale.

ACI would like to thank OSTP for their time and consideration. It is important for OSTP to work with federal agencies, and in particular the new chemicals and new uses authorization programs at EPA, to formulate a definition and framework for advancing the development of sustainable

[3] Similar consideration should be given to providing such incentives in the OCSPP office responsible for authorization of new pesticide and antimicrobial technologies.

chemistries in the U.S. A definition will help to identify chemistries that are more sustainable and worthy of support both in investment and in regulation. The result of this exercise is sure to impact the cleaning products supply chain which is actively striving to create more sustainable chemistries for the products in which they are present.

Sincerely,
Nathan Sell

Senior Director, Sustainability