Testimony of
Joshua Baca
Vice President, Plastics
American Chemistry Council

Hearing on:
"Plastic Waste Reduction and Recycling Research: Moving from Staggering Statistics to Sustainable Systems"

House Committee on Science, Space and Technology
Subcommittee on Research and Technology
June 24, 2021

INTRODUCTION

The American Chemistry Council's (ACC)[1] Plastics Division is pleased to submit this Testimony to the Subcommittee on Research and Technology of the Committee on Science, Space and Technology regarding the hearing titled, "Plastic Waste Reduction and Recycling Research: Moving from Staggering Statistics to Sustainable Systems."

ACC and our members are deeply committed to creating a more circular economy for plastics and ending plastic waste in the environment. Plastics contribute to sustainability goals which will help protect the American environment for generations, plastic waste does not. Waste in the environment, including plastic waste, is never acceptable. We are eager and taking action to solve this problem. Developing and growing a circular economy for plastics will help our nation:

- Reduce waste in the environment
- Combat climate change
- Improve its recycling rates
- Reduce the amount of waste going to landfills, incinerators, and our ocean
- Conserve natural resources
- Develop a competitive recycling market
- Increase jobs and grow the economy

In 2018, America's Plastic Makers established two ambitious circular economy goals: 100% of U.S. plastic packaging is recyclable or recoverable by 2030 and 100% of U.S. plastic packaging is re-used, recycled, or recovered by 2040. Last year, we released our Roadmap to Reuse, which outlined a vision and set of actions to mobilize the entire plastics value chain to achieve these goals.

Since releasing our Roadmap, our industry has worked to grow the circular economy for all plastics, focusing on three core areas:

- *Public Policy Development*: Our Roadmap and Guiding Principles call for enabling policies to grow the circular economy for plastics.

- *Value Chain Coordination*: We are engaging key stakeholders such as the Alliance to End Plastic Waste, Closed Loop Partners, The Recycling Partnership, waste companies and recyclers as well as brands and converters who are critical to achieving the actions outlined in our Roadmap that will help achieve our goals.

- *Private Sector Investments*: Since July 2017, nearly $6 billion in investments to grow plastics recycling have been announced in the United States, most of it in advanced recycling technologies.

[1] ACC represents a diverse set of companies engaged in the U.S. business of chemistry, a $768 billion enterprise that is helping to solve the biggest challenges facing our country and the world. Chemistry touches 96 percent of all manufactured goods, and the use of plastics in modern automotive, building and construction, and food packaging industries is helping to create a more sustainable society.

We believe with the right approaches and commitments, the challenge of plastic waste in the environment is solvable and collective actions by government, industry, non-profits, and NGOs will make America more sustainable. The stakes are high: plastics are critical to modern society, from light-weighting vehicles to reduce emissions, to sealing and insulating our homes and buildings, to delivering essential health care, preserving food and preventing food waste, and contributing to an overall higher quality of life.

PLASTIC WASTE REDUCTION AND RECYCLING RESEARCH ACT IS NEEDED

ACC encourages passage of the bipartisan "Plastics Waste Reduction and Recycling Research Act." If passed, this legislation would direct federal government resources to improve the global competitiveness of U.S. plastics recycling and ensure U.S. leadership in plastics waste reduction and recycling research. It would also help capture the value of used plastics through enhanced research and development, and create standards, tools and technologies needed to modernize and expand today's recycling systems.

Passing the "Plastics Waste Reduction and Recycling Research Act" would accelerate research and development for advanced recycling technologies, which complement mechanical recycling, and enable us to significantly increase the amounts and types of plastics recycled. These innovative technologies will play an important role in accelerating our ability to reduce plastic waste.

This Act would also increase coordination across federal agencies and complement other recently proposed legislation such as the RECYCLE Act and the RECOVER Act, which provide funds to modernize recycling infrastructure and support community recycling programs. Passing the Plastics Waste Reduction and Recycling Research Act would also support the U.S. EPA's goal of achieving a 50% recycling rate for all materials by 2030.

We thank Representatives Haley Stevens (D-MI) and Anthony Gonzalez (R-OH) for sponsoring this bipartisan legislation which helps coordinate various proposals across federal agencies. Ultimately, these proposals are working towards one overarching goal shared by government and industry alike: ending plastic waste in the environment.

My testimony today provides an overview of the investments the ACC and its members are making around the world and policy recommendations to address plastic waste and improve recycling and circularity for plastics.

ADVANCED RECYCLING FOR PLASTICS

While traditional recycling processes will continue to play an important role in plastics recycling, they face some important limitations. Newer, cutting edge technologies, known as advanced recycling, complement these traditional systems by picking up where they leave off and enabling communities to recycle significantly more types and greater quantities of plastics. Advanced recycling technologies are innovative manufacturing processes that fundamentally transform the chemical structure of post-use plastic products back to their basic chemical building blocks. These building blocks are the raw materials used for making virgin-quality plastics and other valuable products. Advanced recycling enables many types of plastics to become resources for new

manufacturing, conserves natural resources, can help grow local jobs and economies and supports the transition to a more circular economy for plastics.

Advanced recycling also provides an opportunity to capitalize on the capabilities of America's world-leading petrochemical infrastructure by co-processing post-use plastics with virgin natural resources. These technologies can thereby help to accelerate the expansion of new recycling capacity and efficiently transition petrochemical facilities to more circular business models. However, with inconsistent, distinct, regulatory, and programmatic obligations being promulgated at the state and municipal levels and the lack of nationally harmonized standards that align with internationally recognized certification programs for advanced recycling, companies interested in participating in advanced recycling are challenged to invest in these manufacturing operations and disadvantaged in the expanding global market.

The absence of appropriate and consistent national standards across thousands of municipalities hinders the growth of U.S. recycling initiatives and related efforts to divert plastics waste from landfills, oceans, and incinerators.

Due to breakthroughs in advanced recycling technologies, we can now reduce waste and capture the post-use value of hard-to-recycle plastics, such as multilayer pouches and film, plastic tubes, other mixed plastics, and polystyrene foam food containers. And these technologies can create high grade plastics approved for use in food, medical and pharmaceutical applications, unlike many mechanically recycled plastics. In fact, companies have announced plans to use feedstock from advanced recycling processes in circular packaging for Philadelphia Cream Cheese and Magnum ice cream containers. Eco Ello water bottles, sold at Target, are made using Eastman's advanced recycling technology.

MOMENTUM FOR ADVANCED RECYCLING

Momentum for advanced recycling is accelerating across the United States.

- Globally recognized corporations and mature recycling enterprises are making significant commitments and building infrastructure at a commercial scale.

- Technology has evolved and created new opportunities and tremendous breakthroughs and can create virgin quality packaging critical for demanding applications such as food-grade and pharmaceutical packaging.

- There is a significant and growing market for recycled products driven by company commitments and consumer demand for using more recycled plastic in products.

- States are passing legislation to update their existing laws, so companies are more appropriately regulated in their deployment of advanced recycling technologies.

- And a first wave of advanced recycling enterprises is achieving third-party validation through international certification.

Infrastructure Being Built At Commercial Scale

Billions of dollars in private sector investments have been announced to commercially scale and accelerate our ability to reuse plastics as raw materials in new products. Existing and planned advanced recycling facilities in the United States have the potential to divert an estimated 7 billion pounds of waste from landfills annually. That's the weight of 28,000 Statues of Liberty.

Some recent highlights include:

- Eastman Chemical Company announced plans to build one of the world's largest plastic-to-plastic advanced recycling facilities at its site in Kingsport, TN.

- Brightmark opened its first advanced recycling plant in 2021 and has plans to open an additional seven facilities across the country. Most recently, Brightmark announced its second facility in Macon, Georgia, aimed to bring more than 100 new jobs and divert 400,000 tons of post-use plastics per year once finished.

- America Styrenics (Amsty) and Agilyx announced plans to explore development of a jointly owned advanced recycling facility at AmSty's styrene facility in St. James, LA, adding to the companies' existing joint ventures.

Breakthroughs In Advanced Recycling

Because technology continues to evolve and is not static, there have been tremendous breakthroughs in advanced recycling.

- Eastman is producing Tritan Renew, a plastic material approved for food-use and made with up to 50% plastic derived from advanced recycling. Tritan Renew is used by brands like Nalgene and Ello in their reusable water bottles.

- SABIC, Plastic Energy, and Sealed Air are producing new food-grade packaging from post-use flexible plastics made from advanced recycling.

- Mars is working with SABIC and packaging supplier Huhtamaki to use recycled plastic manufactured from advanced recycling for its pet food packaging.

Notable plastics like polystyrene foam can also be recycled thanks to breakthroughs in advanced recycling. These technologies not only help keep plastics out of landfills and displace the use of additional virgin natural resources, but are also regulated by the Clean Air Act and state and local regulatory authorities.

Untapped Market for Recycled Products

A 2019 report by the Closed Loop Partners, a New York-based investment firm, estimated that there is a $120 billion-dollar economic opportunity directly connected to the commercialization of advanced recycling technologies.

- By 2025, Shell plans to use 1 million metric tons of post-use plastic per year as alternative feedstocks at its facilities around the world.

- Chevron Phillips Chemical (CPChem) announced that it will produce circular polyethylene using advanced recycling technology and aims to make it a significant part of its portfolio by 2030.

- LyondellBasell announced availability of polymers made from plastic waste using advanced recycling.

- CPChem signed long-term supply agreements with companies like New Hope Energy and Braven Environmental for their certified renewable chemical feedstocks and pyrolysis oil, which will be used to make new, circular plastics.

States Lead The Way, But Congressional Action Needed

Many states have outdated policies that could regulate advanced recycling as "waste disposal" rather than manufacturing. Doing so sends entrepreneurs down the wrong regulatory pathway for citing a facility, making it more difficult for companies to invest in new projects that deploy advanced recycling technologies.

Thankfully, bipartisan leaders in multiple states (blue, red, and purple) are responding to a widespread desire to recycle more plastics. To date, 14 states (with Louisiana being the most recent) have passed laws supporting growth of advanced plastics recycling as an innovating manufacturing process. These laws will enable greater adoption of advanced recycling, help create new jobs and divert post-use plastics from landfills and into valuable new materials. Additionally, several more states are considering similar legislation.

And while this legislation being put forth by the committee is a needed and significant step forward, Congress should do more to foster the growth of advanced recycling by:

1. Recognizing the role of advanced recycling in creating a more circular economy for all plastic packaging and providing the appropriate regulatory conditions to help ensure that it can scale up quickly.

2. Defining advanced recycling as a manufacturing process and distinguishing it from solid waste disposal.

3. Recognizing the role of third-party certification systems which apply mass balance attribution to verify production of recycled plastics.

4. Clarifying that manufacturing which uses an advanced recycling process to produce fuel, such as jet fuel for airlines or ethanol for use in automobiles, is defined as "advanced recovery" and is distinguished from recycling.

Transparent, Credible, and Third-Party Certification

Attainment of such a third-party certification of mass balance systems and recycled plastics via advanced recycling is critical for marketing claims. Mass balance is a chain of custody system used extensively in diverse industries such as renewable energy and many different agricultural commodities. Globally recognized organizations such as the International Sustainability & Carbon Certification System are currently certifying the use of recycled plastics in food contact packaging such as Unilever's Magnum ice cream tub. Additionally, we need to support the National Institute of Standards and Technology as they work to develop their congressionally directed report on mass balance certification via the recently enacted Save Our Seas 2.0 legislation.

OTHER ACTIONS AMERICA'S PLASTIC MAKERS ARE TAKING TO BUILD A CIRCULAR ECONOMY

- The Circular Plastics Fund started by Dow Chemical, NOVA Chemicals and LyondellBasell with Closed Loop Partners was established to invest in scalable recycling technologies, equipment upgrades and infrastructure solutions. The goal of the fund is to deploy $100M and recycle more than 500 million pounds of plastics over its lifecycle.

- To evaluate the environmental impacts and potential benefits of advanced recycling compared to virgin production, ACC members are working with the U.S. Department of Energy's Argonne National Laboratory on a life cycle analysis (LCA) on the conversion of post-use plastics back to a plastic feedstock as well as an ultra-low sulfur diesel pathway. Argonne will add this data to its Greenhouse Gases, Regulated Emissions and Energy Use in Transportation (GREET) model. The GREET model provides a common, transparent platform for LCA and its results are used by government agencies, industries, and academia.

- ACC members are also partnering with Oak Ridge National Laboratory and the U.S. automotive industry and supply chain to demonstrate full automotive plastics and composite circularity.

- With the Institute for Advanced Composites Manufacturing Innovation (IACMI) we are enabling auto lightweighting for fuel efficiency and GHG reduction by developing an automotive performance standards database for plastic & polymer composites – involving all major OEMs and tiers and supported by both DOE and IACMI.

- ACC led the Materials Recovery for the Future (MRFF) consortium that conducted research the successful curbside collection, separation, and preparation for recycling of flexible plastic packaging (FPP). Approximately 12 billion pounds of FPP are consumed annually in the U.S., and it is one of the fastest growing consumer packaging formats, but collecting, sorting, recycling and reintroducing this material back into the marketplace as new products requires a comprehensive approach to ensure that these materials don't end up in landfills. The report also identifies more than a dozen end market opportunities for the captured FPP. We are also working with DOE and the REMADE Institute on flexible film recycling.

- ACC signed a Memorandum of Understanding (MOU) with the DOE under its Plastics Innovation Challenge to enhance innovation in plastics to enhance innovation in plastics recycling. The MOU serves as a framework to gain a deeper understanding of research and development needs in the advanced recycling sector and strengthen the domestic plastics supply chain.

- Many of our members helped found the Alliance to End Plastic Waste, a non-profit organization committed to reducing plastic waste globally and developing programs promoting reusing and recycling in regions suffering most from plastic waste.

CONCLUSION

ACC appreciates opportunity to testify at today's hearing. We support the Plastics Waste Reduction and Recycling Research Act and thank the sponsors for their leadership. ACC and its members are committed to helping solve the plastic waste challenge and supporting the proposed approaches summarized in my remarks. There is much that needs to be done to create a more sustainable future and we remain dedicated and constructive partners in those endeavors.