October 23, 2024

Director Zoe Heller
Department of Resources Recycling and Recovery (CalRecycle)
P.O. Box 4025
Sacramento, CA 95812-4025
Via Public Comment Form

Re: CA SB 54 PERMANENT REGULATIONS REVISIONS INCORRECTLY CATEGORIZES RECYCLING TECHNOLOGIES & CREATES FAULTY STANDARD

Dear Ms. Heller,

The undersigned entities (the "Coalition") are appreciative of the opportunity to submit comments regarding California's Department of Resources Recycling and Recovery's ("CalRecycle") proposed revisions to the Senate Bill 54 ("SB 54") permanent regulations. Together, the Coalition represents virtually all aspects of the packaging value chain and some of the most integral stakeholders in the work that CalRecycle is undertaking to increase recycling in California.

SB 54 Requirements Cannot be Met Through Traditional Mechanical Recycling Technology

The permanent regulations will play a crucial role in enabling California's extended producer responsibility program to meet the circularity targets established within the SB 54 statute, as well as in the ability of the regulated community to achieve their own, concurrent sustainability goals. SB 54 establishes ambitious circularity goals for producers; yet the proposed revisions to the permanent regulations contain a substantial oversight in their methodology for achieving these targets. The revisions incorrectly characterize molecular recycling as hazardous waste management instead of manufacturing, creating a de facto ban on alternative recycling technologies and leaving the system wholly reliant on mechanical recycling. No single sector, technology, or approach can solve the plastics challenge independently.[1] The Coalition is a strong proponent for prioritizing effective mechanical recycling across the United States. However, mechanical recycling alone is incapable of reaching the recycling targets set by SB 54. Mechanical recycling can effectively sort some plastic polymers, such as HDPE and clear or white

[1] Closed Loop Partners (2021), Transitioning to a Circular System for Plastics, Assessing Molecular Recycling Technologies in the United States and Canada - Closed Loop Partners

PET, but is unable to address other categories of plastic material. To build the circular economy which SB 54 and producer organizations are collaboratively pursuing, a holistic array of solutions is required.

Mechanically recycled plastics often undergo a process called “downcycling.” Downcycling occurs when the recovered product is of a lower quality than the original input plastic. Downcycling is largely due to the persistence of essential additives included in packaging. Given the limited range of plastic materials that mechanical recycling can recover at a high enough quality to meet strict food and drug contact packaging standards, the supply of recycled plastic content that can be used for like-new packaging is well below current and future anticipated demand. Challenges with sufficient supply and quality of mechanically recycled content currently leave many companies reliant on the production of virgin plastic materials.

Molecular Recycling Can Complement Recycling for Materials Mechanical Recycling Cannot Effectively Recover

Molecular recycling, also known as advanced or chemical recycling, are scalable technology solutions that can complement mechanical recycling to process plastic material that may otherwise go to landfills or incineration. Molecular recycling is the process of converting plastic back to its basic building blocks or extracting polymers (without breaking them into monomers) from post-consumer plastic in order to create like-new plastic products or packaging with virgin-grade recycled plastic material or raw material plastic components. The integration of molecular recycling technologies can be complementary to mechanical recycling processes for the increased recovery of post-consumer recycled content by providing plastic-to-plastic, or plastic-to-raw material (plastic component) recycling solutions for a variety of difficult to recycle materials, including low-density plastics such as plastic films and flexible plastics. Molecular recycling technologies can also supplement recycling for types of plastic materials which mechanical recycling struggles to recover at a high enough quality to meet strict safety and quality standards set by regulatory entities such as the Food and Drug Administration.

Molecular Recycling is Manufacturing

Molecular recycling, like traditional mechanical recycling, is manufacturing. The Environmental Protection Agency (“EPA”) has produced multiple publications which consistently define manufacturing as inclusive of the extraction of component chemical substances and any byproducts or impurities created. Adhering to EPA's definitions, molecular recycling is fundamentally a form of manufacturing. Additionally, in contrast to waste management facilities, molecular recycling technologies do not process untreated waste.[2] The material inputs of a molecular recycling process are pre-sorted and cleaned, often undergoing sortation two to three times, prior to undergoing molecular recycling. The plastic materials entering a molecular recycling process are a feedstock, not untreated waste.

Half of the country has recognized the viability of molecular recycling technologies as manufacturing processes; 25 states have adopted legislation which regulates molecular recycling as manufacturing. This clarification is a fundamental step toward ensuring molecular recycling facilities are subject to the same environmental oversight and permitting as a manufacturing facility under state and local laws. It is also a fundamental step toward enabling these

[2] Closed Loop Partners (2021), Transitioning to a Circular System for Plastics, Assessing Molecular Recycling Technologies in the United States and Canada - Closed Loop Partners

technologies to fill the gap in our recycling infrastructure left by the limited ability of mechanical recycling to recover a wider range of plastic materials at a high enough quality to meet federal safety and quality standards.

The revisions to the permanent regulations establish a punitively high barrier to entry for molecular recycling technologies; the proposed review process will require both extensive financial and time commitments for any non-physical recycling technology. This is inconsistent with the regulation of existing manufacturing processes and is disproportionately severe in comparison to the regulation of mechanical recycling. The proposed revisions also fail to consider the fact that as manufacturing facilities, molecular recycling technologies are subject to environmental regulations at the federal level, to include the Clean Air Act and the Clean Water Act. The revisions establish an inhibitive, lopsided requirement for non-mechanical recycling technologies, disregarding the existing regulatory oversight applied to manufacturing processes, including mechanical recycling. The Coalition recommends that alternative recycling technologies are regulated equivalent to existing guidelines for the safe and environmental management of manufacturing facilities.

Molecular and Mechanical Recycling are Complementary

In establishing mechanical recycling as the standard and measuring molecular recycling against that standard, the existing revisions insinuate that mechanical recycling and molecular recycling technologies should compete. The Coalition believes that molecular recycling should provide recycling solutions for types of plastic materials which mechanical recycling is unable to effectively recover- thereby complementing, rather than competing with, existing mechanical recycling processes. Molecular recycling is a manufacturing process and should complement mechanical recycling; “significant hazardous waste” products from molecular recycling should not be measured against a mechanical recycling standard. Rather than competing with mechanical recycling for feedstock, as the proposed revisions suggest, molecular recycling technologies can supplement recycling for types of plastic materials which mechanical recycling can’t recover at a high enough quality to meet regulatory safety and quality standards.

Molecular Recycling Can Support Reduction of Environmental Impacts

When considering minimizing the generation of hazardous waste, generation of greenhouse gases, environmental impacts, and public health impacts, the products of molecular recycling technologies should be compared instead to the production of virgin plastic materials. Molecular recycling provides an opportunity to reduce the generation of greenhouse gases and other environmental impacts that occur through the production of virgin plastic by increasing the supply of high-quality plastic material components recovered through recycling, for use in plastic packaging. The use of plastic materials or raw material plastic components recovered through a molecular recycling process can replace quantities of virgin plastic, therefore, the molecular recycling manufacturing process that produces these outputs should be measured against the manufacturing process of virgin plastic.

The Coalition encourages CalRecycle to remove the proposed revision to the permanent regulations which measures the “significant hazardous waste” product of molecular recycling against a mechanical recycling standard. We recommend CalRecycle use virgin plastic production as the basis for any comparison of generation of greenhouse gases, hazardous waste, environmental justice impacts, and public health impacts associated with alternative recycling technologies.

Revisions Dissuade Innovation for Variety of Alternative Recycling Technologies

The proposed revisions establish a high barrier to entry for any non-mechanical recycling technology, through the implication of significant financial resources necessary to achieve the outlined review process requirements, and the likely extensive time period needed for the review- which may occur no more frequently than once every five years according to the revisions. Not only does this significantly delay the incorporation of effective alternative recycling technologies which can provide sustainable end of life solutions for a broader range of plastic materials, but the revisions also fail to consider the variety in existing molecular recycling technologies.

There are three classifications of molecular recycling technologies: purification, depolymerization, and conversion technologies. Within each of these three categories, there are several different types of technologies. These technologies will each serve a different purpose. Purification technologies on average have a higher plastic material component yield than depolymerization and conversion. Depolymerization can function effectively with a higher level of contaminants than purification. This is especially useful for textiles which contain mixed fibers, dyes, and fabric coatings. Conversion technologies can take the widest range of plastics and demonstrate the largest energy savings. However, in contrast, they typically produce the most byproducts. Each technology subset has unique strengths and considerations for efficiency and outputs.[3]

In order to achieve the sustainability goals outlined by SB 54, a diverse array of solutions will be required. There are different obstacles for the effective end of life management of each material type, and recycling innovation is establishing different solutions to meet these challenges. A variety of solutions, and recycling technologies, will be necessary in order to create circularity for plastic materials, particularly the plastic material types that the mechanical system is currently unable to recover. Requiring each technology to undergo the extensive review process constructs high cost and time barriers, ultimately creating a de facto ban on innovation and the incorporation of new technologies within the recycling space. With these revisions, the array of solutions will predominantly be limited to technologies which can amass the financial resources necessary to commission a review. The proposed revisions fail to consider that there are a plethora of different recycling technologies and that overly high barriers to entry discourage the effectiveness of any and all of these innovative technologies.

Scalable, Sorted and Complimentary

The Coalition also encourages CalRecycle to allow producers to use quantifiable and transparent chain of custody approaches, specifically credit based mass balance, to account for recycled content and attribute recycled material components recovered through molecular recycling processes to the recycled content requirements established by SB 54.[4] Additionally, the Coalition believes that molecular recycling technologies should be a viable option in improving the circularity of plastics, and processes that only produce energy / fuel should not qualify as recycling or towards meeting recycling mandates for plastics (e.g., rates and content).

With proper environmental and regulatory oversight, molecular recycling is a scalable technology capable of complementing mechanical recycling to divert materials from incineration and landfills,

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[3] Closed Loop Partners (2021), Transitioning to a Circular System for Plastics, Assessing Molecular Recycling Technologies in the United States and Canada - Closed Loop Partners

[4] Enabling a Circular Economy for Chemicals with the Mass Balance Approach, Ellen MacArthur Foundation, CE100. White Paper Ellen MacArthur Foundation

and to promote the reduction of the production of virgin plastic within California. Additionally, molecular recycling utilizes and benefits from the effective sorting and pre-processing infrastructure already established for mechanical recycling. Sorted, clean streams generated by the existing recycling infrastructure maximize the quality of plastic material components recovered from molecular recycling processes. On average, molecular recycling technologies require less energy and emit fewer greenhouse gases in comparison to the production of virgin plastic, aligning with the goals established by the SB 54 statute.[5] The use of these technologies, complementary to mechanical recycling, for material-to-material applications should be permitted under the proposed revisions and measured against virgin plastic production to promote the achievement of circularity for materials within California.

The Coalition thanks CalRecycle for the ability to submit feedback and appreciates its consideration of this paramount topic. Please reach out to John Hewitt via jhewitt@consumerbrandsassociation.org with any questions or follow up.

Thank you,

John Hewitt

Senior Vice President of Packaging & Sustainability, Head of State Affairs
Consumer Brands Association

On behalf of:

Agricultural Council of California

California Grocers Association

California League of Food Producers

California Manufacturers & Technology Association

Chemical Industry Council of California

Consumer Brands Association

Dairy Institute of California

Flexible Packaging Association

Household and Commercial Products Association

U.S. Plastics Pact

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[5] Closed Loop Partners (2021), Transitioning to a Circular System for Plastics, Assessing Molecular Recycling Technologies in the United States and Canada - Closed Loop Partners