

## **APR Statement on Chemical Recycling Technologies**

The mission of the Association of Plastics Recyclers (APR) is to enhance quality and increase supply through technical resources, testing programs, design solutions, corporate training, regulatory leadership and education programs. The focus of these efforts has predominately been on the readily available and developing mechanical recycling technologies due to the efficiency, cost competitiveness and the environmental benefits of the resulting post-consumer resins (PCR) versus virgin or prime resins and chemically recycled materials.

With the increased attention given the plastic waste issue, as well as increased regulatory action and consumer goods commitments related to plastics recycling – recycled, recyclable materials and recovery - it is critically necessary for the industry to research all solutions. In this effort, chemical recycling is receiving renewed focus.

What is “chemical recycling”?

The plastics recycling technology spectrum includes several segments, including mechanical, purification, decomposition and conversion technologies<sup>1</sup>. Chemical recycling can include the purification, decomposition and conversion segments, but vary in approach and technology used to transform into a valuable material.

**Mechanical Recycling** is a process to recover a thermoplastic material so that it can be applied again in another article or component. The chemical structure remains unchanged.

**Purification** involves the solvent based decontamination of a material. The material is not chemically deconstructed - the chemical structure remains unchanged. This is primarily a mechanical recycling process but uses chemical means to remove contaminants and “purify” the material.

**Decomposition** involves the depolymerization of a material. The molecular bonds are broken down to monomer or oligomer level to allow for repolymerization or “remanufacturing” of a resin.

**Conversion** often involves depolymerization but the resultant material can be converted into recycled plastics as well as other materials including waxes and fuels that can reduce dependency on their fossil fuel derived counterparts. Pyrolysis and gasification are examples of conversion technologies.

**The APR sees opportunity to accelerate the plastics circular economy, and reduce dependency on non-renewable resources, through the intersection of mechanical and chemical recycling technologies. The APR supports the analysis and development of these segments as a means to increase efficiency, improve the quality of recycled plastics, and accelerate the availability of the outputs. Improvement and investment across the entire recycling value chain – mechanical and chemical - will reduce plastic waste in the environment and provide the most sustainable materials to the industry.**

<sup>1</sup>Closed Loop Partners, “Accelerating Circular Supply Chains for Plastics,” 2019.