

## EXECUTIVE SUMMARY

# Comparison of Pyrolysis-Based Advanced Recycling Air Emissions to Common Manufacturing Emissions

## INTRODUCTION

Advanced recycling technologies are helping to expand the circular economy by converting waste plastics that cannot be recycled mechanically back into valuable feedstocks for new plastics and products like waxes, lubricants and lower-environmental-footprint fuels. These technologies offer a unique way to recover the building blocks for new materials and can do so in an environmentally friendly way, helping to keep plastics out of oceans and landfills and reduce the use of virgin fossil-based energy.

The emissions from these technologies are well regulated and controlled through technological and operational practices to be kept low. This new analysis finds that pyrolysis-based advanced recycling technologies are not only better for our planet by avoiding virgin resource extraction, but are also well-regulated by the federal Clean Air Act and state and local regulatory authorities. In fact, these advanced recycling facilities are so finely tuned that materials which do not meet strict requirements are automatically rejected. Most importantly, every category of air emissions from these technologies was shown to be well below regulated levels and below typical well-known everyday industries and institutions that are often located right in our own communities.

So, an advanced recycling facility, which itself is designed to use waste to create brand new materials and keep plastic out of our oceans and landfills, generate no more emissions than an average hospital, college campus or even an auto manufacturer.

## KEY FINDINGS

- The production of new materials, such as chemical and plastic feedstocks, waxes, lubricants and fuels, from post-use plastics diverts these materials from landfill or incineration and reduces the extraction of virgin natural resources.
- Pyrolysis-based advanced recycling technologies help reduce plastic waste by recycling more types and greater amounts of post-use plastic materials that are technically unfeasible or uneconomic for mechanical recyclers.
- Emissions produced by pyrolysis-based advanced recycling technologies that process 55,000 tons of post-use plastics per year are lower when compared to many other common facilities such as food processing facilities, universities and automotive manufacturing.
- Because pyrolysis-based advanced recycling technologies are manufacturers, they are regulated by the Clean Air Act and applicable state and local regulatory authorities.
- Permitting and operational data indicate that pyrolysis-based advanced recycling facilities processing 55,000 tons of post-use plastics per year are expected to create very few Hazardous Air Pollutants (HAP) emissions. These emissions from pyrolysis facilities are so low that they are likely to be well-below manufacturing federal permitting requirements.
- Pyrolysis-based advanced recycling technologies do not produce dioxins. These technologies control their inputs and manage temperatures during the process to avoid formation and have emission controls that would destroy or capture any dioxins that would be emitted to the air or the final products.