



May 8, 2023

Senator Brenner, Chair
Representative Gramlich, Chair
Joint Standing Committee on Environment and Natural Resources
Maine Legislature
100 State House Station
Augusta, Maine 04333

RE: Testimony in Support of LD 1660 – An Act to Provide That Advanced Recycling Facilities Are Subject to Solid Waste Regulation and That Advanced Recycling Does Not Constitute Recycling

Dear Senator Brenner, Representative Gramlich, and Members of the Joint Committee on Environment and Natural Resources:

Thank you for the opportunity to provide testimony on LD 1660, An Act to Provide That Advanced Recycling Facilities Are Subject to Solid Waste Regulation and That Advanced Recycling Does Not Constitute Recycling. **Just Zero supports this bill.**

Just Zero is a national environmental non-profit advocacy organization that works alongside communities, policy makers, scientists, educators, organizers, and others to implement just and equitable solutions to climate-damaging and toxic production, consumption, and waste disposal practices. We believe that all people deserve Zero Waste solutions with zero climate-damaging emissions and zero toxic exposures.

LD 1660 is a commonsense measure that will protect Maine's environment and communities from the pollution associated with an emerging and unproven array of waste management technologies referred to as "Advanced Recycling." The bill will ensure that if an advanced recycling facility is proposed in Maine, it is subject to the state's robust solid waste management laws and regulations.

I. Overview of So-Called "Advanced Recycling."

In theory, advanced recycling refers to a category of technologies that use heat and/or solvents to break down plastics into monomers (the building blocks of plastic), hydrocarbons, fuels, chemicals, and waste byproducts.¹ These technologies include gasification, pyrolysis, depolymerization, solvolysis, methanolysis, and hydrolysis.²

¹ Andrew Rollinson & Jumoke Oladejo, Chemical Recycling: Status, Sustainability, and Environmental Impacts, Global Alliance for Incinerator Alternatives, p. 7–12. (2020).

² *Id.*



According to proponents like the American Chemistry Council, these materials can be used to manufacture new plastic products.³ The reality of advanced recycling, however, dramatically contrasts with these statements. Advanced recycling isn't an answer to our plastic woes. It's an expensive, risky, toxic, and climate-damaging process that doesn't improve recycling. And its only purpose is to convince us to deepen our dependence on single-use plastics.

II. **Advanced Recycling Does Not Result in Plastic Waste Actually Being Recycled.**

In practice, advanced recycling means burning plastic derived fuels and toxic chemicals. The process results in plastics being boiled down into gases, chemicals, tars, oils, and toxic waste byproducts, which are subsequently burned.⁴ Little to no new plastics are manufactured.⁵ In fact, all six of the advanced recycling facilities operating at a commercial scale in the U.S. are using pyrolysis to create and burn plastic derived fuel.⁶ Converting plastic into fuels is not considered recycling by national and international standards.⁷

For example, a company called Brightmark operates an advanced recycling facility in Indiana. 70% of the output from this facility is plastic-derived "syngas," which Brightmark burns onsite.⁸ Another 20% of the output is liquid fuel, which Brightmark ships to be burned offsite.⁹ The remaining 10% is a "powdery residue," which Brightmark landfills.¹⁰ During a failed attempt to build another advanced recycling facility in Georgia, Brightmark was required to demonstrate that its existing facilities and technologies actually resulted in plastic being recycled into new products.¹¹ The company could not make the demonstration and subsequently was forced to scarp the project.¹²

This is not an isolated example. An advanced recycling facility in Oregon operated by a company called Agilyx follows a similar story. The Agilyx facility uses pyrolysis to boil polystyrene – a plastic often used for food and beverage containers – into its

³ American Chemistry Council, Advanced Recycling – Overview.

⁴ Dr. Veena Singla, Recycling Lies: Chemical Recycling of Plastic is Just Greenwashing Incineration, Natural Resources Defense Council, p. 2. (2022).

⁵ *Id.* at 3.

⁶ *Id.*

⁷ See EPA's 1997 Measuring Recycling: A Guide for State and Local Governments and European Union, Directive of the European Parliament on Waste and Repealing Certain Directives, Pub. L. No. Article 3(17).

⁸ See, Brightmark Response to Draft Survey for Pyrolysis and Gasification Units, p. 17. (Dec. 23, 2021).

⁹ *Id.*

¹⁰ *Id.*

¹¹ DeAnne Toto, Brightmark Scraps Plans for Georgia Plant, Recycling Today. (Apr. 12, 2022).

¹² *Id.*



monomer, styrene.¹³ Agilyx ships much, if not all, of that styrene to be burned offsite.¹⁴ Between 2019 and 2021, Agilyx reported to the U.S. Environmental Protection Agency. that it shipped more than 340,000 pounds of styrene to be burned for “energy recovery.”¹⁵

III. Advanced Recycling Threatens Surrounding Communities and the Environment.

In addition to not actually recycling any plastic, so-called advanced recycling facilities also pose a significant threat to the environment and the public health of surrounding communities. All six of the operational advanced recycling facilities in the U.S. produce dangerous toxics and contribute to climate damage. Air emissions, chemicals, and waste products generated at these facilities can include lead, mercury, chromium, benzene, toluene, arsenic, and dioxins – all of which pose significant risks to human health and the environment.¹⁶ These chemicals are found in the gases, fuels, oils, tars, and solid wastes that result from processing the plastic waste.¹⁷ Burning these materials – which as explained above is the status quo – releases many of these toxics into the air.¹⁸

Burning plastic-derived fuels, gases, and chemicals is also climate damaging. Because virtually all plastics are derived from fossil fuels, burning plastic-derived fuels and chemicals results in significant greenhouse gas emissions.¹⁹ However, this is only part of the overall climate impact. Advanced recycling technologies used by these facilities typically heat plastics to temperatures of 800 degrees Fahrenheit and above.²⁰ Generating that heat is an energy-intensive process that relies on burning even more fossil fuels.²¹ In fact, the energy inputs required for advanced recycling far outweigh the utility of the fuels and chemicals produced. For example, the Agilyx

¹³ See Agilyx, Regenyx: Changing the Way We Recycle Polystyrene.

¹⁴ U.S. Environmental Protection Agency, Agilyx Production Related Waste Management for Styrene.

¹⁵ *Id.*

¹⁶ Dr. Veena Singla, Recycling Lies: Chemical Recycling of Plastic is Just Greenwashing Incineration, *Natural Resources Defense Council*, p. 6. (2022).

¹⁷ Andrew Rollinson & Jumoke Oladejo, Chemical Recycling: Status, Sustainability, and Environmental Impacts, *Global Alliance for Incinerator Alternatives* 23-27. (2020)

¹⁸ Dr. Veena Singla, Recycling Lies: Chemical Recycling of Plastic is Just Greenwashing Incineration, *Natural Resources Defense Council*, p. 6. (2022). David Azoulay et al., Plastic & Health: The Hidden Costs of a Plastic Planet, *Center for International Environmental Law*, p. 47-48. (2019)

¹⁹ See Andrew Rollinson, Why Pyrolysis and ‘Plastic to Fuels’ is Not a Solution to the Plastics Problem. (Dec. 4, 2018).

²⁰ Andrew Rollinson & Jumoke Oladejo, Chemical Recycling: Status, Sustainability, and Environmental Impacts, *Global Alliance for Incinerator Alternatives*, p. 9. (2020).

²¹ *Id.*



facility in Oregon emits more than three tons of carbon dioxide for every ton of polystyrene that it processes.²²

Unsurprisingly, the pollution and public health impacts created by advanced recycling facilities are primarily born by communities that are already subjected to a disproportionate amount of pollution from other sources.²³ 76% of advanced recycling facilities in the U.S. are located in communities of color and low-income communities.²⁴

IV. State Regulation Lobbying Campaign.

Despite the repeated failures of advanced recycling facilities, the plastic and petrochemical industry – lead primarily by the American Chemistry Council – has spent the past several years working to lobby state legislatures to promote this unproven and polluting technology.²⁵ The purpose of the legislative campaign is to enact laws that reclassify advanced recycling as manufacturing, and not solid waste management.²⁶ Currently, 24 states have passed these deregulatory laws.²⁷

Many of these laws also exempt plastic waste that is processed at an advanced recycling facility from being classified as solid waste.²⁸ Some also automatically classify plastic waste sent to an advanced recycling facility as being recycled without any requirement that the plastic was used to manufacture a new product.²⁹

States subject solid waste facilities to significantly more stringent regulations than manufacturing facilities. And for good reason. Shipping, accepting, dumping, processing, and even recycling waste comes with inherent risks to the environment and surrounding communities. And plastic is a particularly toxic component of the waste stream.

²² Denise Patel et al., *All Talk and No Recycling: An Investigation of the U.S. “Chemical Recycling” Industry*, Global Alliance for Incinerator Alternatives, p. 3. (2020).

²³ Lauren Fernandez, *Environmental Justice Communities Are Not Responsible for Our Waste Crisis*, Just Zero. (Nov. 8, 2022).

²⁴ Kevin Budris, *Loopholes, Injustice, and the Advanced Recycling Myth*, Just Zero, p. 31. (Dec. 2022).

²⁵ Joseph Winters, *The Petrochemical Industry is Convincing States to Deregulate Plastic Incineration*, Grist. (Aug. 18, 2022).

²⁶ Kevin Budris, *Loopholes, Injustice, and the Advanced Recycling Myth*, Just Zero, p. 15-21. (Dec. 2022).

²⁷ *Id.* at 17. This chart shows the laws passed prior to Dec. 2022. Since the chart was published [Kansas](#), [Indiana](#), [Michigan](#), and [Utah](#) have also passed laws that exempt advanced recycling from commonsense solid waste regulation.

²⁸ *Id.* at 15.

²⁹ *Id.* at 22-27.



The impact of this reclassification is that these facilities are now exempt from state solid waste laws and regulations that they would otherwise be required to comply with. This includes commonsense requirements for all facilities that handle solid waste such as public permitting processes, siting restrictions, public input and oversight, transparency requirements, closure plans, and operating conditions that apply to all solid waste facilities, but not manufacturing facilities.

Unsurprisingly, more than half of the advanced recycling facilities operating in the U.S. are located in states that have passed laws exempting these facilities from solid waste regulation.³⁰ By design, this unproven and polluting industry is expanding most rapidly where there is little oversight or accountability. This is despite a recent investigative report that found advanced recycling facilities that turn plastic into fuel can create a one-in-four lifetime cancer risk for those forced to live nearby.³¹

V. Advanced Recycling Is Also Being Proposed to Address Other Forms of Solid Waste Which Raises Additional Environmental and Public Health Concerns.

Additionally, some of the technologies that fall under the advanced recycling umbrella have also been proposed as a means to manage other forms of waste. One specific waste stream is sewage sludge. Like the management of plastic waste, processing sewage sludge through gasification, pyrolysis, and other advanced recycling technologies will result in significant harm to public health and the environment.

Sewage sludge contains perfluoroalkyl and polyfluoroalkyl substances (PFAS), commonly known as toxic forever chemicals. Advanced recycling processes do not guarantee the destruction of PFAS.³² Studies have shown that exposing PFAS containing waste to these processes simply breaks down long-chain PFAS into short-chain PFAS, which still pose significant threats to human health. These processes also result in the airborne release of PFAS which significantly increases their ability to spread throughout the surrounding area. Some studies suggest that some PFAS bonds do not break down until 1,400 degrees Celsius (2,550 degrees Fahrenheit).³³

³⁰ U.S. Environmental Protection Agency, Potential Future Regulations Addressing Pyrolysis and Gasification Units, 86 Fed. Reg. 50296, 50302 (Sept. 8, 2021).

³¹ Sharon Lerner, This "Climate-Friendly" Fuel Comes With an Astronomical Cancer Risk, *Pro Publica*. (Feb. 23, 2023) <https://www.propublica.org/article/chevron-pascagoula-pollution-future-cancer-risk>

³² U.S. Environmental Protection Agency, Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances, EPA-HQ-OLEM-2020-0527. (Dec. 18, 2020).

³³ U.S. Environmental Protection Agency, Per- and Polyfluoroalkyl Substances (PFAS): Incineration to Manage PFAS Waste Streams, Technical Brief at 1. (February 2020).



Most gasification and pyrolysis facilities only reach a maximum of 1,200 degrees Fahrenheit.³⁴

VI. Conclusion.

Maine has developed strong, important, and necessary laws that regulate facilities that handle solid waste. LD 1660 will ensure that a new and emerging set of solid waste management technologies is correctly regulated under these laws. Doing so will ensure that the requirements that apply to all solid waste management facilities to protect our communities and environment must be met before one of these facilities is permitted to be developed. Additionally, it will ensure that if one of these facilities is developed in Maine, that the materials sent to it – such as plastic waste – are not classified as being recycled. This will protect against the greenwashing of plastic recycling that industry groups are pursuing across the country. Thank you for your time and consideration of this testimony. Just Zero strongly encourages you to support this measure.

Respectfully submitted,

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³⁴ U.S. Environmental Protection Agency, Potential Future Regulations Addressing Pyrolysis and Gasification Units, 86 Fed. Reg. 50296, 50302 (Sept. 8, 2021).