

PLASTIC-TO-FUEL: A FALSE SOLUTION

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WHY IT MATTERS

Plastic production is increasing globally and in Virginia, resulting in the state's waterways being inundated by single-use plastic pollution. However, “advanced” or “chemical” recycling, also known as plastics-to-fuel, pyrolysis, gasification, chemical conversion, and chemical depolymerization, is not a solution to this plastic pollution crisis. These processes use chemicals and heat to incinerate plastic waste to create fossil fuels (see graphic to left).¹ As such, the **U.S. Environmental Protection Agency** has classified these processes as “incineration.”² In addition, “chemical recycling” produces more greenhouse gases and hazardous waste than the production of virgin plastic,³ while also incentivizing the production of more plastic. The resulting air pollution and hazardous waste put Virginia's communities and environmental health at risk.

Many of these facilities do not test, record, or report the environmental impacts of their incineration. For example, a 2018 report found that an Oregon facility released over 49,000 tons of waste styrene, a highly toxic chemical, into our air.⁴ Pollution disproportionately burdens communities of color,^{5,6} and, as a result of this environmental injustice, Black people are three times more likely to die from exposure to air pollutants than white people.⁷ Seven of the eight U.S. “chemical recycling” facilities are located in **environmental justice communities**.⁸ This, combined with the fact that these facilities are often out of compliance with EPA hazardous waste regulations,⁹ further demonstrates that “chemical recycling” is a false, inequitable solution.

CURRENT LANDSCAPE

Twenty-four states,¹⁰ including Virginia, effectively exempt “chemical recycling” facilities from important waste regulations required of other waste industries because they are regulated as manufacturing facilities. This carveout was awarded based on promises from the **American Chemistry Council**, highlighting the operations of a Tigard, Oregon polystyrene “chemical recycling” facility. However, this facility lost \$4.5 million between 2021 and 2023 and ultimately closed in early 2024 after failing to produce a marketable product, but not before generating more than 200 tons of styrene waste between 2018 and 2022—all of which was burned off-site.¹¹

Likewise, the short history of “chemical recycling” facilities in Virginia suggests “chemical recycling” is a false solution that depends on taxpayer dollars while delivering little to no public benefit. For example, Braven Environmental LLC received approval for a

\$1.2 million incentive grant from the **Virginia Tobacco Region Revitalization Commission** to build a chemical recycling facility in Cumberland County.¹² The project was touted as a solution to Virginia's plastic waste challenges, but the company ultimately withdrew from the project, leaving the facility unbuilt and the grant unpaid.¹²

OPPORTUNITIES

The “chemical recycling” industry has failed for decades due to issues of technology scalability, high volumes of hazardous waste production, energy consumption, and overall inability to turn a profit.^{13,14,15} To truly tackle Virginia's plastic pollution crisis, the Commonwealth should look towards producer responsibility and proven solutions that reduce our reliance on single-use plastic (see *Plastic Pollution & Producer Responsibility*, page 33) to protect human health, our waterways, the ocean, aquatic animals, and the economy.

State solid waste management policy follows a clear hierarchy designed to minimize community and environmental impacts: source reduction, reuse, recycling, resource recovery (waste-to-energy), incineration, and landfilling.¹⁶ This hierarchy can guide discussions on “chemical recycling,” as the process is considered incineration according to EPA regulations. Effective solid waste management focuses on reducing single-use plastics in the waste stream and as litter, reusing products where possible, and, when recycling is necessary, prioritizing solutions that reduce the manufacture of virgin plastics. Technologies that convert plastic into fuel are distinct from recycling and do not align with the goals of extended producer responsibility and recycling development programs. This position is also reflected by national recycling organizations, including the National Recycling Coalition, which has stated that any process using heat or chemicals to transform plastic waste into fossil fuels, fossil fuel additives, substitutes, or waxes does not meet their “definition of recycling.”¹⁷

Technologies with limited demonstrated performance, such as “chemical recycling”, warrant robust evaluation for safety, scalability, and economic viability before being allowed in Virginia. Technologies that contribute to Virginians' quality of life—through outcomes such as litter reduction, plastic waste management, and environmental equity—demonstrate measurable benefits and economic sustainability independent of ongoing taxpayer support. Public investments, including loans, grants, and subsidies, are best directed toward solutions with a demonstrated track record of achieving these goals.

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TOP TAKEAWAYS

Chemical recycling, i.e., converting plastics to fuel and burning plastics, is environmentally unsustainable and enables the petrochemical industry to increase the production of plastics.

Environmental justice communities are disproportionately impacted by “chemical recycling” facilities, with seven of the eight U.S. facilities most often out of compliance with EPA hazardous waste regulations sited in low-income communities and communities of color.

Chemical recycling has not been demonstrated to be an economically viable or scalable solution for managing plastic waste. Rather than creating a circular economy for plastics, these technologies primarily produce fossil fuels or fossil fuel substitutes that are burned, driving greenhouse gas emissions and the continued production of virgin plastics.

ENDNOTES

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