WHY CHEMICAL RECYCLING WON'T SOLVE THE PLASTIC POLLUTION PROBLEM

"Chemical Recycling: A Dangerous Deception. Published by: Beyond Plastics and International Pollutants Elimination Network (IPEN), October 2023. beyondplastics.org/publications/chemical-recycling

February 2024

KEY FINDINGS:

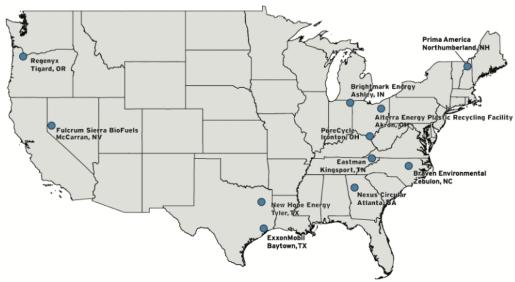
- Of the 11 constructed facilities in the United States, most are not operating at full capacity.
- Even at full capacity, the 11 facilities could process less than 1.3% of all U.S. plastic waste.
- Expensive construction: up to half a billion dollars per facility, with significant public subsidies
- Minimal production of actual recycled plastic: Two of the 11 plants have a stated purpose of only making feedstock for plastic production. Three only make fuels, and six make a combination of fuels, chemicals, and plastic feedstocks.
- Eight of the 11 plants are in **environmental justice communities**.
- Some plants have experienced fires and explosions.

"Plastic contains many hazardous additives or polymers, recently estimated at more than 3,200 hazardous chemicals (UNEP 2023). In turn, they contaminate the plastic waste management processes (Takada and Bell 2021) and outputs while possibly exposing waste and recycling workers, as well as nearby communities."



Braven Environmental facility in Zebulon, N.C.; courtesy of Schuyler Mitchell / The Intercept

Constructed U.S. Chemical Recycling Plants, as of September 2023



Chemical recycling processes of the 11 constructed plants we profiled in this report:

- **Eight use pyrolysis** (Agilyx/Regenyx, Alterra Energy, Braven Environmental, Brightmark, Exxon Mobil, New Hope Energy, Nexus Circular, and Prima America).
- Two use forms of gasification (Fulcrum and Eastman).
- One uses solvents (PureCycle).
- One uses solvolysis (Eastman).

(The total adds up to 12 because Eastman has two separate processes.)



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HIGH CONSTRUCTION COSTS

★Total project costs: at least \$1.7 billion ★Total subsidy value: at least \$184 million ★Private investment: at least \$1.1 billion

NOT MEETING RATED PROCESSING CAPACITY

★The combined rated annual capacity of the 11 plants is less than half a million tons of plastic waste, or less than 1.3% of the total U.S. plastic waste generated annually (36 million tons). ★Many of these plants are not operating at their rated capacities:

- Two are still in test mode (Brightmark and Eastman).
- Two are partially operating (New Hope and Nexus).
- Two appear to be non-operational (Prima and PureCycle).
- There is little to no publicly available information about the actual operational throughput for five of the facilities (Agilyx, Alterra, Braven, Exxon, and Fulcrum).

HAZARDOUS WASTE GENERATION

- ★Hazardous wastes produced by chemical recycling include polycyclic aromatic hydrocarbons (PAHs), dioxins and furans, persistent organic pollutants (POPs), volatile organic compounds (VOCs), and heavy metals.
- ★Three of the 11 plants are classified by the U.S. Environmental Protection Agency as largequantity generators of hazardous waste (Agilyx/Regenyx, Alterra, and Braven), while one is classified as a small-quantity generator (PureCycle).

BURDEN TO ENVIRONMENTAL JUSTICE COMMUNITIES

★Using the U.S. EPA's Environmental Justice Tool:

- Eight of the 11 plants are located in areas with lower-than-average income.
- Five of the 11 plants are located in areas with **higher-than-average concentrations of people of color**.



Brightmark Energy facility in Ashley, Indiana. Source: The Last Beach Cleanup

