SUMMARY

CHEMICAL RECYCLING: A DANGEROUS DECEPTION

WHY CHEMICAL RECYCLING WON'T SOLVE THE PLASTIC POLLUTION PROBLEM

October 2023

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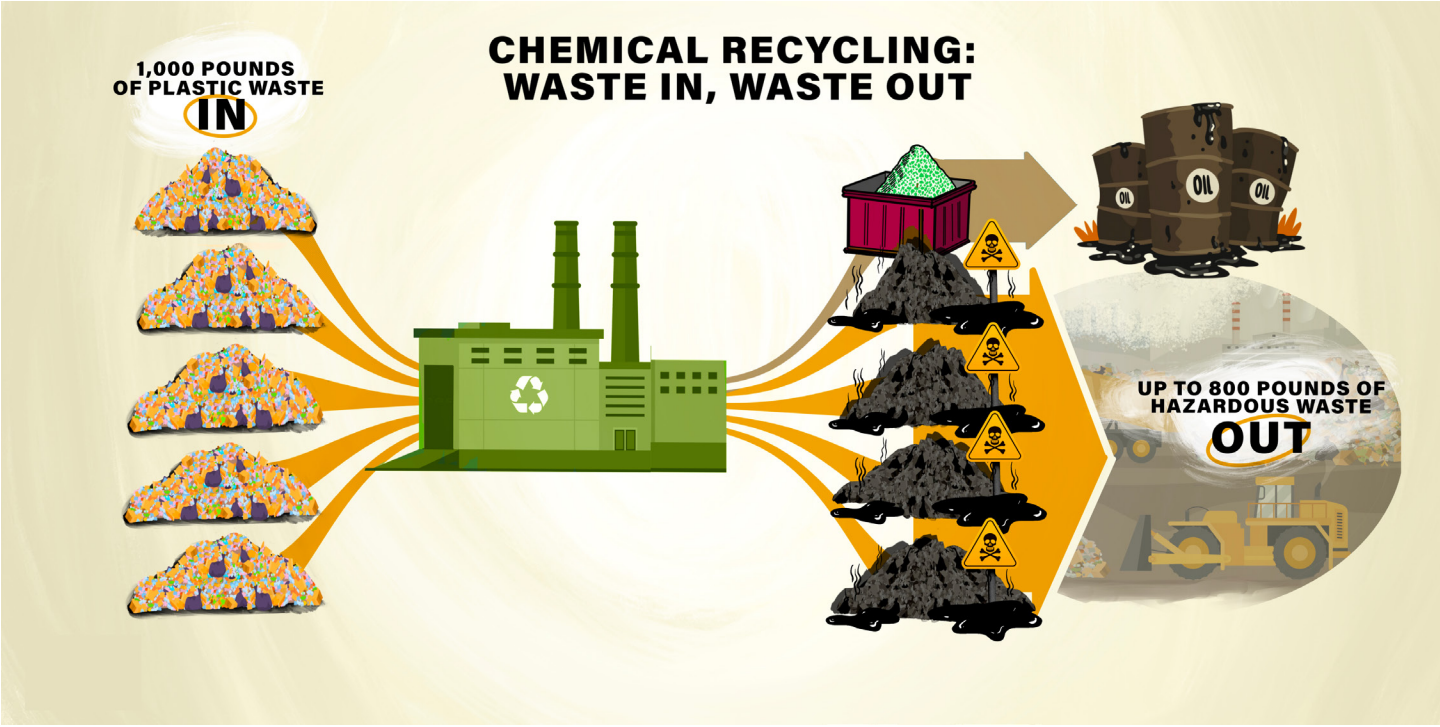
BEYOND PLASTICS
BENNINGTON COLLEGE

IPEN
for a toxics-free future

KEY FINDINGS AND RECOMMENDATIONS

The report **Chemical Recycling: A Dangerous Deception** produced by IPEN and Beyond Plastics examines the plastic industry's claims that chemical recycling, also known as "advanced recycling," will play a significant role in reducing global plastic pollution. In fact, the science and data outlined in our report show that chemical recycling has failed for decades and will not contribute significantly to resolving the plastics crisis. The report exposes chemical recycling as an industry ploy to support the ongoing expansion of plastic production while causing unacceptable levels of environmental and social harm and impacts on human health, through emissions, waste generation, energy consumption, and contaminated outputs.



KEY FINDINGS

Chemical recycling is a false solution to plastic pollution. Chemical recycling has failed for decades, continues to fail, and there is no evidence that it will contribute to resolving the plastics pollution crisis.

Plastics are inherently risky to recycle. Plastics are made with toxic chemicals and when recycled, these chemicals go into the recycled plastic or product. Toxic chemicals can also be created in recycled plastics from cross contamination and heating, resulting in ongoing and often increased chemical threats to our health and the environment.

Chemical recycling is inefficient, energy-intensive, and contributes to climate change. According to U.S. government researchers, the energy needs (derived from plastic waste itself or additional fossil fuels) of chemical recycling can create as much as 100 times more damaging environmental and climate impacts than virgin plastic production.

Chemical recycling creates large amounts of toxic waste. Regardless of what products facilities are attempting to create, chemical recycling — at best — produces small amounts of usable products from large amounts of plastic waste. Typically, most of the plastics going into chemical recycling facilities will become waste (often hazardous waste), be burned as fuel, or be landfilled.

Chemical recycling is dangerous and dirty. Chemical recycling facilities release toxic emissions, create hazardous waste, and are prone to fires and explosions.

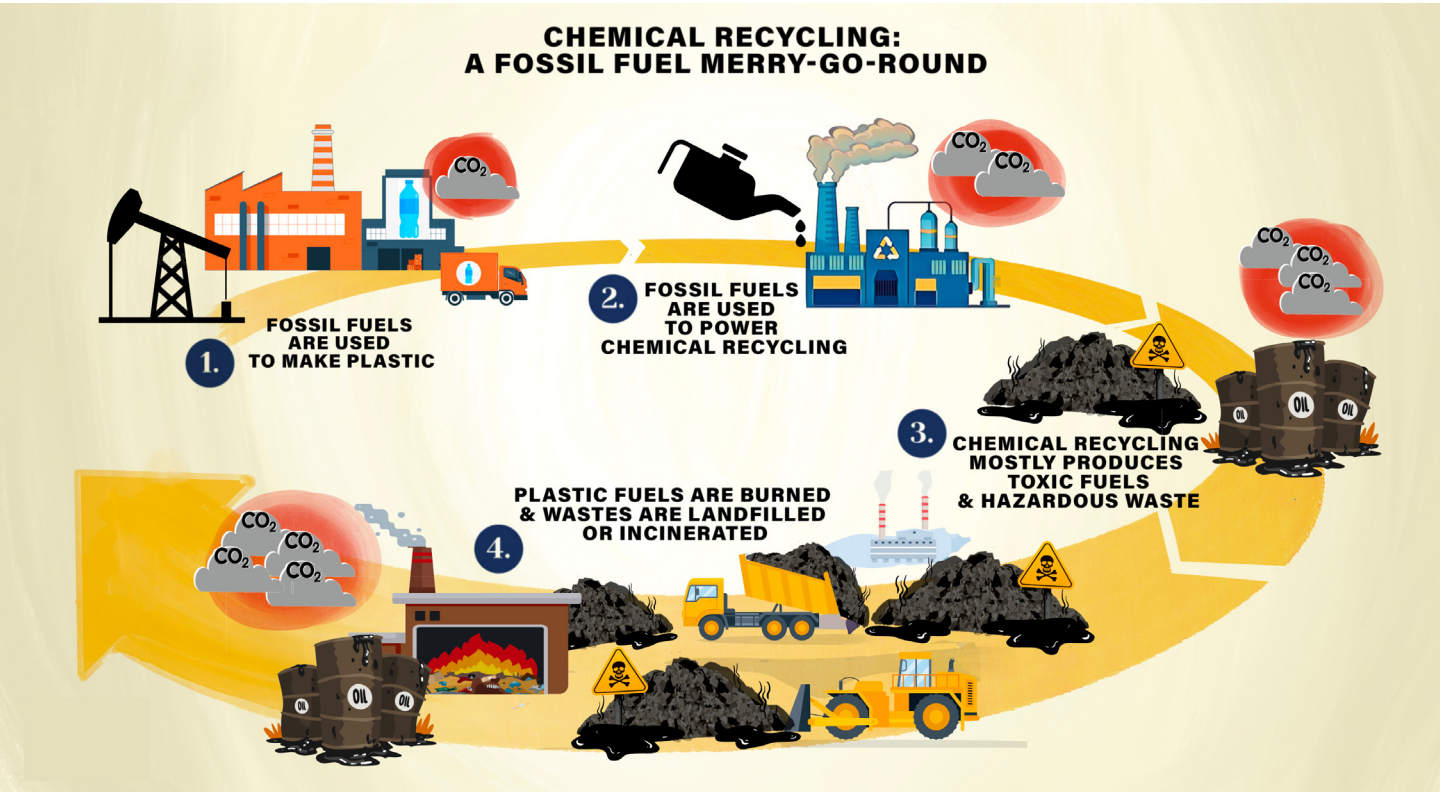
Chemical recycling will not supplement conventional (mechanical) recycling. Proponents say chemical recycling is needed for mixed plastics that are difficult to recycle mechanically, but there is no evidence that chemical recycling can economically or effectively recycle mixed plastic waste. To the extent it works at all, chemical recycling uses the same kinds of plastics as conventional recycling. Thus, chemical recycling will likely compete with, not supplement, conventional recycling.

Burning plastic as fuel is dirty and unsustainable from start to finish. These operations can create unacceptable risks to nearby communities, posing threats to environmental justice. Weak regulations will increase these health and environmental risks. Using chemical recycling to turn plastic waste into fuel creates a toxic, dirty fuel that is harmful to human health and disastrous for the climate.

Making plastic into fuel to burn is not recycling. According to internationally accepted definitions, plastic to fuel is not recycling. It is a dirty and dangerous disposal method.

Eliminating or relaxing regulations puts our health at risk. Chemical recycling facilities emit cancer-causing chemicals and substances that have been banned globally because they are among the most toxic chemicals known. Yet in the United States, many states eliminate or relax environmental and health rules to incentivize new plants, and the industry often evades federal clean air rules. Environmental justice communities that already face unequal health risks from toxic pollution will face the highest health risks from expansion of chemical recycling.

Public funds should support sustainable solutions, not chemical recycling. Government subsidies for chemical recycling are risky investments in a dirty, unproven technology. We need to support innovation for safe, clean materials to create sustainable alternatives that can replace plastics.



Prima America chemical recycling facility in Northumberland, New Hampshire. Source: Google Maps

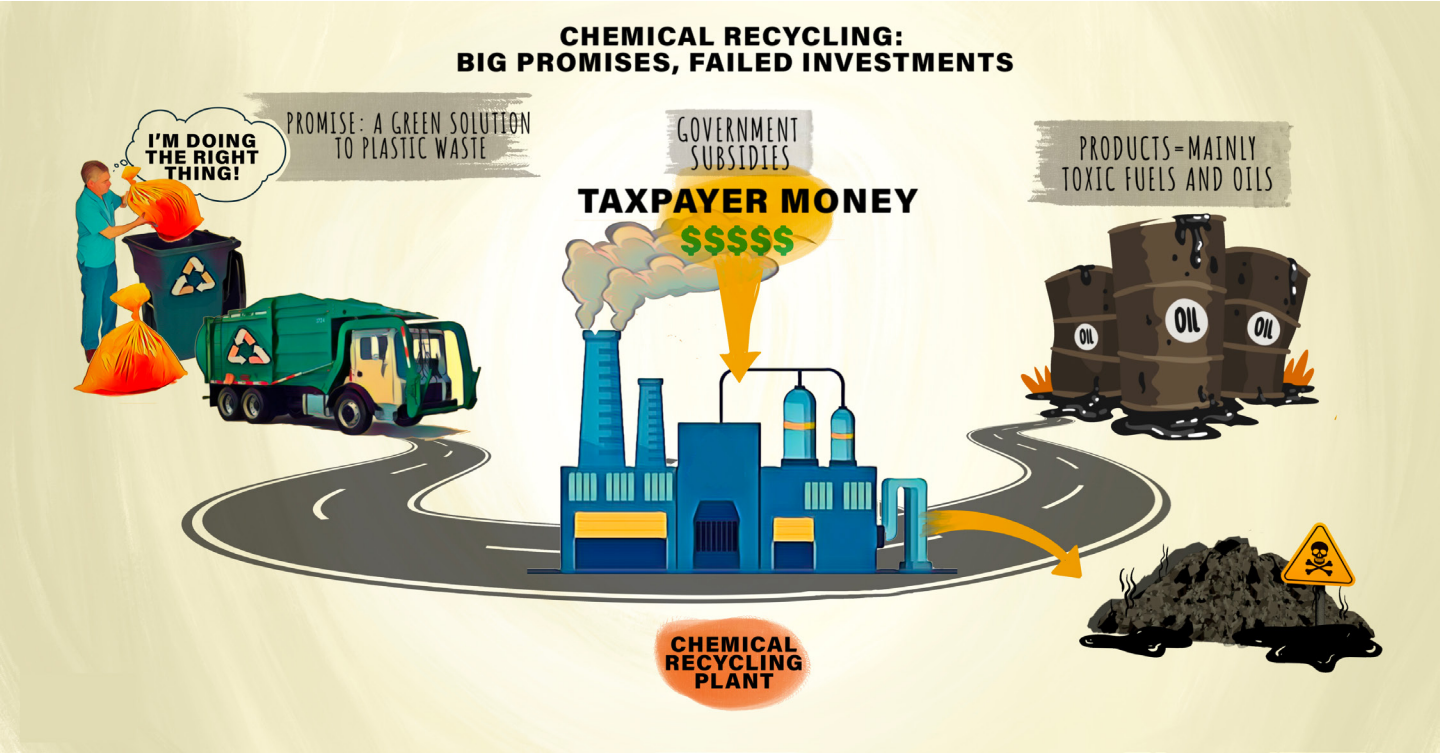
KEY FINDINGS FROM THE CASE STUDIES: FAILURE IS THE ONLY CONSTANT

As of September 2023, 11 chemical recycling facilities have been constructed in the United States. The report provides detailed case studies of each facility, exposing a long list of failures, toxic emissions, and dangerous operations. The key findings are:

1. Chemical recycling processes insignificant amounts of plastic waste.
2. Chemical recycling rarely produces recycled plastic so it is not recycling. It mostly produces low-quality fossil fuels for burning.
3. Chemical recycling harms the environment and human health and threatens already overburdened environmental justice communities.
4. Chemical recycling is expensive and risky and draws public funds that could be used for truly renewable, sustainable projects.
5. Industry secrecy makes it difficult to determine how much chemical recycling costs and its impact on public health, the environment, and managing plastic waste.
6. Companies market the technology as successful and "green" with little to no accountability.
7. While each facility takes a somewhat different approach, failure is a constant.

Some "lowlights" from the case studies include:

- A 2018 collaboration between Dow and Reynolds Consumer Products promised residents of Boise, Idaho, that their chemical recycling plant would take their plastics and recycle them into clean, green recycled plastics for reuse. The project was shuttered after the companies found that the collected plastics contained 10 times more contamination than expected.
- In 2012, a chemical recycling plant in Tigard, Oregon, opened, but today the plant has yet to prove commercially viable, and despite its low output, regulators say the operation is a "large quantity generator" of hazardous waste.
- After 10 years of testing, a Braven chemical recycling facility in Zebulon, North Carolina, is classified as a "large quantity generator" of hazardous waste, even though it remains unclear whether the plant is producing any significant outputs. A recent news investigation found numerous company misstatements to regulators and repeated environmental violations.
- In June 2020, Brightmark Energy claimed its chemical recycling plant in Ashley, Indiana, would reach a yearly plastic waste recycling capacity of 100,000 tons by early 2021. But to date the plant remains at the "test" phase, has processed just 2,000 tons of plastic waste, and has been plagued by fires, oil spills, and worker health and safety complaints.
- A 2020 statement by New Hope Energy company claimed its chemical recycling plant would process 50,000 tons of plastic waste annually, but in June 2022 a company official optimistically noted the plant was "on track" to process about one-third of this amount by the year's end.
- After a decade of testing its pyrolysis unit with different waste products, a representative for the Prima America company in Northumberland, New Hampshire, said in a 2020 interview that the company could take "all the plastic on the East Coast." But by March 2023, a plant manager admitted the facility was still in its "test" phase and noted its diesel fuel was too expensive to be sold economically.



10 RECOMMENDATIONS

1. **Declare** a national moratorium on new chemical recycling plants.
2. **Require** extensive analyses and testing of existing chemical recycling plants' toxic emissions, releases, waste residues, wastewater, output contamination levels, and fire and explosion risks.
3. **Deny** approval or permitting of chemical recycling plants if risks from their emissions or products (for example, fuels) exceed a one in 1 million excess public cancer risk.
4. **Mandate** testing of oils and other outputs from chemical recycling before they can be used as fuel or plastic feedstock to prevent widespread contamination of products and human exposure to unacceptable toxic risks.
5. **End** all federal, state, and local incentives for establishing chemical recycling plants, including public funds, subsidies, tax breaks, investment bonds, carbon credits, landfill diversion credits, and other schemes.
6. **End** siting of chemical recycling plants in environmental justice communities.
7. **Prohibit** plastic-to-fuel projects, which recreate (rather than displace) fossil fuels that pose dangers to the climate and the environment.
8. **Implement** the "polluter pays" principle and ensure that the petrochemical industry bears all financial risks of chemical recycling and the manufacture, use, and disposal of plastics.
9. **Prohibit** chemical recycling of any form to count toward recycling targets or recycled content goals in any public policy or program, including but not limited to extended producer responsibility (EPR) programs.
10. **Prohibit** use of free-allocation mass balance accounting in determining recycled content of products that incorporate chemical recycling outputs.

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