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Chemical Recycling of Plastics Won't Close the Loop on the Climate Crisis

Fracking and a gas glut have fueled an unnecessary plastics production bonanza.[1] The process of turning fracked gas into plastic releases climate-altering air pollutants,[2] and as plastic breaks down into smaller pieces it releases methane.[3] On top of its climate impacts, increased production means more disposable plastic materials that pollute our air, water and even table salt.[4] This has generated concern about the mountains of waste.

Subsequently, the plastics industry has partnered with major oil and gas companies to protect their industries by investing in chemical recycling.[5] Though chemical recycling is promoted as an effort to address our growing plastics problem,[6] it greenwashes plastics and fails to address the climate crisis bolstered by the fracking and petrochemical industries.

Chemical recycling 101

The largest sector of the plastics industry is packaging, which creates materials that are immediately discarded.[7] In 2017, just 8.4 percent of the plastics generated in the U.S. were recycled, while the rest went to landfills and incinerators.[8] To temper outcry about plastic waste, industry is looking to a process called chemical recycling.

Plastic waste has traditionally been recycled through mechanical recycling, which grinds plastic waste into smaller pieces before further processing and reusing it to create new materials. But this is limited to certain types of plastic which make up less than half of what is annually produced.[9] Chemical recycling is a polluting process that uses chemicals, solvents and/or heat to chemically break plastics into their raw components, which can be reused as new materials.[10]

While chemical recycling is touted as a technology to improve mechanical recycling and meet the growing demand for recycled plastic, chemical recycling is often used to convert plastics to fuels and hydrocarbons, rather than new plastic.[11] For example, thermal processes such as pyrolysis and gasification can convert plastics to hydrocarbons used for fuel and heat, but the practice releases toxic emissions including carbon monoxide, hydrogen cyanide, benzene, heavy metals and carcinogenic dioxin.[12]

Chemical recycling contributes to the climate crisis

At a time of climate catastrophe, it is critical we stop investing in fossil fuels, petrochemicals and plastics. Many of the more established chemical recycling technologies are limited to plastic-to-fuel technologies — not plastic-to-plastic recycling — and they emit harmful greenhouse gases, air pollution and toxic byproducts.[13] In fact, plastic-derived vehicle fuels actually emit more sulfur dioxide, nitrous oxides and greenhouse gas emissions than traditional diesel and gasoline.[14]

Chemical recycling of plastics simply trades one problem for another. While recycling plastics into fuel may reduce the amount of plastic trash, it fails to reduce the demand for plastic and it contributes to climate change through continued plastic production.[15] Plastic is expected to continue bolstering demand for oil and gas, which in turn enables the expansion of the climate polluting petrochemical industry that turns gas feedstocks into plastic.[16]

Chemical recycling greenwashes the petrochemical industry

Chemical recycling has enabled industries to falsely paint themselves as stewards of the environment. Fossil fuel and chemical companies have announced questionable plans to tackle the plastics crisis. For example, BP has partnered with waste, food and beverage companies to develop chemical recycling technologies.[17] Shell, ExxonMobil, Dow and dozens of others formed the "Alliance to End Plastic Waste" (AEPW).[18] But all these announcements offer are opportunities for corporations to tout their commitment to sustainability while continuing business-as-usual.

For example, Shell has "ambition[s] to use one million tonnes of plastic waste a year...by 2025."[19] Yet its $6 billion plastics-manufacturing plant in Pennsylvania will use ethane from fracked gas to produce 1.6 million tons of plastic annually, striking a notable contrast with its stated efforts to

"end plastic waste."[20] That same facility could emit 2.2 million tons of carbon dioxide a year.[21] Similarly, AEPW is boasting its planned $1.5 billion investment to fight plastic waste and improve recycling technologies, yet several companies in the coalition are propagating plastic waste with investments in new petrochemical and plastics manufacturing facilities.[22]

Conclusion

Chemical recycling is being hyped as an opportunity to make plastics more sustainable. Touting plastic-to-fuel recycling as a "cleaner" or "transition" fuel[23] is reminiscent of the "clean coal" and natural gas "bridge fuel" myths. This strategy must not be mistaken as a pathway to solving either the plastics or climate crises. The best step forward is to ban fracking, stop building new petrochemical facilities and develop environmentally friendly alternatives to plastic.

Endnotes

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