No False Solutions PA: Statement Regarding Emerging Technologies that represent False Solutions to the Climate Crisis

Advanced recycling: A False Solution to the Climate Crisis

"Advanced recycling" is the process of chemically breaking down or melting (via pyrolysis) post-consumer plastic waste to make fuel or chemicals that can be made into more plastics. Proponents of this technology claim that it is creating a "circular" economy for plastics in which the plastics are recycled, thus reducing the need to make plastics from new fossil fuels and offering a solution to our current plastics waste crisis.

Our concerns: This technology has not been demonstrated to work, despite numerous attempts at different plants around the country, most of which have shut down or are running at reduced capacity. Plastics are inherently toxic, and by-products of these processes, including microplastics and per- and polyfluoroalkyl substances (PFAS or "forever" chemicals), are not adequately regulated at the state or federal level in air or water to protect communities and the environment. These plants create tons of hazardous waste and toxic emissions, are extremely energy intensive, and contribute to climate change. The chemical products of these processes (pyrolysis oil and volatile organic compounds such as benzene, toluene, and xylene) are also inherently toxic and their generation, storage, and transport creates a health risk for local populations. Proponents' claims that this technology will provide jobs, prosperity, and a solution to the plastics waste crisis are overstated and unsubstantiated [Beyond Plastics, 2023].

- **Air pollution**: Pennsylvania has passed a law, Solid Waste Management Act 127 of 2020, that defines advanced recycling as manufacturing and **exempts advanced recycling from environmental laws** that regulate hazardous air pollution from solid waste management facilities [PA General Assembly 2020]. This change in the law allows these pyrolysis and gasification facilities to be built without following federal regulations that require monitoring of hazardous emissions, set emissions limits, and determine which air pollution control filtration equipment is needed, leaving communities unprotected from the toxic emissions from plastics processing [Beyond Plastics, 2023].
    - The EPA has decided not to follow states in making this change to solid waste management law and will continue to regulate plastics waste processing plants as solid waste management facilities, creating **regulatory uncertainty** for proposed plants in PA [EPA 2023; Inside Climate News 2023 EPA].

- **Water pollution**: The process of washing and sorting the plastics prior to pyrolysis can generate substances that can contribute significantly to **pollution of local waterways**, potentially contaminating municipal water supplies and local fisheries.
    - Plastics are made from fossil fuels and can contain many additives, such as dyes, plasticizers, and PFAS chemicals, that are added to achieve a variety of product qualities. As a result, plastics are inherently toxic, and these chemicals may be shed into the wastewater used for washing the plastics prior to pyrolysis [Beyond Plastics, 2023]. For example, PFAS chemicals that are used in plastics production have been shown to leach into food and liquids they contain [Notre Dame news 2023].

- **PFAS chemicals and microplastics are not regulated by EPA or DEP in wastewater**, so advanced recycling plants are not required to remove or monitor these pollutants as part of their wastewater management system, putting municipal drinking water supplies and critical watersheds at risk [PA DEP 2023 PFAS; Inside Climate news 2023 Who said].
- Solid and semi-liquid materials in the plastic waste must be removed and dried as "sludge" before being disposed of, either to a landfill or as a "land application" onto nearby farms and fields, creating the possibility that unknown toxic substances will be released into land, water, and air near these plants.
- The waste in post-consumer plastic containers is a mixture of everything that was in the plastic to begin with, from food waste to chemicals to detergents (from ketchup-to-roundup), and this must be removed from wastewater used in the washing process. Wastewater management systems are not equipped to remove/test for such a wide variety of potentially harmful substances.

- **Economically unviable**: There has been **no demonstration that these plants can be economically viable** or that there is a sufficient market for the products of these billion-dollar plants to justify the expense of building them [Reuters news 2021;Beyond Plastics, 2023].
  - In one example, the product created by a plastics-to-styrene chemical recycling plant built in 2012, Agilyx in Tigard, Oregon, was not of sufficient quality for customer use, and 49,000 tons of styrene product was subsequently sent to an incinerator for burning in another state [GAIA, 2020].
  - The Alterra plant in Akron, Ohio was built in 2014 but has only ever run as a demonstration plant that nonetheless generates large quantities of hazardous waste and is nearly exceeding its air pollution limits while operating below capacity [Beyond Plastics, 2023].
  - Other plants have simply shut down after proving to be not economically viable, leaving local residents and governments with stranded assets and toxic waste clean-up to contend with [GAIA, 2020; Beyond Plastics, 2023].

- **Not a solution**: Advanced recycling does not live up to the promise of solving the plastics crisis. Even if all 11 of the currently operating plants were working at full capacity (and only 3 of them are), they would only process 1.3% of plastic waste in the United States [Beyond Plastics, 2023].

- **Worker health concerns**: Workers at advanced recycling plants have reported **health concerns** related to breathing clouds of plastic dust, toxic chemical vapors, and fires [Inside Climate News 2023 Inside; Inside Climate News 2023 Where; NBC news 2023 New Mexico].

- **Does not work**: Experts on advanced recycling and the plastics crisis say that, "Plastic recycling doesn't work and will never work." [The Atlantic 2022].

- **Inherently toxic**: Plastics are made with thousands of toxic chemicals and, when processed, these chemicals go into the recycled plastic or product in addition to other toxic chemicals that are a byproduct of the pyrolysis process, making it difficult to

remove these contaminants from the final product [Beyond Plastics, 2023]. In addition, the volatile organic chemicals generated by these plants are known to present health hazards to humans and present a significant risk to local communities in terms of air pollution, water pollution, and toxic spills/leaks. Benzene, for example, is a known carcinogen.

- **Fire and emergency response concerns**: Local firefighters are not trained to deal with the intense and very toxic fires associated with plastics recycling and advanced recycling facilities. A number of high profile plastics recycling facility fires have raised awareness of the exposure of local fire companies, who are often volunteers in the rural areas these plants are sited in [Inside Climate News 2023 Inside; NBC news 2023 New Mexico]. Several chemical recycling facilities have already had fires that were difficult to control due to the fossil fuel basis of the feedstocks and outputs, even before they were operational, with associated release and ignition of toxic vapors [Beyond Plastics, 2023].

Example projects:

- Encina Point Township:
  This billion-dollar plastics waste processing facility proposed by Encina along the Susquehanna River in Point Township, Northumberland, PA, will process 450,000 tons of post-consumer plastic per year to make volatile organic chemicals (benzene, toluene, xylene, and propylene) using a proprietary catalytic pyrolysis process. The plastics will first be washed and sorted, using 2.9 million gallons of water per day from the Susquehanna River, and then will be melted in the pyrolysis process. The pyrolytic oil generated by melting will then be used to power the plant or be further processed and fractionated into the chemical products that will then be stored on site before being transported by rail, along the river, to customers to make more plastics. The plastics will be transported to the site by truck (170 trucks per day). Local residents are concerned about air pollution, water pollution, light pollution, traffic, noise, trash odors, and the location of the refinery in the 100-year flood plain of the river that provides drinking water for local and downstream residents and is part of the Chesapeake Bay watershed.
- Braven Environmental: The developers of this advanced recycling plant in Zebulon, North Carolina, that has been in operation since 2020, told the Zebulon board of commissioners and the public that their process would break down plastic waste by pyrolysis into chemicals to be used to make plastics or fuel without endangering the public health, safety, or welfare. The site is located 400 feet from a public housing community and 780 feet from a school. Braven claimed they did not handle hazardous materials of any kind but investigations found that they generated and shipped 9.6 tons of hazardous, ignitable waste and benzene in 2021 alone. They also claimed there would be no hazardous air emissions from the plant in their “closed loop” process but emissions reports show that their plastics pyrolysis process emits carbon monoxide, nitrogen oxides, sulfur dioxide, and particulate matter, as well as 5.14 tons of volatile organic chemicals like benzene, similar to a fossil fuel plant. In 2022, North Carolina’s Department of Environmental Quality (DEQ) cited Braven for numerous violations related to improper storage of hazardous waste in a manner that could allow it to leak into the ground or drainage systems, improper transport of hazardous waste by non-licensed operators, and hazardous waste disposal of pyrolysis oil products that were intended to be the

company's product but were disposed of because they couldn't sell them. NCDEQ called the company a "significant noncomplier". In another report, it was found that Braven was supplying Chevron with pyrolysis oil to be made into jet fuel (not other plastics products) in a process that creates air pollution that subjects local residents to an unacceptable 1:4 cancer risk. After claiming to be proactive about safety, Braven did not have safety data forms on file for their pyrolysis oils and did not distribute information about their processes and products to local emergency authorities. In addition, the company has been implicated in a number of financial issues related to misleading investors and the public about their plans for expansion and partnerships. [The Intercept 2023].

The bottom line: Experts on the plastics crisis agree that advanced recycling technologies do not achieve the stated goals of these projects and have not been proven to be economically viable. In addition, many agree that, despite their stated environmental aspirations, these projects are not designed to solve the plastics crisis but rather to justify continued generation of plastics from fossil fuels with the promise that they can now be "recycled" [The Atlantic 2022]. Experts agree that the solution to the plastics crisis is to make less plastic and use other, more sustainable, less toxic products for our daily needs [Beyond Plastics, 2023].

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No False Solutions is a coalition of advocacy groups and concerned residents of Pennsylvania and other states in our region affected by the oil and gas industry. The group aims to educate and inform legislators and decision makers about emerging technologies that claim to be solutions to the climate crisis but in fact exacerbate the climate crisis, damage the environment, and/or harm public health and do not offer more effective or economically viable solutions than those offered by renewable energy and renewable energy storage technologies.