ENVIRONMENTAL HEALTH PROJECT
DEFENDING PUBLIC HEALTH SINCE 2012

# POSITION STATEMENT on PETROCHEMICALS

EHP advocates for action to protect the health and well-being of community members living near petrochemical plants and related infrastructure


## SUMMARY STATEMENT

Petrochemical plants release toxic pollution that raises the risk of negative health impacts for community members who live, work, or go to school near them. Adding more petrochemical facilities would increase health risks and could lead to increased acute and chronic health issues, hospitalizations, and premature deaths.


*The Shell ethane cracker plant in Beaver County, PA.*

## WHAT ARE PETROCHEMICALS?

**The petrochemical industry produces chemicals and other materials derived primarily from oil and gas.** Petrochemicals are used in making plastic products and many other consumer goods, such as clothing, tires, digital devices, packaging, fertilizer, explosives, and detergents.

In addition to these large-scale petrochemical plants, **petrochemical infrastructure includes a web of pipelines, compressor stations, storage facilities, rail and truck transport, marine vessels, and export terminals.** This infrastructure also includes the thousands of shale gas wells required to supply the feedstock for petrochemical production, not to mention upstream facilities, such as cryogenic plants (generally used for processing liquified natural gas, or LNG), ethane cracker plants (which typically produce raw plastic pellets called *nurdles)*, and chemical recycling facilities (which claim to break down post-consumer plastics into chemical components).

## HEALTH IMPACTS

**Petrochemical production raises serious health concerns.**[1] Many of the substances used in the manufacturing process and others released as waste are toxic and accumulate in bodies and ecosystems, and their production poses a significant threat to the climate.[2]

**People living near these plants often report higher rates of health impacts compared to those living farther away.** Several studies examining Louisiana's "Cancer Alley,"[3] for example, reveal a connection between these high-emitting facilities and greater risks of a number of health impacts, including maternal, reproductive, and newborn health issues;[4] respiratory and pulmonary complications;[5] mental health and impairment problems;[6,7] susceptibility to viruses like COVID-19;[8] and, of course, cancer.[9] Overall hospitalizations for people living in proximity to petrochemical facilities may also be higher.[10] In addition to direct health impacts, social, economic, and non-air environmental impacts of petrochemicals all contribute significantly to public health issues.

Many petrochemicals interfere with the function of the endocrine system.[11] These endocrine-disrupting chemicals (EDCs) are present in many industrial and everyday products (e.g., plastics, building materials, children's toys, fabrics and dyes, detergents, cosmetics, and pesticides).[12] Exposure to EDCs has been linked to **multiple adverse human health conditions, including cancer, neurodevelopmental harm, and infertility**.[13]

## HEALTH IMPACTS (continued)

Microplastics (between 5 millimeters and 1,000 nanometers across) and nanoplastics (between 1 and 1,000 nanometers across) are a particular health concern. These minute particles can enter human bodies through ingestion, respiration, or dermal contact[14] and have been detected in organs, blood, saliva, and breast milk.[15] Toxicologists warn that these plastics can raise the risk of **cancer, heart and brain diseases, immune disorders, and reproductive issues**.

**Petrochemicals pose a greater threat to the health of vulnerable and marginalized communities.**[16] Vulnerable populations—children, the elderly, pregnant individuals, and those with preexisting conditions—are most likely to be impacted or to suffer more acute health consequences. Petrochemical development most often occurs in communities of color, low-income neighborhoods, and regions already burdened by polluting industries. Putting these communities disproportionately at risk of negative health outcomes is an environmental injustice.

Petrochemical plants also produce large amounts of waste products, many of which are toxic and harmful to public health. Wastewater from these plants is required to be treated prior to releasing it back into the environment, but evidence exists that **toxic substances**,[17] **radioactive materials from upstream gas extraction, and manufacturing byproducts sometimes make their way into local waterways**.[18]

**Any new petrochemical plant also requires many miles of new pipelines, which can leak and explode, often causing serious injuries and fatalities.** Similarly, new plants require additional infrastructure like gas wells, compressor stations and storage facilities—all of which can leak toxic chemicals and affect air and water quality in the region.

*A compressor station in Clinton County, PA. Photo courtesy of Ted Auch, FracTracker Alliance, 2021.*

Petrochemical plants also release significant amounts of greenhouse gases, such as methane, which hastens climate change and results in **more deadly floods, fires, heat waves, storms, and insect-borne diseases like Lyme disease**. Methane is more than 80 times as powerful at trapping greenhouse gases over the first 20 years as $CO_2$. Globally, more than one million deaths per year have been attributed to respiratory disease linked to long-term exposure to ozone air pollution.[19]

## Petrochemical Expansion in Northern Appalachia

There is a misconception that the vast majority of shale gas drilled in the northern Appalachian region is used for energy generation and home fuel use. In reality, much of it is currently shipped to the Gulf Coast to be used in petrochemical production there or shipped overseas as liquified natural gas (LNG). Some of it is now transported to the plastics plant in Beaver County, Pennsylvania.[20]

Several corporations are proposing to build additional petrochemical plants in the northern Appalachian region, particularly because they can save costs over transporting gas across large swaths of the country. A petrochemical build-out in the region—where much legacy pollution still impacts public health—would be especially concerning.

Even if a larger petrochemical buildout fails to materialize in the northern Appalachian region, plants located elsewhere will still rely on the gas feedstock from the Marcellus shale reserves, leading to the drilling of many more shale gas wells.

## RECOMMENDATIONS

EHP makes the following recommendations with respect to petrochemical production:

**1. Scale back the production of petrochemicals.**

**The U.S. already produces more petrochemicals than we need.** Even as more and more petrochemical materials are being sold and used in clothing, packaging, fertilizers, and other products, the oil and gas industry can easily keep up with demand through existing manufacturing facilities. In fact, **petrochemical demand is in a current global downturn,** while the U.S. oil and gas industry continues to look for other new markets, such as blue hydrogen and LNG exports, for the raw materials it extracts.[21]

Given the known health risks of microscopic plastic particles and other petrochemical pollution, EHP opposes the expansion of the fossil fuel–based petrochemical industry. **Petrochemical facilities are typically subsidized by taxpayer dollars**, even while these polluting operations raise the risk of health impacts for people living nearby, thus driving up healthcare costs. These facilities also contribute to climate change. Decision-makers must apply sound judgement based on facts to resist petrochemical industry expansion.

**Reducing plastic use in the economy is absolutely critical to protect people and the environment from the harms of petrochemicals.** A combination of initiatives geared toward replacing plastics with sustainable materials and implementing consumer reuse infrastructure could result in an 80% reduction in plastic waste by 2040.[22]

**2. Realize the limitations of plastic recycling and recognize false solutions.**

There is a misconception that much of the plastic we use is recycled. In reality, **only about 5% to 6% of plastic is mechanically recycled in the U.S.**[23] About 19 percent of plastic waste is incinerated, releasing toxic chemicals that compromise public health, while most plastic waste —about 72%—ends up in landfills or in the environment, such as in oceans.[24] **Plastic recycling is expensive and limited to only a few types of materials,** and mechanical recycling creates microscopic plastic particles and releases toxic chemicals that can harm anyone coming into contact with them.[25] Plastic recycling becomes even more difficult when you consider that more than two-thirds of textile production is derived from synthetic materials made from petrochemicals.[26]

**The petrochemical industry claims that the solution to eliminating plastic waste and perpetuating production is chemical recycling.**[27] Also called "advanced recycling," this process typically refers to the breaking down of hard-to-recycle plastics (e.g., bags or films) with chemicals or heat. These processes require large amounts of energy, can emit hazardous chemicals and waste, and generally do not result in a closed-loop recycling process (when a product or material can be used and then turned into a new product—or converted back to raw material).[28] **Chemical recycling has not been commercially or economically successful.** It is often used to generate oil from plastic waste, which is then burned. Chemical recycling has wide health impacts for individuals exposed to toxic emissions or vulnerable to the effects of climate change.

Industry also proposes a transition to using more bioplastics—plastic-like materials made from plants, animals, or microorganisms.[29] However, many bioplastics are not biodegradable and require significant energy to produce them.[30] Bioplastics may also drive up the price of other products because they use source materials, such as corn, that would be used more appropriately for food.

**In every case, the chemical recycling of plastic waste produces toxic pollution detrimental to human health.** Instead of advocating for chemical recycling, we need to recognize and avoid any solutions that fail to reduce overall petrochemical production and protect the health and welfare of all residents.

**3. Promote stronger regulations and health protections around existing facilities.**

**Petrochemical production yields toxic waste** in the form of air emissions and microscopic plastic particles that become airborne, enter waterways, and contaminate soil, endangering human health. Health risks are especially high for people who work in these plants, but they may also impact people living nearby, as emissions can pollute the local airshed. **Unchecked emissions also exacerbate climate change,** contributing to increased storms, wildfires, heatwaves, poor air quality, vector-borne diseases, and property damage.

To protect residents' health and wellbeing, **it is imperative that decision-makers push for stricter pollution regulations on petrochemical plants.** It is incumbent on federal and state regulators to enforce existing regulations, holding polluters accountable for any violations with meaningful fines and other penalties, including the threat of business interruption. Decision-makers at all levels of government must ensure that residents are protected from pollution impacts, enacting stricter rules where needed, **especially with respect to environmental justice communities, where pollution typically produces the greatest harms.**

**4. Support bigger picture policy solutions.**

Decision-makers must understand that **petrochemical pollution is not just a local issue but a global one.** Participation—or at least knowledge of—regional, national, and international policy cohorts and accords can coalesce ideas and consolidate power. Petrochemical impact efforts include the Intergovernmental Negotiating Committee on Plastic Pollution, Beyond Plastics, Global Alliance for Incinerator Alternatives, Break Free from Plastic, and others. **It is imperative that government act as a check and balance against industry influence,** with the goal of protecting the health of as many constituents as possible from harms caused by petrochemical pollution.

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