

# **Brief on Plastic in the Gulf Coast – Buildout Hazards to Human Health and Microplastics**

## **EXXONMOBIL – Baytown & Portland/Gregory, Texas**

### **Baytown Chemical and Refining Complex –**

In Baytown, Texas the expansion fueled by plastic has included a new 1.5-million-tonnes-per-year ethane cracker at the integrated Baytown chemical and refining complex which began operation in 2018. This unit is producing ethylene feedstocks to polyethylene lines at Mont Belvieu plastics plant, one of the largest polyethylene plants in the world with an output of 2.3 million tonnes per year, and a Beaumont polyethylene plant expected to start in 2019. Together these represent Exxon's largest chemical investments in the US. <sup>1</sup> Expansions as large as Exxon's come at a cost to environmental justice communities throughout the Houston Ship Channel. On July 31, 2019, in the most recent fire 37 people were injured, some with first-degree burns. The fire resulted in massive releases of known carcinogens, including more than 14,000 pounds of benzene and over 25,900 pounds of 1,3-butadiene, along with other ozone forming pollutants.<sup>2</sup> Workers were initially evacuated, but later required to reenter the plant *as the fire was still burning*. To compound the problem, the Commission's Baytown air quality monitors malfunctioned during the event and thus deprived community members of invaluable air quality data to protect their health. Meanwhile, many community members were wholly unaware of the fire or proper shelter-in-place procedures because ExxonMobil does not have a proper notification system in place. According to ExxonMobil's 2018 Financial & Operating Review Exxon is the leading producer and leaseholder in the Permian with 1.8 million acres across the Delaware, Midland and Central basin with an estimated 9.7 billion oil-equivalent barrels of net recoverable resource. This kind of upstream investment has devastated West Texas with an increase of 23 oil rigs in the area bringing their rig count from 21 to 44 from 2017 to 2018 respectively in an attempt to capitalize on low-cost highly profitable production of feedstocks for U.S. Gulf Coast manufacturing plants. <sup>3</sup>

### **Enforcement**

According to analysis from the Environmental Integrity Project, from 2015 through 2017, Texas or EPA imposed penalties on only 57 out of 872 unpermitted pollution releases from Houston plastic plants, that's only 7%. Combined the incidents resulted in 11 million pounds of pollution, totaling to only \$665,000 in fines. This would come out to 6 cents per pound.<sup>4 5</sup> The analysis also identifies 48 new expansions or plants of which 16 have permitting documents available. Outlined are the addition of 14,192 tons of new air pollution per year from such projects.

### **Texas EXXON SABIC Ethylene Plant & Desalination**

In a 1,400-acre tract between Gregory and Portland, Texas will be the new site of ExxonMobil and Saudi Arabia Basic Industries Corporation partnership project. The ExxonMobil SABIC partnership is building the world's largest ethylene plant off the coast of Corpus Christi in San Patricio County to be finished in 2022. This facility will

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<sup>1</sup> <https://corporate.exxonmobil.com/-/media/Global/Files/annual-report/2018-Financial-and-Operating-Review.pdf>

<sup>2</sup> <https://www2.tceq.texas.gov/oce/eer/index.cfm?fuseaction=main.getDetails&target=317789>

<sup>3</sup> <https://corporate.exxonmobil.com/-/media/Global/Files/annual-report/2018-Financial-and-Operating-Review.pdf>

<sup>4</sup> <https://www.houstonchronicle.com/news/houston-texas/houston/article/Plastics-industry-accounts-for-one-fourth-of-14414705.php>

<sup>5</sup> <https://www.environmentalintegrity.org/news/rapid-growth-of-houston-plastics-industry-increases-air-pollution-and-safety-risks/>

include an ethane cracker with a capacity of 1.8 million tonnes per year of ethylene, a monoethylene glycol unit and two polyethylene units. Gregory being a predominantly Hispanic, low-income town with fewer than 2,000 residents. The new emitter will be over a mile from Gregory-Portland High School and about two miles from a junior high and an elementary school. Lawyers representing the companies were looking for at least 1,000 acres on the Gulf Coast, close to a deep-water port. The Exxon SABIC partnership is fueled by the natural gas shale boom of the Permian Basin and others. A petition asking them to move has gathered over 2,600 signatures. <sup>6</sup>

### **Freshwater Scarcity -**

A project this size will be drawing 20 million gallons per day from Corpus Christi and drinking water from Portland and Gregory. This type of water consumption is additionally pushing for the additional construction of a desalination plant. The UCLA Luskin Center for Innovation found that a similar desalination plant would produce a gallon of water at twice the cost of a recycled gallon of water and as much as three times more than a gallon of groundwater. It also found that from this process plants generate enormous amounts of salt brine that usually goes to the bottom of the ocean and kills marine life unfortunate enough to be in the vicinity. Desalination plants are a multi-year process which can take an average of 10 years. <sup>7</sup>

Local community members that fish and use the surrounding bodies of water for recreation call to preserve Corpus Christi Bay and other local waterways (Copano Bay, Mission Bay and Port Bay) slated for industrial wastewater discharge from the proposed industrial facilities.

The ExxonMobil SABIC Plant emissions are already estimating the following emissions. (based on annual emissions allowed by the TCEQ draft permit)

Volatile Organic Compounds - 976.33 tons  
Sulfur Dioxide - 38.49 tons  
Nitrogen Oxides - 525.03 tons  
Particulate Matter - 529.33 tons  
Carbon Monoxide - 1440.60 tons  
Sulfuric Acid Mist - 1.15 tons  
Hydrogen Sulfide - 0.03 tons

### **Formosa Plastics - Port Lavaca, Texas & St. James Parish, Louisiana**

Earlier this year U.S District Judge Kenneth M. Hoyt ruled that the Taiwanese-owned company Formosa Plastics was in violation of its state permit and the federal Clean Water Act. For years the plant had been releasing plastic pellets from its facility into local waters. Local community activist like Diane Wilson, collected multiple boxes full of thousands of white plastic pellets from Lavaca and Matagorda bays along with Cox Creek. In the report Plastic & Climate: The Hidden Cost of Plastic Dr. Sarah-Jeanne Royer from the Scripps Institution of Oceanography and her team found that plastic at the ocean's surface "continually releases methane and other greenhouse gasses and that these emissions increase as the plastic further breaks down." Royer's study identified low-density polyethylene as the most prevalent plastic discarded in the ocean. Low-density polyethylene releases methane ethylene, (C<sub>2</sub>H<sub>2</sub>), ethane and propylene at the highest rate. Formosa is currently seeking to build an even larger plastic-making plant along the Mississippi River in St. James Parish, Louisiana, already facing opposition from local and national conservation groups. In a statement from the Center for Biological Diversity Sharon Lavigne, director of Rise St. James stated, "Formosa Plastics needs to be held accountable for polluting Texas, not invited to do the same thing in our community." "We're already suffering from too much industrial pollution, my kids and grandkids are

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<sup>6</sup> <https://www.houstonpress.com/news/two-rural-texas-towns-debate-whether-exxons-proposed-steam-cracker-plant-would-be-blessing-or-curse-9253666>

<sup>7</sup> [https://innovation.luskin.ucla.edu/wp-content/uploads/2019/04/Analyzing\\_Southern\\_CA\\_Supply\\_Investments\\_from\\_a\\_Human\\_Right\\_to\\_Water\\_Perspective.pdf](https://innovation.luskin.ucla.edu/wp-content/uploads/2019/04/Analyzing_Southern_CA_Supply_Investments_from_a_Human_Right_to_Water_Perspective.pdf)

suffering, and now they want to put more on us. We can't let that happen." The proposed project would discharge plastic and pollutants including benzene and polycyclic aromatic hydrocarbons into the Mississippi River. "This ruling is a warning about the danger plastic production poses to our communities and oceans and the lengths to which these companies will go to avoid responsibility for their pollution. What Formosa Plastics did to Texas, it will also do to Louisiana if we don't stop it," said Julie Teel Simmonds, an attorney with the Center for Biological Diversity.<sup>8</sup>

## **Microplastics in the Gulf:**

In 2015, Louisiana State University Department of Oceanography & Coastal Sciences, College of the Coast and Environment Professor Mark Benfield and colleagues, Matthew Kupchik and Rosana DiMauro surveyed the waters of the Gulf of Mexico. The team collected samples from four locations in the northern Gulf of Mexico. These samples ranged from surface samples to samples about 15 meters deep and found that each sample contained some kind of microplastic. These samples were found to have some of the highest concentrations of microplastic in the world.<sup>9</sup>

## **Conclusion**

The Gulf Coast has a history of shouldering the burden of fueling the nation's energy needs. Major oil and gas investments slated for the Gulf Coast fueled by plastic production is a burden we cannot shoulder. The petrochemical buildout fed by the shale gas boom in the Permian Basin (West Texas) threatens the survival of our communities, culture, ecosystem and planet. With negative impacts to our communities, food systems, freshwater sources clearly documented we need to seek high priority strategies<sup>10</sup> to stop the continued destruction of our Gulf Coast.

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<sup>8</sup> <https://www.biologicaldiversity.org/w/news/press-releases/formosa-plastics-liable-for-texas-plastic-pollution-2019-06-28/>

<sup>9</sup> [https://www.lsu.edu/mediacenter/news/2017/08/11docs\\_benfield\\_plastic.php](https://www.lsu.edu/mediacenter/news/2017/08/11docs_benfield_plastic.php)

<sup>10</sup> <https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf>