Subcommittee on the Environment: House Committee on Oversight and Reform

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Plastic, Climate & Human Health: The Hidden Costs of a Plastic Planet

Chairman Rouda, Ranking Member Comer, honorable members of the Subcommittee, thank you for the opportunity to speak with you today about two of the most urgent environmental matters of our time, and the deep interconnections between them.

My name is Carroll Muffett and I am president and chief executive officer of the Center for International Environmental Law (CIEL). CIEL is a nonprofit organization that uses the power of law to protect the environment, promote human rights, and ensure a just and sustainable society. We have worked for three decades to confront the human health threats from toxic substances, and the threat of global climate change. In the context of plastics, those threats are deeply interwoven.

As Professor Enck and Dr. Terrell have discussed, plastic pollution is now pervasive in our environment. That prevalence exposes human populations not only to plastic pollution itself, but to an array of toxic pollutants and disease vectors that inhere in or adhere to that plastic. As witnesses Arellano and Hardin have described, moreover, exposure to these pollutants begins long before plastics enter (or escape) the waste stream.

In 2019, CIEL and partners released a comprehensive survey of the human health impacts of the plastics lifecycle.[1] We found that every stage of that life cycle exposes human beings to a growing array of toxic risks. These risks confront all of us: from the frontline and fenceline communities where feedstocks and resins are extracted, refined, and incinerated; to consumers and families exposed to plastic additives and microplastic dust in their homes; to communities across the country and around the world exposed to accumulating macro and microplastics in the water they drink, the food they eat, and the very air they breathe.

More than 99% of all plastic is made from fossil fuels—oil, coal, and natural gas, including fracked gas. For communities surrounding the wellheads and drillpads where these feedstocks are extracted, the plastic lifecycle threatens water supplies, degrades air quality, and creates pervasive health risks. More than 170 fracking chemicals used to produce these primary plastic feedstocks have known impacts on human health, including carcinogenicity, neurotoxicity, reproductive and developmental

[1] *Plastic & Health: The Hidden Costs of a Plastic Planet* (February 2019). Available at https://www.ciel.org/reports/plastic-health-the-hidden-costs-of-a-plastic-planet-february-2019/.

toxicity, and impairment of the immune system. Toxins associated with fracking have documented impacts on skin, eyes, the respiratory, nervous, and gastrointestinal systems, liver, and brain.

These risks are intensified and concentrated in the facilities and communities where fossil fuels are refined and transformed into plastic resins. The refining and production of plastic resins and additives releases carcinogenic and other highly toxic substances into the air. Exposure to these substances can produce impairment of the nervous system, reproductive and developmental problems, cancer, leukemia, and genetic impacts like low birth weight. Industry workers and communities neighboring refining facilities are at greatest risk and face both chronic exposures and acute exposures due to uncontrolled releases during emergencies. As witnesses Arellano and Hardin have already shared, these impacts fall disproportionately on communities of color, increasing their vulnerability to other environmental and disease risks.

For families who bring plastic products and packaging into their homes, their use leads to ingestion and/or inhalation of large amounts of microplastic particles and hundreds of toxic substances with carcinogenic, developmental, or endocrine disrupting impacts. The lack of transparency regarding the chemical composition of most plastic and those used in its production processes prevent a full assessment of these impacts. These uncertainties are compounded because the few risks assessment processes applicable to these chemicals fail to evaluate the health effects of cumulative exposure to the mixtures of thousands of chemicals used in food packaging and other consumer goods.

Nor do these health risks end when plastic is thrown away or recycled. In a fundamental sense, when plastic reaches the end of its economic life, its life in our environment is only just beginning.

Plastic waste management technologies (including incineration, co-incineration, gasification, and pyrolysis) release toxic metals such as lead and mercury, organic substances (dioxins and furans), acid gases, and other toxic substances to the air, water, and soils. Use of these technologies can produce direct and indirect exposure to toxic substances for workers and nearby communities, including through inhalation of contaminated air, direct contact with contaminated soil or water, and ingestion of foods that were grown in an environment polluted with these substances.

Once plastic reaches the environment in the form of macro- or microplastics, it contaminates and accumulates in food chains through agricultural soils, terrestrial and aquatic food chains, and the water supply. This environmental plastic can leach toxic additives or concentrate toxins already in the environment, making them bioavailable again for direct or indirect human exposure. Yet despite this pervasive presence, and its attendant risk, research into the impacts and movement of plastic and microplastics through terrestrial environments, marine ecosystems, and food chains remains limited. The profound gaps in our knowledge, and the risks those gaps create in an increasingly plastic planet, were made apparent in recent research documenting that microplastic pollution is accumulating rapidly even in pristine regions, and that microplastics in agricultural soils can be taken up by growing plants and transported to the edible portions of food crops—echoing and amplifying similar findings with respect to seafood, salt, honey, and, most troublingly, human waste.

Although it has received little attention to date, the plastic lifecycle also threatens human health through its growing role in the climate crisis. Because plastics are primarily made from fossil fuels, the fracking boom has fueled a massive expansion in plastic production. The American Chemistry Council projects that the industry will invest more than 200 billion dollars in more than 340 new or expanded facilities for plastic production by 2025. If all of these new facilities are built, the capacity

for plastic production will expand by approximately 40% in the next few years and more than triple by 2050. As a result, plastic production is poised to become the major driver of new oil production between now and 2050. This is significant because not only do plastics create health risks at every stage of their life cycle, they emit greenhouse gases at every stage of their lifecycle.

In 2019, CIEL and partners calculated those projected emissions.[2] On our current trajectory, the production, use, and disposal of plastics will generate more than 56 gigatons of carbon emissions by 2050. This is equivalent to 13% of the earth's entire remaining carbon budget, if we are to have any hope of keeping warming below 1.5 degrees Celsius.

The COVID pandemic compounds these risks.

In recent years, the industry's plans for endless expansion of plastic production have run aground on the growing recognition that the world needs less, not more, plastics. In the face of growing calls to phase out single-use disposable plastics, the industry's multi-billion-dollar bets on a plastic and petrochemical future look increasingly wrongheaded. In the midst of the pandemic, however, Companies that produce and market plastics are working to roll back existing regulations on single-use disposable plastics, stop new initiatives that would limit plastics, and advocate for increased use of plastic packaging and disposable plastics under the guise of protecting public health. At the same time, these industries are seeking—and securing--measures from the Trump Administration to roll back or halt the enforcement of critical environmental health and safety standards. This not only increases the risks of systemic exposures to toxins, but greatly increases the risks of accidental releases or explosions that trigger exposures on a larger and deadlier scale.

A recent experience in India demonstrates these risks. An LG Polymers plant, reopening amidst the pandemic, released a cloud of toxic gas into an Indian community, killing 13 and sickening hundreds in a matter of hours. While the disaster in India was tragic, it was neither unforeseeable nor uncommon. As witnesses Arellano and Hardin shared with you, communities across the Gulf Coast live with the ongoing risk of explosions and leaks from the facilities that surround them.

Regrettably, the accelerating impacts of the climate crisis will further exacerbate those risks. In the wake of climate-fueled Hurricane Harvey, widespread flooding throughout large parts of the Gulf triggered catastrophic releases of toxic substances into the air and into the floodwaters that surrounded Houston communities. Ironically, the same industries who created the crisis, both by fueling the climate crisis and by building petrochemical infrastructure in low-lying areas, also became the primary beneficiaries of hurricane relief funds in the region, further deepening the harms to Gulf Coast communities in Houston and beyond.

As the United States enters what is predicted to be a worse-than-average hurricane season in the midst of a global pandemic, these converging realities could not be more urgent or more important. The production, use, and disposal of plastics is a risk for workers, communities, consumers, and for of us who share this planet. Any approach to address the plastic crisis needs to reflect that underlying reality and begin by immediately and dramatically reducing the amount of plastic entering our economy, our homes, the environment and our bodies.

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[2] *Plastic & Climate: The Hidden Costs of a Plastic Planet* (May 2019). Available at: https://www.ciel.org/reports/plastic-health-the-hidden-costs-of-a-plastic-planet-may-2019/.