



CENTER for INTERNATIONAL
ENVIRONMENTAL LAW

Making Plastic Polluters Pay

How Cities and States Can Recoup the Rising Costs of Plastic Pollution



Making Plastic Polluters Pay

How Cities and States Can Recoup the Rising Costs of Plastic Pollution

About CIEL

Founded in 1989, the Center for International Environmental Law (CIEL) uses the power of law to protect the environment, promote human rights, and ensure a just and sustainable society. CIEL is dedicated to advocacy in the global public interest through legal counsel, policy research, analysis, education, training, and capacity building.

Acknowledgements

This report was authored by Steven Feit, Patrick Boyle, Carroll Muffett, and Ka'sha Bernard. It was edited by Lindsey Jurca with help from Cate Bonacini. Special thanks to Jane Patton for her review and project support.

Errors and omissions are the sole responsibility of CIEL. This report is for general informational purposes only. It is intended solely as a discussion piece. It is not and should not be relied upon as legal advice. While efforts were made to ensure the accuracy of the information contained in this report, the information is presented "as is" and without warranties, express or implied. If there are material errors within this brief, please advise the authors. Receipt of this report is not intended to and does not create an attorney-client relationship. Making Plastic Polluters Pay: How Cities and States Can Recoup the Rising Costs of Plastic Pollution by the Center for International Environmental Law is licensed under a Creative Commons Attribution 4.0 International License.

Please send comments or questions to info@ciel.org to be sure of a reply.

Design & Layout: Tyler Unger

Cover Photo: © Pritha_EasyArts - stock.adobe.com

Table of Contents

iii	Acronyms
1	Executive Summary
3	Introduction
5	Part I: A Crisis Out of Control
6	The Plastics Crisis is Ubiquitous
7	Plastic Production is Proliferative
8	More Plastic Means More Harm
9	Plastics Burden Ecosystems
10	Plastics in Our Soil, Water, and Food
12	Plastics in the Air We Breathe
13	Cities and States Left to Pay the Tab on Plastic Pollution
13	Plastics Spike Waste Management Costs
14	Plastics Burden Water Management Systems
15	States and Municipalities Face Mounting Cleanup Costs
16	Plastics Erode Local Economies
16	Plastics are a Human Health Hazard
18	The Transport of Plastics is Toxic
19	Part II: A Few Bad Actors
20	Plastic Producers are the Primary Drivers of the Plastics Crisis
20	Responsibility Begins with Resin Producers
21	Fast-Moving Consumer Goods Companies Feed the Crisis
21	Companies Have Known Plastic's Harms for Decades
22	The Origins of the Plastics Crisis
22	Industry Blocks Progress
23	Recycling Codes are Misleading

24	Case Study: Coordinate Nationally, Fight Locally
24	The Set Up and Take Down of a State's Plastic Ban
27	Industry Leaned on Labor
28	Industry Front Groups Mobilized
30	Legislative and Litigation Strategies
31	Massachusetts Was Only a Microcosm
34	Industry's Present-Day Response to Mounting Pressure
35	Industry Insights
36	Part III: Making Polluters Pay
37	Foundations for Accountability and Legal Responsibility
38	Nuisance
39	Public Nuisance is Flexible and Evolving
41	Plastics Nuisance in Practice
42	Harms from Plastic-Polluted Water
44	Harms From Plastic-Polluted Air
45	Plastic Pollution's Public Health Impacts
45	Per Se Nuisance Defined by Statute
46	Nuisance and Plastics, What is on the Horizon
46	Products Liability
47	Design Defects
47	Failure to Warn
48	Design Defects and Failure to Warn in the Plastics Context
48	Harms to Health
48	Environmental Harms
50	Consumer Protection, Unfair Practices, and Greenwashing
51	Legal Tools Available for Cities and States
51	Quantifying Plastics' Harms
52	Acquiring Evidence
54	Conclusion and Recommendations
56	Endnotes

Acronyms

ACC	American Chemistry Council
AFL-CIO	American Federation of Labor and Congress of Industrial Organizations
AG	Attorney General
ALEC	American Legislative Exchange Council
API	American Petroleum Institute
ASTM	American Society for Testing and Materials (formerly)
BPA	bisphenol A
CAA	Clean Air Act
CID	civil investigative demands
CSWS	Council for Solid Waste Solutions
CWA	Clean Water Act
EPA	US Environmental Protection Agency
IEA	International Energy Agency
FELA	Federal Employers' Liability Act
FMCG	fast-moving consumer goods
FTC	Federal Trade Commission
MassPIRG	Massachusetts Public Interest Research Group
MCRWM	Massachusetts Coalition for Responsible Waste Management
MOU	memorandum of understanding
MTBE	methyl tert-butyl ether
NAAQS	National Ambient Air Quality Standards
NAS	National Academy of Science
PCB	polychlorinated biphenyls
PET	polyethylene terephthalate
PVC	polyvinyl chloride
TSCA	Toxic Substances Control Act

Executive Summary

The plastics crisis touches every corner of the planet. As the production and impacts of plastic increase, so too does the need for those affected to seek remedy. States and municipalities — the governmental entities most directly charged with managing waste and water, conserving and preserving the environment, and administering the commons for the public good — bear the costs of these impacts. Because state and municipal systems directly manage the material flows of their jurisdictions, they shoulder the burden of plastic pollution that impacts entire populations. States and municipalities are, thus, in a unique position to hold accountable the companies — especially plastic resin producers and fast-moving consumer goods companies (FMCGs) — most responsible for the expansive and expensive plastics crisis. **This report outlines the myriad of impacts resulting from the plastics crisis, the burden on states and municipalities, why the plastics industry is responsible, and how government attorneys may hold the industry accountable for its harms.**

The scale, scope, and diversity of impacts from the plastics crisis are enormous. Plastics are produced at an accelerating rate, and because they do not biodegrade, they accumulate in landfills, communities, and ecosystems. Plastics are ubiquitous, with large pieces of plastic waste blighting the environment and microplastics contaminating air, water, soil, clouds, rain, food, and human bodies around the globe.

The environmental, economic, and human health costs of plastic pollution are increasingly and overwhelmingly evident. Plastics disrupt municipal systems and interfere with economic activity and recreation. Scientific understanding of the human health consequences of plastics — and the corresponding costs thereof — is advancing rapidly.

States, counties, and municipalities bear the brunt of the plastics crisis. The impacts associated with the plastics crisis are felt by all but place a substantial and undue burden on state and local governments, which dedicate significant and disproportionate time, resources, and money to manage the harm caused by plastic pollution that litters natural and built environments. The impacts of the production, use, and disposal of plastics often fall first, most directly, and most heavily on state, county, and municipal governments in several identifiable and quantifiable ways. The most clear impacts include:

- Damage to waste management and recycling systems
- Clogging of drainage and stormwater management systems
- Disruption of water treatment facilities
- Increased infrastructure investment, maintenance, and operation costs
- Costs for cleanups of public lands and waterways
- Economic impact on environmentally-dependent industries, including tourism and fisheries
- Illness and healthcare costs
- Pollution from transportation and storage facilities

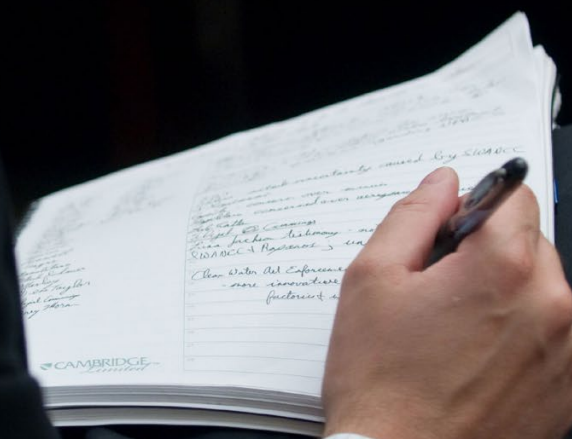
Plastic resin producers and FMCG companies are the primary causes of the plastics crisis.

Two sets of corporate actors are disproportionately responsible for the plastics crisis. First, a limited group of petrochemical companies — including many integrated into larger fossil fuel conglomerates — produce nearly all plastics on the market. These companies control the production of plastics and are responsible for their entry into the stream of commerce. Second, a set of consumer products companies design, produce, and market an enormous share of the FMCG whose disposable plastic elements and packaging flood markets, waste management systems, and the environment.

Evidence reveals that the plastics industry has been aware that it is the cause of the plastics crisis for decades and has acted to exacerbate it. For decades, the plastics industry knew or should have known that plastic does not biodegrade, that plastics accumulate readily in the environment, and that the great majority of plastic consumer products and packages either could not — or would not — be recycled. Nonetheless, substantial evidence demonstrates that these industries, both directly and through intermediaries, actively promoted recycling as the solution to plastic waste for decades despite its known inadequacies. Industry efforts to promote new forms of recycling that purport to solve the problem of plastic waste continue to this day.

Litigation over previous toxic harms, as well as ongoing climate litigation, demonstrate how states and municipalities can pursue legal avenues for redress for the impacts of plastics. The legal regimes of nuisance, products liability, and consumer protection provide promising pathways for states and municipalities to seek remedy for the harms of the plastics crisis.

Tools to quantify harms and acquire evidence are critical and readily available. Governments are well served to quantify the costs in expenses, labor, and lost revenue, as well as catalog trends and amounts of plastic found in their jurisdictions. As plastics litigation proliferates, the legal and evidentiary basis for bringing similar or related claims will continue to grow. City and state attorneys need not wait, as the ability to open investigations and make investigative demands for companies and industry groups is readily available.



Introduction

Individuals and communities are increasingly burdened with a sweeping range of toxic and expensive impacts from the production, use, and disposal of plastics. Plastic waste clogs storm drains, litters public spaces, and overflows landfills. From desolate mountaintops to the depths of the ocean, from ambient air to the soil in which we grow our food, every region, ecosystem, and stratum of the biosphere — including our bodies — is impacted by plastic and its toxic pollution.

Provincial, state, and local governments are at the forefront of managing and responding to plastics' impacts. The growing need to address the consequences of the plastics crisis places a substantial and rising burden on the time, resources, and finances of subnational governments. Faced with mounting costs and potentially significant losses to local economies and ecosystems, state and local decision-makers are increasingly scrutinizing who should bear responsibility. They are also evaluating whether and how impact costs can be recouped from petrochemical producers and consumer goods companies who produce the plastic and push it into the stream of commerce.

Substantial and growing evidence reveals the role of private corporations in causing and perpetuating the plastics crisis. Every piece of plastic in the global economy and every particle of plastic that contaminates our air, our waters, our soils, and our bloodstreams was produced and distributed by a relatively small number of companies. Many of these corporations are the brand names and logos behind the plastics accumulating on coastlines, in green spaces, and on city streets across the US and around the world.

A handful of corporate actors are not only the primary source of plastics but are also responsible for actively and knowingly furthering the plastics crisis. As detailed in the section titled “Companies Have Known Plastic’s Harms for Decades” below, plastic resin producers and fast-moving consumer goods (FMCG) companies have long known about the accumulation of plastics in the environment and the impacts of plastics on people and ecosystems. Evidence demonstrates that these industries have been on notice for decades that the very nature of their plastic products makes them virtually impossible to manage, and their vast and growing production means they are bound to accumulate rapidly in both human and natural environments. The same companies also appear to have known that plastics both leach toxins into their surroundings and adsorb and accumulate toxins from the environment.

Substantial and growing evidence reveals the role of private corporations in causing and perpetuating the plastics crisis.

An ever-growing number of investigations reveal the plastics industry’s more than half-century-long understanding of the significant limitations of plastics recycling, despite its promotion of the process as the primary solution to plastic waste.¹ Despite their awareness, companies that produce and market plastics have made and continue to make dubious, misleading, or demonstrably false claims about recyclability in order to promote the continued and expanded use of their products — and to convince consumers, voters, and regulators alike that the hazards of plastics can be safely recycled away. Through extensive, and at times concealed, lobbying campaigns, the companies that produce and market plastics have repeatedly obstructed efforts to responsibly regulate plastic products and their wastes at the state, local, and national levels.²

The problems with plastic production and pollution are not new, but they have become increasingly acute for two key reasons. The first is the increasing inability of major waste-producing countries — primarily in North America and Europe — to offload their plastic waste and plastic problems to others. After attention to the issue of rising pollution from disposable plastics first peaked in the 1980s and 1990s, concern was alleviated due to a combination of recycling promises and waste exports. In 2017, the United States exported more than 1.6 million metric tons of plastic waste, mostly to China.³ In 2018, China halted most waste plastic imports, and in 2019, Parties to the Basel Convention added further restrictions on the international trade of plastic waste. By 2023, US exports of plastic dropped by about three-quarters to just over 400,000 metric tons,⁴ with the balance of waste left for cities and municipalities to manage. Put more simply, **the growing refusal by China and other countries, primarily in the Global South, to accept an endless flood of waste plastics forced countries that consume the most plastic products and packaging to confront, for the first time in decades, the true scale of plastic waste.**

Second, in addition to growing visible evidence of the plastics crisis, public scientific understanding of the often unseen hazards borne by plastics has also dramatically increased. New studies are released at an ever-accelerating pace detailing the myriad of ecosystems, food and beverage products, and human and animal tissues in which plastic particles and their toxic companions are found. The impacts of plastics on the environment and human health are increasingly being identified, quantified, and linked to the companies responsible for them.

The plastics crisis is inextricably linked to the climate crisis, with both beginning at the same hydrocarbon source, often with the same corporations and producers. There are emerging lessons that climate litigation and related research offer with regard to accountability and the role that corporations and private actors play in the climate crisis. Despite important distinctions, arguments in litigation seeking remedy for the impacts of plastics have so far paralleled those in climate cases. The legal foundations set forth in the climate cases are still being litigated, including those concerning contributions to harm, how to best assess harms to states and municipalities, and how to determine the culpability and responsibility of corporate actors.

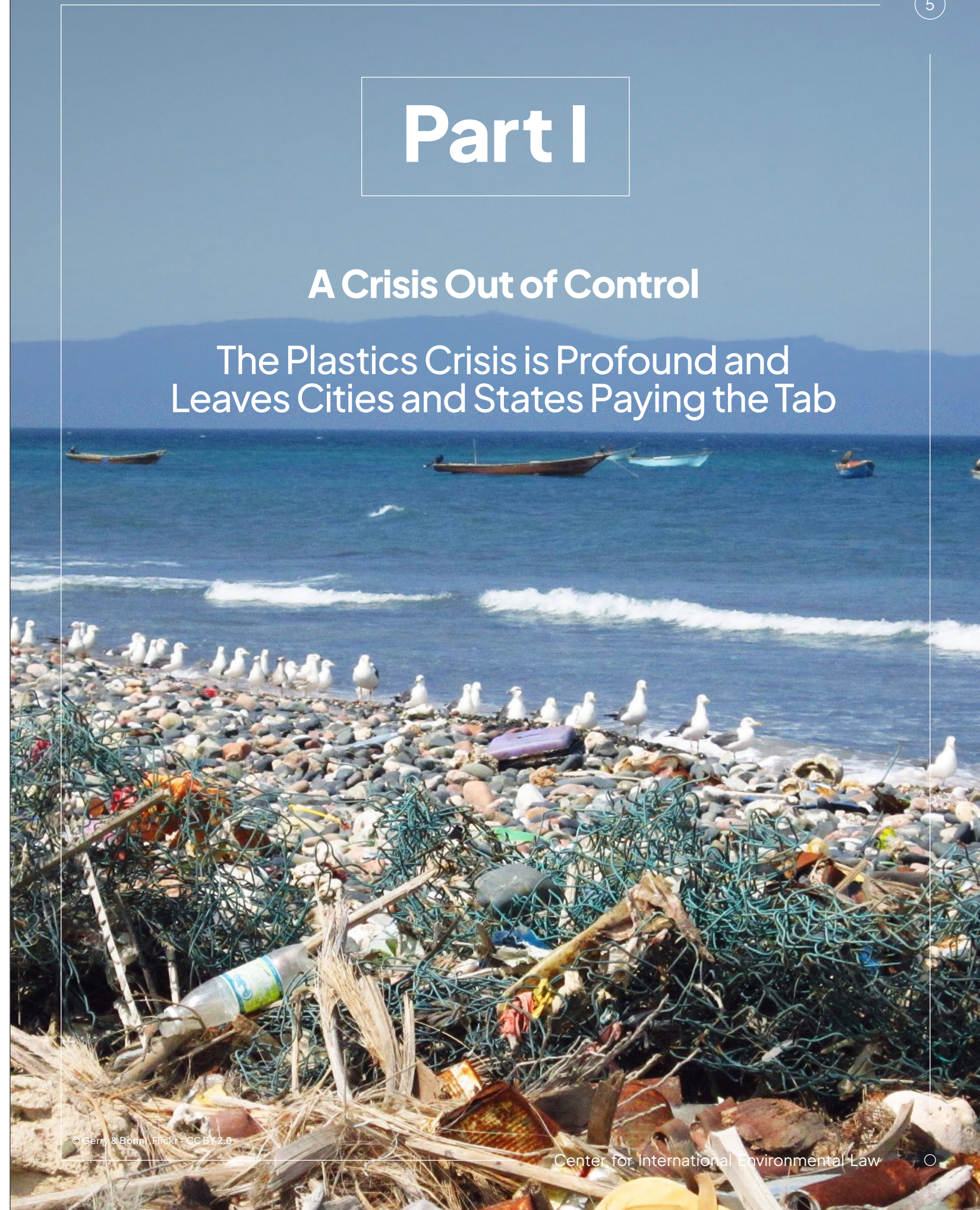
The plastics crisis is inextricably linked to the climate crisis, with both beginning at the same hydrocarbon source, often with the same corporations and producers.

This briefing details the plastics crisis and provides a guide for how subnational governments may seek legal accountability for its impacts. This report looks first at the incredible scale and scope of the plastics crisis. It then lays out several ways in which states and municipalities are directly and uniquely affected by different facets of the plastics crisis. Next, it describes the role of the plastics industry — specifically resin producers and FMCG companies — in creating and exacerbating the crisis, and presents a case study that illustrates how the industry fights against regulation. Finally, **building on the foundation of US tort law and the context provided by accelerating climate and plastics accountability cases, this briefing lays out legal avenues and available tools for states and municipalities to hold accountable those companies responsible for their role in the plastics crisis.**

Part I

A Crisis Out of Control

The Plastics Crisis is Profound and Leaves Cities and States Paying the Tab



The Plastics Crisis is Ubiquitous

The plastics crisis is profound in its scale, scope, and diversity of impacts. The problem is bigger than many realize, as the production and global use of plastics are rapidly growing. As plastics are discovered in increasingly diverse forms and locations, our understanding of the scale of the crisis will continue to deepen. Plastics pose a wide variety of harms to communities, individuals, and the environment, with impacts reaching far beyond the most visible and familiar form of litter. Indeed, the plastics crisis is universal in its reach, while personal in its harms.

As their production and use have increased, plastics have overwhelmed the systems put in place to manage waste, resulting in their rapid accumulation in the environment.⁵ The burden of plastic pollution will grow exponentially if the production and use of plastics expand at the current and expected pace.

Far beyond plastics that blight coastal beaches, flood city streets, and clog waterways, plastic pollution has been found in the deepest depths of the ocean, in remote, pristine streams, and raining from the air on the reaches of mountain-tops. Plastic pollutants are documented in ecosystems, in agricultural soils, in the foods we eat and water we drink, and in the body tissues of people in every part of the world.

Mounting evidence demonstrates that many of the most pervasive impacts of the plastics crisis are hidden from sight. From the toxins released into our air, water, and soil from plastics production, to the microplastics that accumulate in our environment and our bodies — and the thousands of chemicals they carry — the true scale and scope of the plastics crisis have long evaded systematic observation and public understanding. And as plastic production grows, the depth of the crisis will accelerate.



© Sylwia Bartyze

Plastic Production is Proliferative

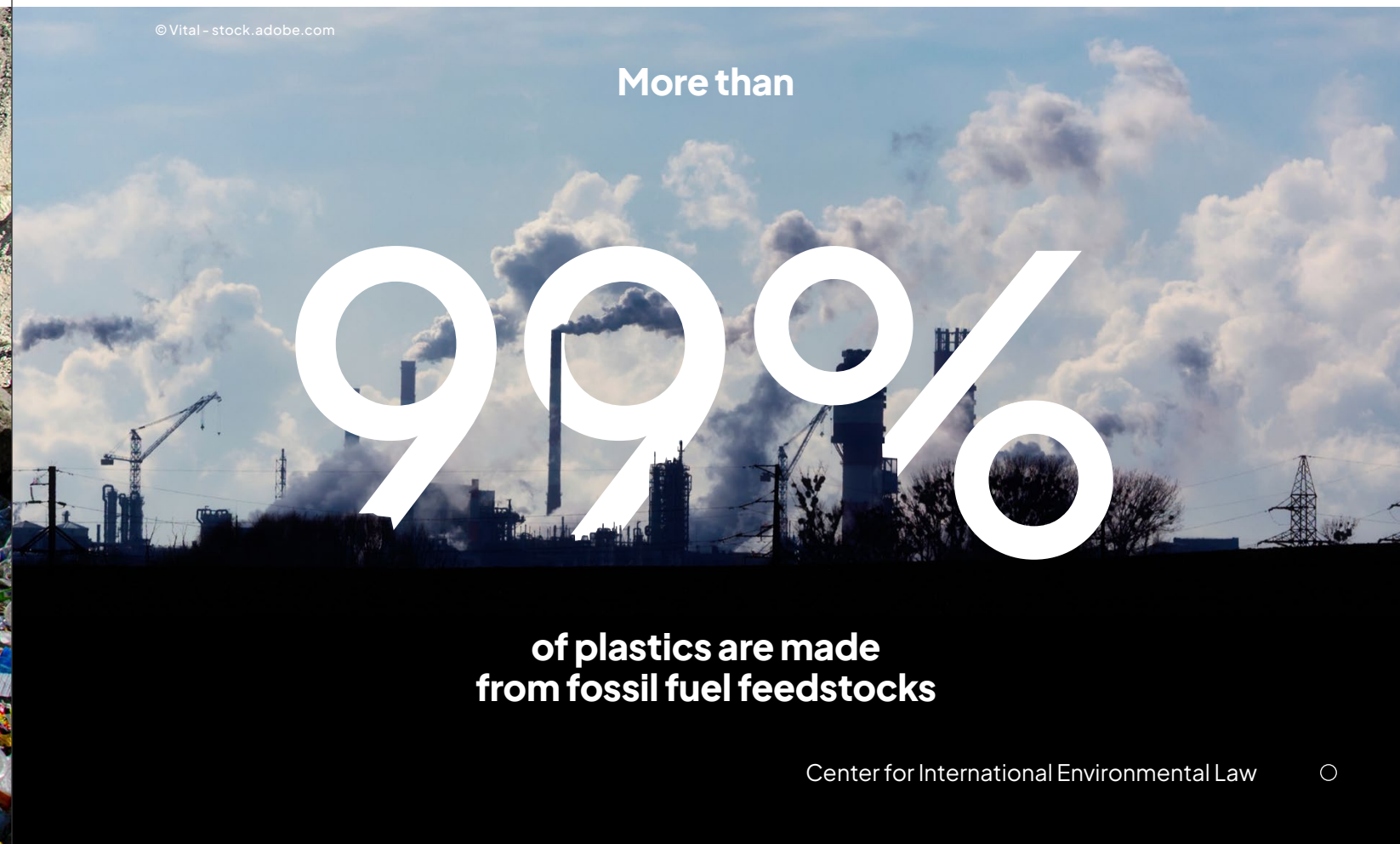
The petrochemical industry has been rapidly expanding production capacity for plastics,⁶ largely driven by the flood of fracked gas into global markets.⁷ The large-scale production and use of plastic products began in earnest after World War II, accelerating onward from the 1950s.⁸ Global plastic production grew from 2 million tons per year in 1950, to 234 million tons in 2000, more than doubling again in the next twenty years to 460 million tons in 2019.⁹ Because of this rapid growth, the majority of all plastic ever made was produced within the past two decades.¹⁰

Plastics have their origin in the petrochemical by-products of oil and gas. More than 99 percent of plastics are made from fossil fuel feedstocks,¹¹ primarily oil or gas liquids (the liquid hydrocarbons mixed with methane in fossil gas streams). Plastics thus account for a significant and rapidly growing share of global demand for oil and gas.

In 2018, plastics and related petrochemicals represented roughly 8 percent of global petroleum use worldwide.¹²

Plastic production and its role in oil and gas demand have increased significantly in recent years, with the United States as an epicenter of growth. Following the massive expansion of fracking operations in the early 2010s, the shale gas boom led to a glut of ethane — the key building block for plastics — and the US-based petrochemical industry dramatically expanded its capacity.¹³ As recently as 2014, the United States produced 49 million metric tons of plastics.¹⁴ That number has since risen sharply, and the American Chemistry Council reports that in 2022, US production amounted to 58 million metric tons.¹⁵

This expansion is poised to continue, both in the United States and globally, as fossil fuel companies increasingly focus on ramping up plastic production to offset lost sales and profits from the energy and transport sectors. As the use of oil and gas for electricity and transportation



© Vital - stock.adobe.com

More than

99%

of plastics are made
from fossil fuel feedstocks

declines in the face of increasingly evident changes to our climate, fossil fuel companies are acting aggressively to increase the share of their products used for petrochemicals, especially plastics. As the capacity to make new plastics rapidly expands, the International Energy Agency (IEA) projects plastics and petrochemicals will account for either one of the largest, or possibly the only, sources of growth in oil demand over the next few decades. In the IEA's most rapid transition scenario, petrochemicals are the only area of oil use to see growth and represent more than 50 percent of all global oil use by 2050.¹⁶

The International Energy Agency projects plastics and petrochemicals will account for either one of the largest, or possibly the only, sources of growth in oil demand over the next few decades.



More Plastic Means More Harm

While the plastics crisis has a singular cause — the production and use of plastic by a discrete number of corporations — it does not have a singular harm or vector of harm. Rather, the impacts of plastics are diverse and manifest through macroplastic waste and pollution, microplastic contamination and infiltration, and toxic exposures — particularly from additives and emissions.¹⁷ In addition to human health consequences, plastics impact ecosystems, marine habitats, soil, drainage systems, lakes, rivers, drinking water, and food supplies.¹⁸

As the production of plastics has increased, so too has the generation of plastic waste. The amount of plastic waste around the world has more than doubled from 156 million tons in 2000, to 353 million tons in 2019.¹⁹ In 2016, the United States generated 10.5 percent of global plastic waste, despite only having 4.3 percent of the world's population.²⁰ In 2019, the United States had the largest relative plastic waste footprint of any country, generating approximately 486 pounds per capita.²¹ Most of this plastic waste is either landfilled, incinerated, or it escapes into the environment.²² These methods of waste management each have their own environmental concerns, putting communities near landfills, incinerators, and materials recovery facilities at risk.

Plastics are being produced at a scale that far exceeds the capacities of waste management systems. The continuous and increased flow of plastics into the environment has led to its most visible impacts: the accumulation of plastics on shorelines, in oceans, and on land. In 2019, 22 million tons of plastic waste were lost as “leakage,” resulting in accumulation in terrestrial, freshwater, and marine ecosystems.²³

The air and water emissions associated with the production and disposal of plastics present significant threats to health and the environment.

Plastic production results in the release of hazardous air pollutants, as many of the chemicals used to produce plastics are toxic.²⁴ Plastic production facilities are often geographically clustered, thereby concentrating hazardous emissions within fenceline communities. In addition to production concerns, air pollutants associated with the incineration of plastics contaminate air, soil, and water, thereby threatening vegetation, the food chain, and human and animal health.²⁵

Many plastics additives have been shown to contain endocrine-disrupting chemicals, which have the potential to interfere with human health.

Finally, the additives used in plastics manufacturing and processing present their own toxic threats. Additives are used to give plastics a variety of properties, including to make them flexible or tough. Common additives include flame retardants, plasticizers, colorants, fillers, and reinforcements.²⁶ These additives can leach from plastics and make their way into the air, water, and soil.²⁷ Many plastics additives have been shown to contain endocrine-disrupting chemicals, which have the potential to interfere with human health by interacting with hormones,²⁸ and to increase the risk of female and male reproductive harms (e.g., impaired ovarian development and decreased sperm quality); metabolic disorders (e.g., obesity and diabetes); hormone-sensitive cancers (e.g., breast, prostate, and testicular cancers); and neurodevelopmental harms (e.g., intelligence quotient [IQ] reduction and attention deficit hyperactivity disorder).²⁹ For example, the effects of bisphenol A (BPA) — part of a class of plasticizers used in food packaging and other plastics — on small mammals led the Food and Drug Administration to ban the use of BPA in baby bottles, sippy cups, and infant formula packaging³⁰ and led to a dramatic restriction on bisphenols in food packaging in the European Union.³¹

Plastics Burden Ecosystems

Whether on land, in freshwater, or in marine environments, plastics have significant impacts on the ecosystems they pollute, as well as the organisms that depend on them. Plastics are found in a diverse number of ecosystems and biomes, which threatens the health of habitats and vulnerable species. Plastics harm animal populations physically, as well as through toxic exposure. In addition to leaching additives, plastics can adsorb and accumulate contaminants from the environment, making them a vector of contaminants to organisms.³²

Plastics threaten the health and vitality of ecosystem flora and fauna and disrupt the planet's natural cycles. Plastics hinder soil's ability to sequester carbon and affect the formation of polar ice, which disrupts the planet's carbon cycle.³³ Plastics found in grasslands have the potential to alter soil and cause oxidative stress.³⁴ Micro- and nanoplastics can also get trapped in the soils of forest floors and may even disrupt the food systems, health, and growth of forest-dwelling flora and fauna.³⁵ The presence of microplastics in ecosystems can impact plants by limiting diversity and inhibiting the metabolic function of bacteria and other microorganisms.³⁶ For example, plastics accumulate in root systems of mangroves and in swamp sediment, causing measurable damage to the roots and seedlings of these trees, which play an essential role in the carbon cycle.³⁷ Plastics in the environment are being carried by wind and river currents to the Arctic tundra, where they have entangled megafauna and altered the ways in which sea ice forms and melts, adding to the effects of climate change and, potentially, sea level rise.³⁸ Plastics have also been found in desert ecosystems, where they harm animals, including camels and gazelles.³⁹

Plastics are present in rivers, freshwater, and marine food chains. Researchers estimate that around 12 million tons of plastic waste enter the ocean each year.⁴⁰ Without changes to the status

quo, that number is projected to increase to 90 million tons annually by 2030.⁴¹ Further estimates show that there are likely more than 170 trillion particles of microplastics floating at the surface of the world's oceans.⁴² Plastics in coral reefs have been found to cause structural damage and raise the risk of disease in coral species.⁴³ Wetlands, estuaries, and marshes often serve as sinks for plastic waste, which impacts aquatic vegetation.⁴⁴

In addition to containing toxic additives themselves, plastics act as sponges — and therefore transportation vectors within ecosystems — of a number of other toxic and detrimental contaminants, such as pesticides, heavy metals, antibiotics, and other medicines in human wastewater.⁴⁵ Fish and other aquatic animals in rivers, lakes, streams, and other bodies of water ingest, become entangled in, or suffocate on plastics.⁴⁶ Fish are experiencing dramatic impacts like population depletion from the presence of plastics in their habitats⁴⁷ and diets: The abundance of macro- and microplastics in waterways makes it easy for marine animals to mistake small plastic pieces for food,⁴⁸ which threatens their health and the health of the rest of the food chain.⁴⁹ Larger fauna, like seabirds, sometimes ingest plastics after confusing them for fish or plankton, which causes them to feel artificially full and stop eating, often leading to malnutrition or death.⁵⁰ Sea turtles have also been known to ingest plastic bags and packaging materials, as well as fishing nets and twine.⁵¹ Marine mammals like whales, seals, and sea lions are threatened by entanglement, ingestion, and habitat degradation due to plastics.⁵²



© Tim Mossholder

Plastics also impact national and state parks, wildlife refuges, and environments directly stewarded and managed by governments. More than 1,000 metric tons of microplastics rain down each year on national parks and protected areas across the country, including in Wyoming, Colorado, California, Utah, Nevada, and Idaho.⁵³ The world's largest albatross colony in the Midway Atoll National Wildlife Refuge has been inundated with plastics, where the seabirds make nests of plastic waste and feed plastic pieces to their young.⁵⁴ Plastics impact many other wildlife refuges, including the Alaska Maritime National Wildlife Refuge, and the Caribbean Islands National Wildlife Refuge Complex.⁵⁵

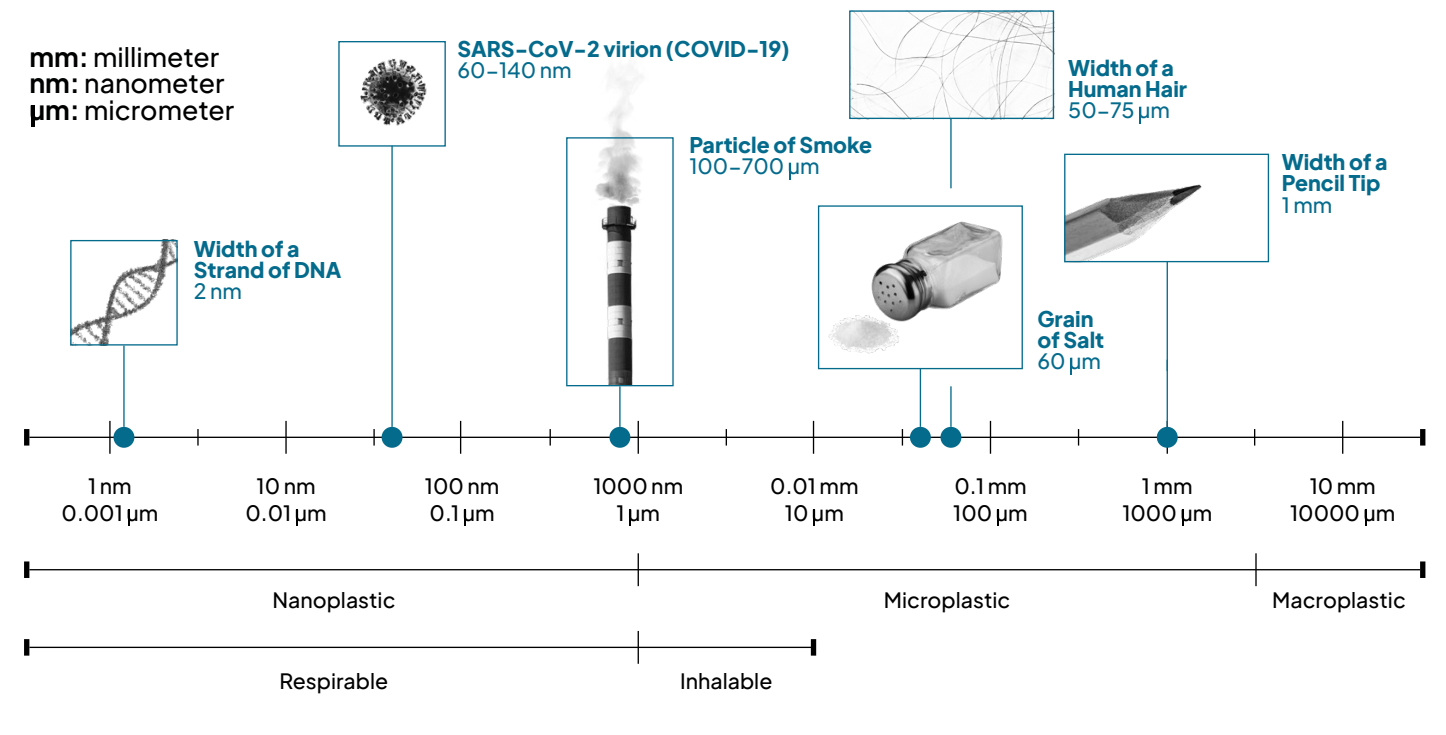
Plastics in Our Soil, Water, and Food

Marine habitats, oceans, and shorelines have been the most visible domains of the plastics crisis. However, the crisis reaches far beyond these most visibly impacted environments.

As plastics continuously circulate through waters and the atmosphere, they are being increasingly found in nearly every global ecosystem. When plastics fragment, they can travel quickly, over great distances, and in often unseen ways.⁵⁶ **Plastics are now being found in clouds,⁵⁷ rain, and snow, even in remote locations.⁵⁸** Plastics are documented to be flowing through more than 1,000 rivers globally⁵⁹ and are found embedded in rock formations on remote shores.⁶⁰

As discussed in more detail below, states and cities bear the financial and logistical burden of plastic pollution, as plastics impact municipal drainage networks. Plastics can block waterways and drains, causing flooding and serving as a vector for waterborne diseases.⁶¹ Plastic-aggravated flooding puts hundreds of millions of people at risk across the globe.⁶² Plastics can also cause harm as pollution, once they escape from or evade waste management systems.

The Size of Micro- and Nanoplastics



Source: Based on a visual by Deonie and Steve Allen, presented in a webinar hosted by Plastic Pollution Coalition.

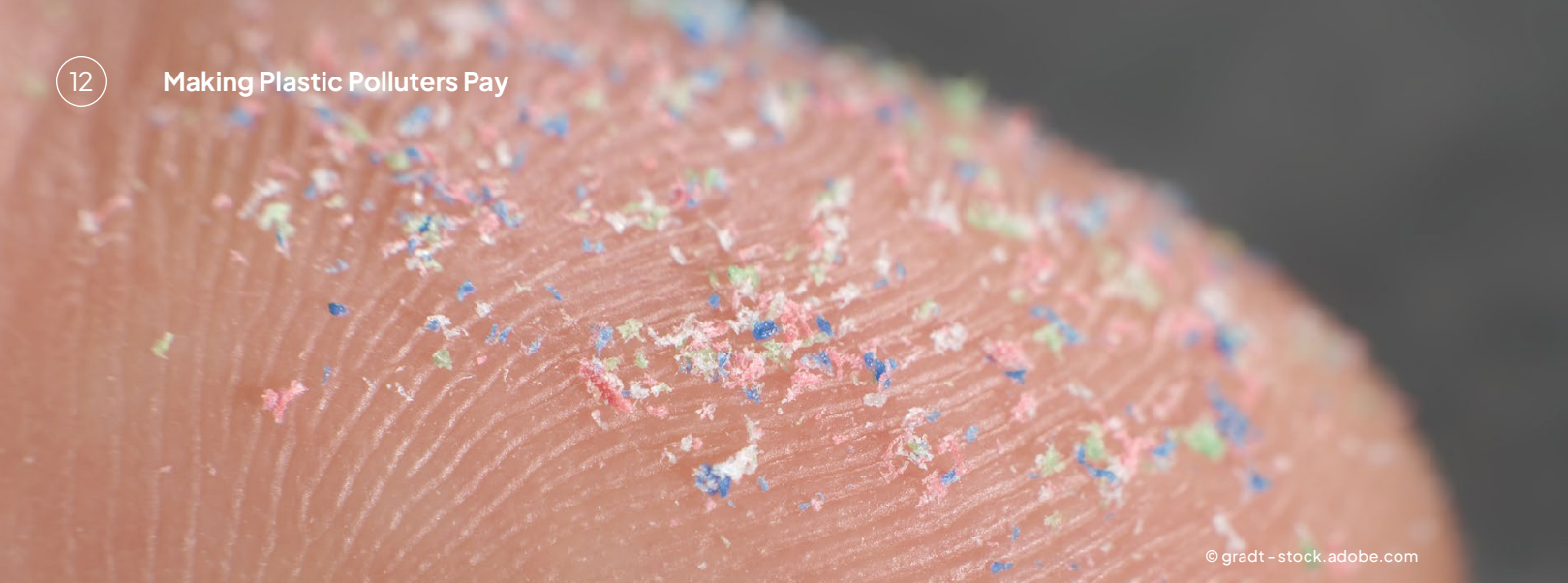
Growing evidence demonstrates that microplastics pose unique challenges beyond those of plastic pollution that are easily seen. Microplastics are tiny plastic pieces smaller than 5 mm consisting of synthetic polymers that do not dissolve in water and do not easily degrade. Micro- and nanoplastics (usually identified as plastic particles within the 1 to 1,000 nanometer range)^{*} are increasingly found in ecosystems and lifeforms across the planet — including sewer sludge, agrochemicals, freshwater, and even in the air we breathe. There is widespread prevalence of plastic contamination in drinking water from municipal water supplies, bottled drinking water, and the freshwater rivers, streams, and aquifers that supply both.⁶³

Plastics pose potentially significant risks to soil productivity and food security.

Via both intentional and unintentional routes, plastics also infiltrate soil, especially agricultural soils. Plastics are added to soil from airborne deposition, wastewater sludge, and the widespread use of plastics in agriculture.⁶⁴ Notably, plastics are intentionally and increasingly used to coat controlled-release fertilizers, seed coatings, fertilizer additives, and soil conditioners.⁶⁵ These microplastics can carry toxins and diseases into the environment, and impact animals living in the soil that help with soil fertility.⁶⁶

Once in the soil, earthworms can interact with plastics and spread plastic-associated chemicals throughout the soil, and to other animals along the food chain.⁶⁷ The use of plastics in agriculture can limit soil capacity to hold water, reduce plant root growth, and affect crop nutrient uptake.⁶⁸ Plastics pose potentially significant risks to soil productivity and food security.

* For reference, a human hair is approximately 80,000–100,000 nanometers wide, and a strand of human DNA is 2.5 nanometers in diameter.



© gradt - stock.adobe.com

The presence of plastic in our soil means the presence of plastic in our food chain. Plastics increasingly appear in the food supply.⁶⁹ The consumption of foods grown in polluted soil, packaged in plastic containers, or simply exposed to microplastic particles from surfaces and the ambient air, can result in the ingestion of plastics.⁷⁰ Plastic could also be entering the food chain through absorption by algae and ingestion by organisms living in seabeds.⁷¹

Plastics have infiltrated a variety of protein sources — including fish and shellfish, as well as the meat, milk, and blood of farm animals.⁷² Thus, ingestion of plastic-contaminated food is a direct and growing source of exposure to microplastic contamination.⁷³

Plastics are so embedded into our planet's soils that they have been identified as a potential stratigraphic marker;⁷⁴ however, micro- and nanoplastics are so pervasive that they have been found to migrate even beyond the regions that correspond to their production, seeping further into the geological depths.⁷⁵

The plastics crisis is so pervasive, it is a challenge to find a place on the planet – or in the human body – untouched by its negative impacts.

Plastics in the Air We Breathe

Microplastics are prevalent in ambient air. It has been estimated that in the United States, upward of 121,000 microplastics are taken in by each human adult annually, with an estimated 62,000 of those plastic particles — i.e., more than half — coming from inhalation alone.⁷⁶ In some major Chinese cities, estimates are even higher: people may be inhaling between one and two million plastic particles annually.⁷⁷ When small particles of plastics are inhaled, they may cause harm due to their chemical burden as well as the disease-linked substances they carry into the body.⁷⁸

In 2022, researchers found microplastics in 85 percent of human lung tissues sampled. They identified more than a dozen different plastic polymers in human lungs, including polypropylene, polyethylene, polyethylene terephthalate (PET), and others.⁷⁹ More recently, a 2023 study of volunteers in China found microplastics in every breath inhaled and exhaled.⁸⁰

The presence of plastic in air, water, soil, and food leads inevitably to the presence of plastics in human bodies. Tiny plastic particles have now been found in human blood,⁸¹ lungs, and hearts,⁸² as well as in every human placenta⁸³ and semen sample⁸⁴ tested in two recent studies. The plastics crisis is so pervasive, it is a challenge to find a place on the planet – or in the human body – untouched by its negative impacts.

Cities and States Left to Pay the Tab on Plastic Pollution

The impacts of the plastics crisis are borne largely by state and municipal governments and economies as they bear the cost of responding to the inundation of plastics within their jurisdictions. As the impacts of plastic pollution accelerate, states and municipalities will be increasingly on the hook for its harms and costs. **Once they begin taking account, states and municipalities will be hard pressed to find municipal resources that remain immune to the impacts of plastics.** These impacts can be quantified to better analyze the overwhelming burden plastics pose on communities across the country.

Plastics Spike Waste Management Costs

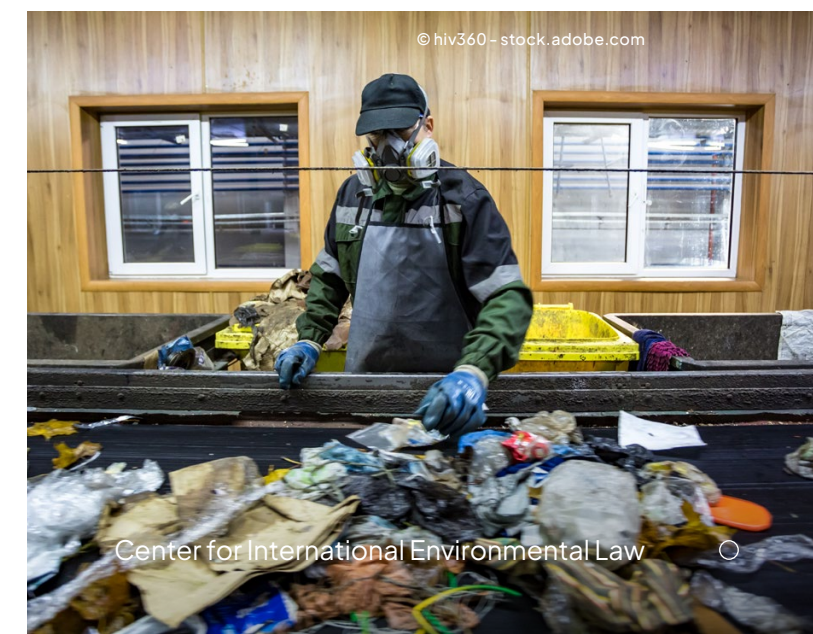
Plastics burden municipal waste management and recycling systems. As the volume of plastic production increases, so do the costs associated with its disposal in local waste streams. Waste management is often one of a municipality's largest and fastest-growing budget line items, comprising up to 20 percent of its budget and demanding significant capital expenditure for infrastructure expansion projects.⁸⁵

For decades, recycling was hailed as the solution to the plastics crisis — largely due to the deceptive and misleading industry-led campaigns detailed in the section titled "Companies Have Known Plastic's Harms for Decades" below. The reality is that recycling is no match for the plastics crisis: indeed, plastic recycling rates have fallen to less than 6 percent in the US as of 2021.⁸⁶ Concentrated volumes of mixed and unrecyclable plastics increase the complexity of waste management systems for municipalities. The contamination of recyclable materials by non-recyclable plastics damages recycling equipment, which further increases costs for municipalities.⁸⁷

A full accounting of the growing costs of managing plastic waste was once hidden as states and jurisdictions sold plastic waste for "recycling" in overseas markets. Important policy changes in China and other countries have forced US cities to confront the reality — and the cost — of unusable waste streams. For example, Stamford, Connecticut, used to bale its plastics for recycling and, like other municipalities, was able to earn money selling them to foreign brokers. Following restrictions on waste exports, the city spent at least USD \$700,000 to dispose of that waste in 2018.⁸⁸

Once they begin taking account, states and municipalities will be hard pressed to find municipal resources that remain immune to the impacts of plastics.

Global waste policy shifts have led some cities to cancel their recycling programs altogether.⁸⁹ Municipalities that are still trying to collect local waste for recycling are now being charged more by waste management companies to sort and recycle — or incinerate — that waste.⁹⁰ In 2019, the management of plastic waste cost more than USD \$32 billion globally.⁹¹ Waste management costs are on track to increase as more plastic flows into the stream of commerce.



© hiv360 - stock.adobe.com



©Lindsey Jurca

Plastics Burden Water Management Systems

Plastics place a considerable burden on municipal drainage systems. Some municipalities, such as Washington, D.C., have explicitly identified plastic waste as a challenging pollutant to drainage systems that needs to be reduced at its source.⁹²

Plastics' inundation of public spaces necessitates cleanup to avoid the clogging of municipal drainage systems and maintain a quality of life. The costs associated with removing plastic waste from parks, streets, and stormwater drains are considerable and include both labor and infrastructure costs.⁹³ If cities are unable to prevent plastics from clogging stormwater drains, rainwater could overflow and impose significant and costly flood damage, as blockages from

plastic waste can make floodwaters more quick to rise and slower to recede.⁹⁴ Municipalities are forced to bear significant costs due to accumulated plastics in drainage systems — either from flooding caused by clogged drain or from the labor required to clear those drains.

Microplastics are a particular scourge on local water treatment systems and water quality. Despite states and municipalities having a variety of options to address plastics, microplastics still manage to evade even the best cleanup and filtration systems. Sewage treatment plants are often not designed for the removal of microplastics, thus extra measures must be taken to remove them from wastewater.⁹⁵ Implementing systems that address microplastics results in increased costs — if they even work.⁹⁶ Microplastics are still consistently found in tap water across even the world's richest countries.⁹⁷



© Chesapeake Bay Program, Flickr - CC BY-NC 2.0

States and Municipalities Face Mounting Cleanup Costs

In the United States, municipalities generally lack the resources and capacity to effectively control waste in waterways.⁹⁸ Whether through formal or informal drainage systems, plastics flow into nearby waterways, streams, and rivers, causing an eyesore and carrying with them a considerable amount of toxic chemicals.⁹⁹ Rivers are known to be a major transport pathway from drainage systems to oceans.¹⁰⁰ Within rivers, plastics have been found to accumulate in areas with vegetation, and in river sediment.¹⁰¹ The portion of plastic content within the litter found in rivers and streams has increased by more than 165 percent in only four decades.¹⁰²

Cleanup and response costs arising from plastic pollution continue to increase with the rise in plastic production. For instance, a 2023 survey of public agencies and local jurisdictions conducted in Louisiana found that state entities were collectively spending more than USD \$91.4 million per year on litter cleanup and prevention — a cost increase of more than 65 percent since 2010.¹⁰³ Similarly, the Texas Department of Transportation, in 2021, spent more than USD \$50 million to cleanup only roadside litter (a 42 percent increase since 2004),¹⁰⁴ while Pennsylvania estimated an annual roadside litter price tag of USD \$68.5 million across only nine cities.¹⁰⁵ Notably, even these high price tags are repeatedly cautioned to likely be underestimates of the total costs of litter cleanup, given the nature of survey responses and data limitations.

Plastics Erode Local Economies

Beyond infrastructure and cleanup costs, plastics have a negative impact on tourism, livelihoods, and local economies. Coastal communities rely on clean beaches to generate economic activity from tourism and recreation¹⁰⁶ and can therefore feel the impacts more acutely.

Plastics in tourism-dependent areas can ruin not only the aesthetic value of the area but can cause injury and health problems for tourists. For example, plastic pollution increases temperatures on beaches during the day.¹⁰⁷ Recreation days in some American coastal communities could be reduced significantly if the amount of shoreline waste doubles, causing a loss for tourism-dependent businesses like hotels, retail shops, restaurants, and transportation services.¹⁰⁸

The presence of plastics in the ecosystem also impacts those whose livelihoods depend on it, like fisherfolk. Globally, more than 800 million people depend on fishing and fisheries for income.¹⁰⁹ In the United States, more than 1.5 million people are employed in the seafood sector, with more than 200,000 people working directly as commercial harvesters.¹¹⁰ Abandoned, lost, or otherwise discarded fishing gear makes up a large part of marine plastic pollution, which can waste important fishery resources and cause a loss in value to fishery operations.¹¹¹ But plastic pollution more broadly impacts commercially vital coastal fish stocks by contaminating nurseries and critical habitats — potentially reducing growth and survival rates,¹¹² as well as potentially contaminating fish intended for human consumption.¹¹³

Plastics threaten the livelihoods of communities dependent on tourism or fishing. These risks will be further exacerbated if plastic production continues to grow on its current trajectory, putting increasing pressure on the livelihoods of communities and industries that depend on intact and healthy local ecosystems.

Plastics are a Human Health Hazard

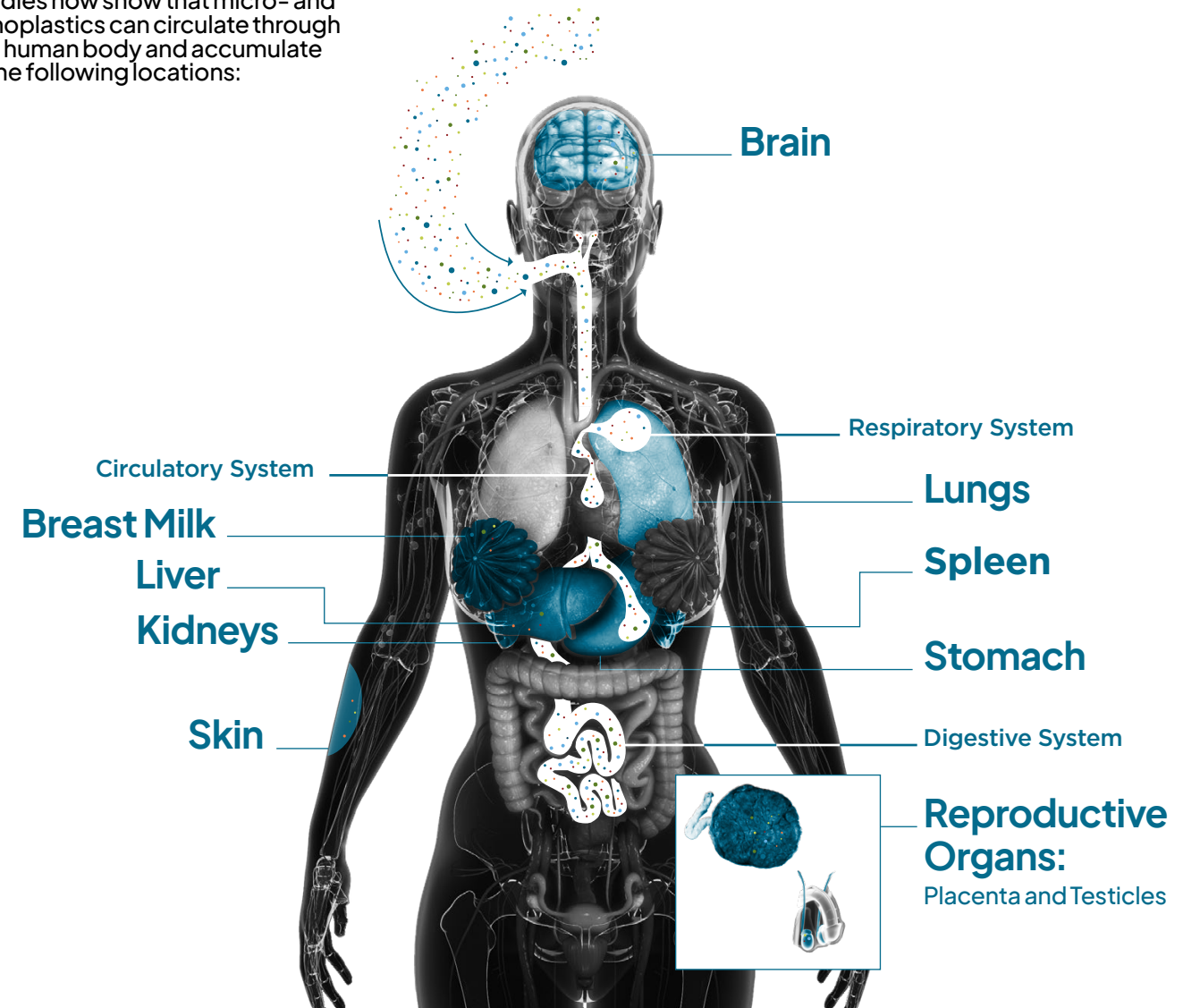
States and municipalities may bear significant costs in responding to the human health impacts of plastic pollution. There is extensive documentation of human exposures to toxic chemicals present in plastics as well as microplastics themselves. Moreover, the production and incineration of plastics produce significant levels of toxic pollution, inflicting harm on nearby communities. In many cases, the burden of healthcare costs resulting from the production and use of plastics will fall on state and municipal governments.

When microplastics escape or evade waste management systems, they pose a threat to human health, especially through their presence in drinking water. As plastics escape waste management and experience fragmentation in the environment, microplastics have been shown to impact drinking water through contamination of the public water supply.¹¹⁴ Microplastics have been found in drinking water across the globe, with untreated tap water and bottled water having some of the highest concentrations.¹¹⁵ Plastics in the water supply undermine access to safe drinking water, and while the full effects of plastics on the human body are not fully known, it is known that as plastics fragment, they can leach toxic chemicals from additives into the water supply.¹¹⁶



Microplastics in the Human Body

Studies now show that micro- and nanoplastics can circulate through the human body and accumulate in the following locations:



Source: Based on visuals by the United Nations Environment Programme (from the 2021 report, "From Pollution to Solution") & the World Health Organization (from the 2022 report, "Dietary and inhalation exposure to nano- and microplastic particles and potential implications for human health").

As outlined above, there is rising evidence of human exposure to plastics in drinking water, air, food, and everyday items. With plastics present in both outdoor and indoor environments, exposure is virtually unavoidable. Plastics made from petrochemicals are toxic themselves, but they also adsorb an array of toxins.¹¹⁷ There is growing documentation and evidence of plastics in human blood, lungs, placentae, and semen.¹¹⁸ The petrochemical polymers identified in human blood samples are some of those used for products such as food packaging and textiles.¹¹⁹ Inhalation of airborne plastic fibers has led to plastics being

discovered in lung tissue.¹²⁰ Workers, women, children, Indigenous Peoples, coastal communities, historically marginalized communities, under-resourced communities, and future generations are most vulnerable to the threats plastics and petrochemical additives bring.¹²¹

The health impacts of plastic are increasingly measured and quantified. A recent study estimated that plastics cost the United States around USD \$249 billion in disease burden and healthcare costs in 2018 alone.¹²² Another study isolated the specific impact of phthalates on

preterm births, estimating a total cost of USD \$3.84 billion from that single exposure pathway and harm alone. A third study, while not putting a direct cost on plastic exposure, found microplastics in the plaques of patients with cardiovascular disease and suggested a potential causal link between them.¹²³ As scientific understanding develops, so will the ability to more fully quantify the health impacts of plastics.

The production and incineration of plastics pose serious impacts on the communities, municipalities, and states that host these industrial operations. Plastic production exposes workers and communities to toxic chemicals and substances that can cause an array of human health issues, including cancer, low birth rates, and reproductive toxicity.¹²⁴ Take, for example, Louisiana's Cancer Alley: an approximately 85-mile stretch of industrialization along the banks of the Mississippi River — home to some 300 fossil fuel and petrochemical operations and where residents face some of America's highest cancer rates.¹²⁵

Plastic production exposes workers and communities to toxic chemicals and substances that can cause an array of human health issues, including cancer, low birth rates, and reproductive toxicity.

Plastics also pose a threat when incinerated or burned at recycling and storage facilities. Plastic waste incinerators expose nearby communities to toxic emissions that can cause damage to the immune and nervous systems.¹²⁶ The incineration of plastic releases toxic gasses into the air, which can increase the risk of respiratory disruption¹²⁷ and threaten the health of nearby communities. There have been numerous and increased instances of recycling facilities catching fire, releasing toxic fumes into the air, and threatening the health and safety of nearby communities.¹²⁸



© National Transportation Safety Board

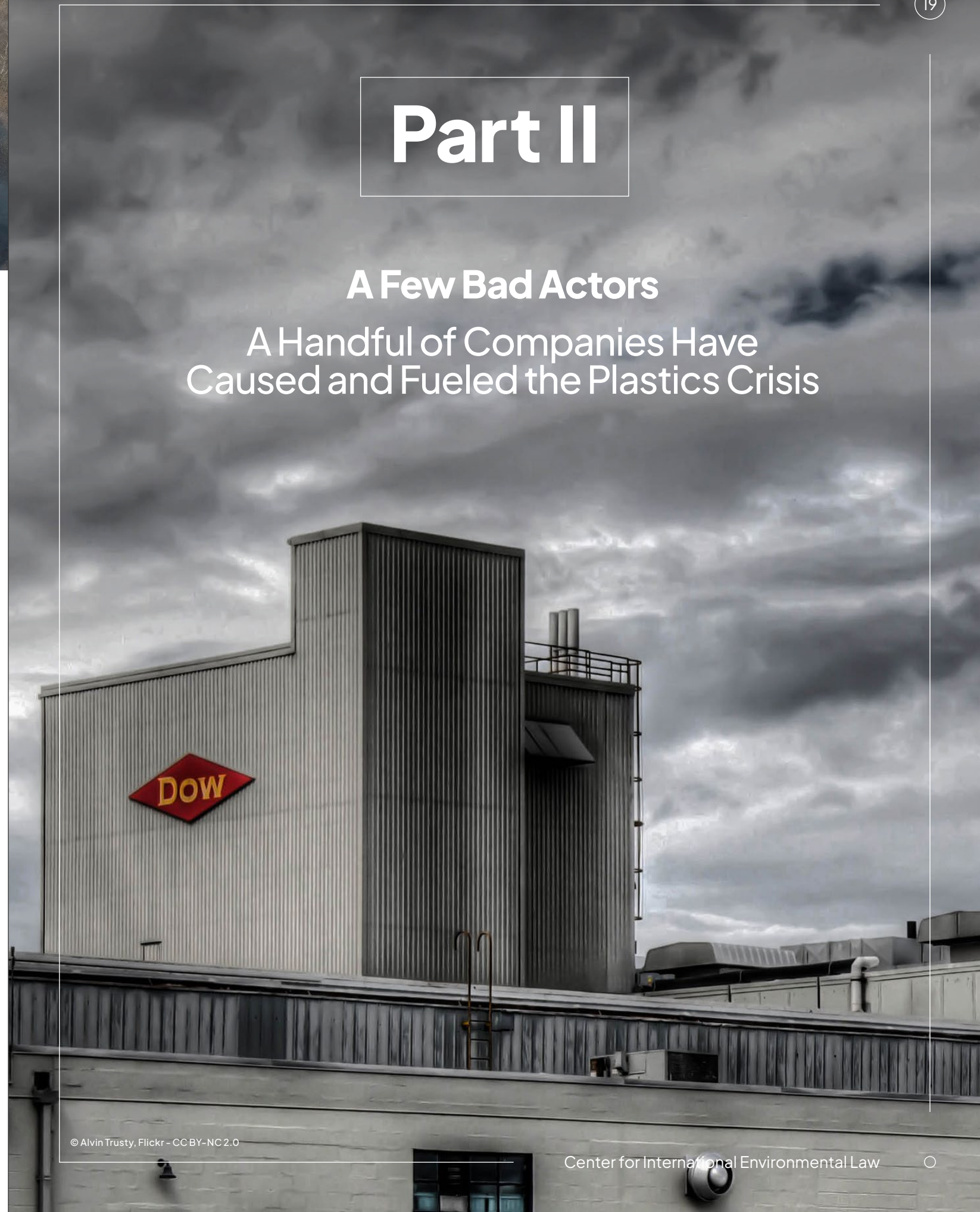
The Transport of Plastics is Toxic

Plastics and their toxic precursors pose danger as they travel via pipe, boat, train, and truck, through communities every day. The reality of this risk was brought into focus in 2023, when a train carrying vinyl chloride, used to make polyvinyl chloride (PVC), derailed in East Palestine, Ohio.¹²⁹ PVC is one of the most common plastics and is used for products such as pipes, flooring, clothing, and toys. When that train derailed, toxic chemicals were vented into nearby soil and water, after which a controlled burn sent a toxic plume into the air, exposing nearby communities to dioxin, a highly toxic human carcinogen.¹³⁰ Disasters like East Palestine destroy the health, livelihoods, and economic prosperity of a community in ways they may never fully recover.

Plastics are frequently transported as nurdles — tiny plastic pellets that are later shaped to take various forms. Small and unwieldy, these pellets frequently spill into the environment. In Spain, a spill of plastic pellets from a cargo ship prompted an investigation after millions of pellets began washing ashore.¹³¹ In Maryland, US, a train derailed during a tropical storm, spilling millions of plastic pellets into the Anacostia River watershed.¹³² Pellets have also escaped the facilities from where they are made, contaminating wetlands and riverbanks and threatening coastal fisherfolk.¹³³ Smaller than pebbles, plastic pellets present a great challenge to cleanup, causing cities and municipalities to expend time and resources following a spill.

Part II

A Few Bad Actors A Handful of Companies Have Caused and Fueled the Plastics Crisis



Plastic Producers are the Primary Drivers of the Plastics Crisis

The plastics crisis is the result of decisions made by a limited set of private actors. Resin producers create raw plastic material, and consumer goods companies shape and brand that plastic as containers, packaging, or products. The plastic supply chain creates pollution and harm at every step — from extraction to production, use, and disposal. Despite its varied mechanisms and impacts, all such pollution is the foreseeable and direct result of the production and marketing of plastics.

The plastics industry presents the plastics crisis as a consumer failing in an effort to distract from the fact that it is an affliction stemming from, and perpetuated by, corporate behavior.¹³⁴ Advertisements and marketing messages drive the narrative that the onus of plastic pollution rests on the shoulders of individual consumers. Proponents of this view argue that consumers demand ever-increasing plastic and that all issues could be solved if individual consumers place their plastic waste into the proper receptacles.

The view that consumers bear responsibility for the plastics crisis and its causes is unfair and misguided. First, much of the pollution — including toxic emissions from extraction and production — occurs before plastics ever reach individual consumers. Second, most individual consumers have little to no control over how the products they buy are delivered to them. Many plastics come in the form of disposable packaging or containers — not the sought-after products themselves — and are not designed for easy and proper collection. Even many of the plastic items that are collected are not economically or technically recyclable. Critically, even if they were recycled, those plastics would not eliminate waste and pollution elsewhere, but would rather

displace the extraction of raw materials upstream. The companies most responsible for the plastics crisis are those that produce the problematic materials, and those that control its shape and distribution. These correspond, respectively, to plastic resin manufacturers and FMCG companies, including packagers, brands, and retailers.

Responsibility Begins with Resin Producers

Producers of resin — the core ingredient of plastics — are the ultimate genesis of the plastics crisis. Resin manufacturers develop the chemistry, market the technologies, design the uses, and market their products to a chain of plastic manufacturers. Because the production of plastics and petrochemicals is a major industrial activity, there are a relatively small number of large resin production companies that produce the world's plastics.¹³⁵ Many of these companies are part of — or integrated with — oil, gas, and petrochemical companies, such as ExxonMobil Chemical (the chemicals division of ExxonMobil) or SABIC (Saudi Basic Industries Corporation, majority-owned by Saudi Aramco).¹³⁶ Companies like ExxonMobil, Dow Chemicals, and Lyondell-Basell are some of the largest producers of single-use plastics in the United States.¹³⁷ Many of these resin producers already have or have plans to expand their resin production capacity through the buildout or construction of new plastic production facilities.¹³⁸

Companies like ExxonMobil, Dow Chemicals, and LyondellBasell are some of the largest producers of single-use plastics in the United States.

As detailed below, resin producers have been aware of plastics' harmful impacts for decades.¹³⁹ Despite their awareness, companies continue to produce ever more plastic while promoting false solutions — particularly forms of recycling — and obstructing efforts to address the proliferation of plastic pollution. Regardless of its forms and applications, the core aspects of plastic materials prove to be strikingly similar across time. Plastics do not truly biodegrade — a process of 'natural' decay and harmless absorption into the environment — but rather, they instead break into smaller and smaller fragments that remain detectable and measurable. These micro- and nanoplastics accumulate and transmit toxins in the form of intentional additives, non-intentionally added material in production, and additional toxins picked up from the environment. Many aspects of the plastics crisis are the result of the fundamental nature of plastic as material, aspects that are known — and in many cases promoted — by the companies that make them.

Fast-Moving Consumer Goods Companies Feed the Crisis

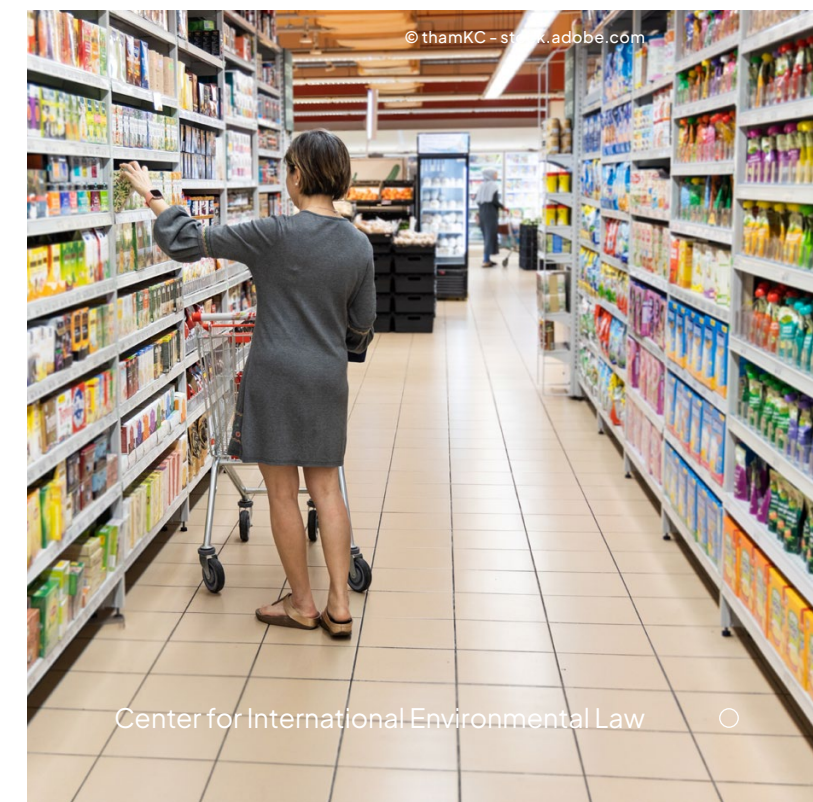
Fast-moving consumer goods companies bear significant responsibility for the plastics crisis. FMCG companies sell products designed for frequent and rapid consumption. When not single-use themselves, the products are typically wrapped in single-use plastic packaging.¹⁴⁰ Plastic packaging is the largest single source of demand for plastics and is the material's fastest-growing use.¹⁴¹ Plastic packaging is inherently designed to be quickly disposed of, and it is largely not recycled — or even recyclable.¹⁴²

Packaging by FMCG companies is a major contributor to the plastics crisis and is a major source of macroplastics and secondary microplastics in the environment. Brand audits have been designed to identify which companies are most represented in plastic waste. For example, Break Free From Plastic's annual brand audit reveals that

companies like Coca-Cola, Nestle, and PepsiCo are well represented in collected plastic waste. Similar brand audits of plastic waste can be specified by jurisdiction to demonstrate which brands are associated with the most plastic waste in a given area. This method can help tie FMCG companies to responsibility within the plastics crisis.

Companies Have Known Plastic's Harms for Decades

The companies that produce plastic are not merely the direct cause of the plastics crisis, they are culpable for it. Resin producers and FMCG companies have known — for decades — about the impacts of plastic and the properties of the material that make those impacts likely. They have promoted the use of their products despite this knowledge and have opposed efforts to regulate or reduce demand for plastics. Moreover, they have sown confusion about the nature of their products and opportunities to alleviate their impacts — particularly through the promotion of recycling as the solution to the plastics crisis — despite knowledge of the inability of recycling systems to do so.



The Origins of the Plastics Crisis

The plastics industry has known, or should have known, that plastic was accumulating in the environment — and potentially causing serious harm — for several decades. In the 1950s and 60s, when plastic production started accelerating after World War II, reports began appearing of animals suffering negative consequences from plastic pollution — including entanglement in plastic fishing line or ingestion of small plastic pieces mistaken for food.¹⁴³ Shortly thereafter, the fossil fuel, petrochemical, and packaging industries held and attended multiple conferences that directly addressed, or indirectly revealed, the issues of plastic pollution. In 1969, for example, representatives from several fossil fuel, chemical, and FMCG companies attended the First National Conference on Packaging Wastes, discussing, among other things, the issues of accumulating plastic waste.¹⁴⁴ In 1973, a National Academy of Science (NAS) workshop on petroleum in the marine environment revealed that “polystyrene spherules are abundant” in coastal waters, and that “[b]acteria and polychlorinated biphenyls (PCB’s) are found associated with these particles, and the particles are ingested by a number of aquatic organisms.”¹⁴⁵ A second NAS workshop attended by petrochemical companies the same year discussed the potential for plastic pollution to cause “widespread significant alterations in the marine system.”¹⁴⁶ **By the early 1970s, the plastic and petrochemical industries were on notice that their products were entering into and accumulating in the environment, attracting toxins, and had the potential to cause significant harm.**

Plastics producers knew that their products were being found in the environment, they also understood the specific nature of plastics as near-permanent substances that persist in the environment, at least on human timescales. In two demonstrative examples from 1973, industry actors both acknowledged the challenges posed by plastic’s inability to decompose¹⁴⁷ and argued

that that inability was, in fact, a benefit, providing structure for landfills.¹⁴⁸ A study for the plastics industry, presented by Dow in 1984, outlined the industry’s keen awareness that plastics would not degrade, despite the fact that creating degradable plastics was conceptually possible — but expensive.¹⁴⁹ In the decades before the industry began to promote recycling as the solution to plastic pollution, it understood that plastic was a unique, prevalent, and persistent problem in the environment.

Industry Blocks Progress

Despite being well aware of the harms that plastics cause, the plastics industry has worked to protect and expand its access to markets in the face of public concern and potential regulation.

The plastics industry has fought efforts to tax, regulate, and ban its products for decades. When the problem of plastics in municipal solid waste gained serious attention among states in the 1980s, the industry responded by organizing a number of institutes and front groups to prevent such regulation and, as discussed below, promote the idea of plastics recycling to the public. Over the past two decades, the industry has mobilized against renewed efforts in several states and municipalities, including opposing plastic bag bans in California in 2007-08, 2010, and 2016, as well as a plastic bag tax in Seattle in 2009.¹⁵⁰ The plastics industry also successfully lobbied several states to preemptively prohibit local regulations that would ban plastic bags.¹⁵¹

The industry’s efforts to preserve access to markets are not limited to the state level or even the United States. In 2020, industry representatives were found lobbying the United States to include provisions in a negotiated trade deal with Kenya that would undo the country’s plastic bag ban and enable continued imports of plastic waste.¹⁵² The plastics industry has also been documented sending large numbers of lobbyists to ongoing international plastic treaty negotiations.¹⁵³

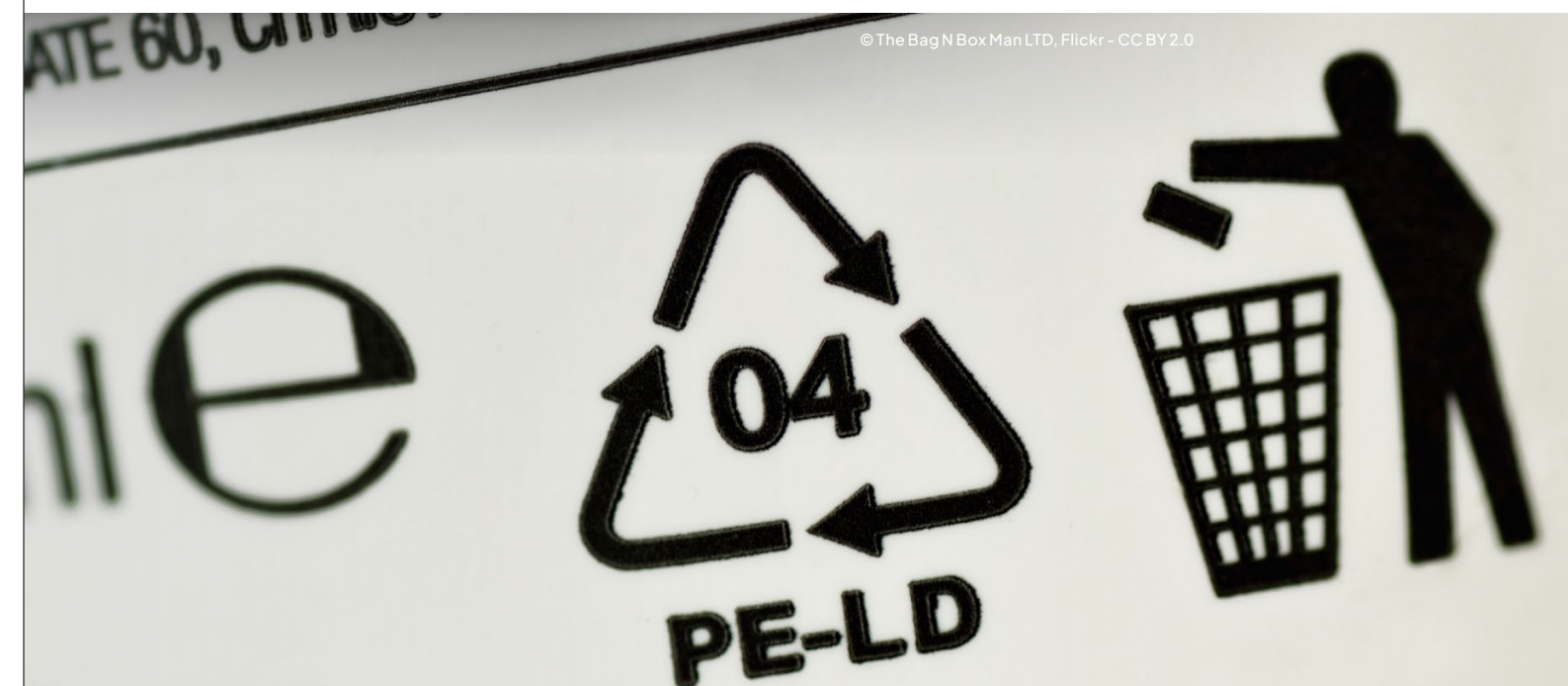
Recycling Codes are Misleading

The plastics industry has engaged in a coordinated, continuous, decades-long effort to persuade the public that its products can and should be recycled and that such recycling is the solution to plastic pollution.¹⁵⁴ Industry documents from the 1970s reveal that the industry was aware that recycling plastics on a large scale was nearly impossible due to the degradation of the material and costs associated with sorting.¹⁵⁵ Despite this, the industry promoted plastics recycling through a connected network of front groups and financial commitments that led essentially nowhere.

One of the most significant acts that misled the public and regulators was the creation of resin identification codes. In 1988, the plastics industry spearheaded the implementation of a numbering system for plastic packages that it then lobbied states to formally adopt. These symbols — resin identification codes — ostensibly reflect which of the major thermoplastic resins constitute a given product. In reality, these symbols, which included triangular arrows suggestive of the

‘chasing arrows’ recycling symbol, misled millions of people for decades about the recyclability of their products. In 2013, the standard-setting organization ASTM (formerly American Society for Testing and Materials) determined that resin codes required a redesign, given their nature to mislead.¹⁵⁶ For the same reason, the Federal Trade Commission is currently evaluating recycling claims for its updated “Green Guides.”¹⁵⁷

The widespread corporate promotion of recycling as the solution to the plastics crisis continues today. Consumer products coalitions, like the American Beverage Association, focus heavily on recycling initiatives to repair their reputations for wastefulness,¹⁵⁸ while networks of resin producers are actively working to shift the policy framework to one of “circularity.”¹⁵⁹ “Circularity” has largely served as a cover for the chemical-laden thermal processing of plastics, often dubbed “advanced recycling” or “chemical recycling,” nebulous concepts that encompass the intensive application of both heat and industrial chemicals to reconstitute waste materials.¹⁶⁰ Both petrochemicals and FMCG companies have hailed “advanced recycling,” or “chemical recycling,” as a solution to the plastics crisis, despite the fact that it is energy intensive, expensive, and largely infeasible.¹⁶¹



© The Bag N Box Man LTD, Flickr - CC BY 2.0

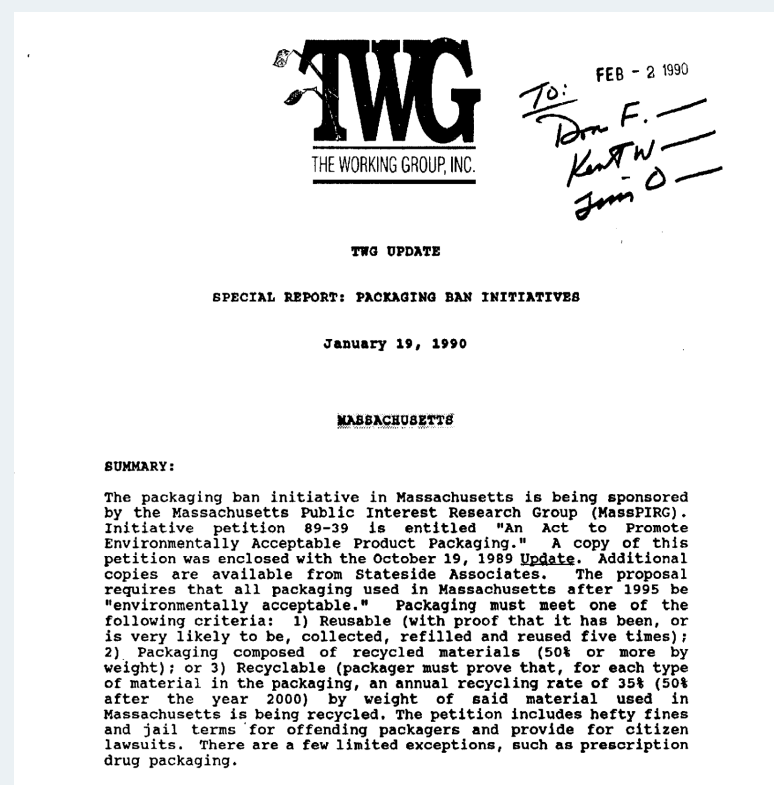
Case Study: Coordinate Nationally, Fight Locally

Plastic Polluters Ran Coordinated National Campaigns
Masquerading as Local Business Coalitions to Block Early State Action
on Plastic Pollution in Massachusetts and Beyond.

The Set Up and Take Down of a State's Plastic Ban

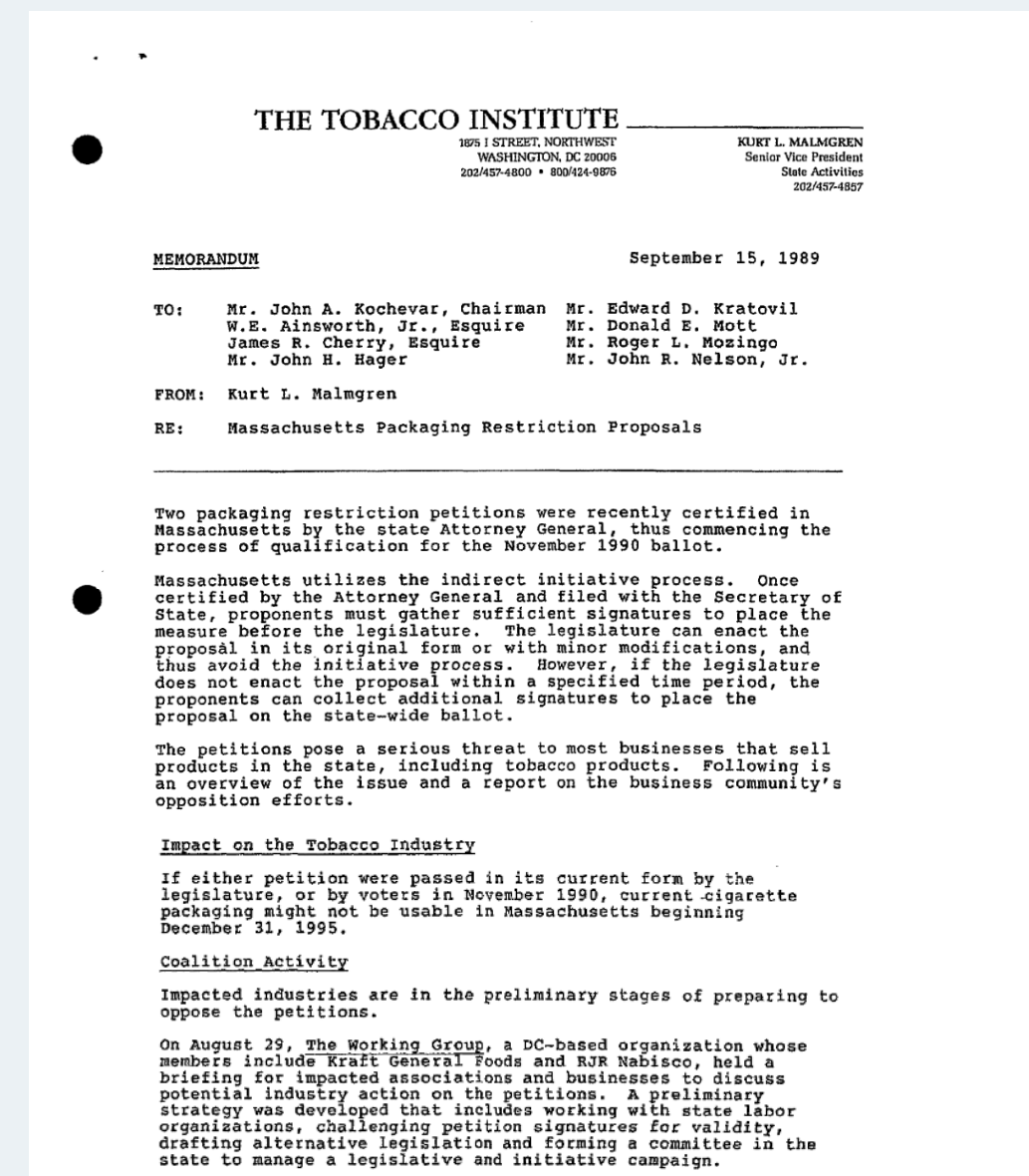
In 1989 — amid increased national attention on the problems caused by runaway plastic waste — the people of Massachusetts were considering legislative options to encourage or require a statewide shift towards more sustainable packaging. The strongest and most serious option was a ballot initiative proposed by the Massachusetts Public Interest Research Group (MassPIRG), which proposed a functional ban on all single-use packaging. The initiative required that by 1996, all packaging used within the Commonwealth of Massachusetts be reusable or made with recyclable or recycled materials.¹⁶² The MassPIRG proposal had teeth to ensure compliance, including potential fines, jail time, and citizen-suit provisions that allowed private individuals to initiate civil enforcement actions if state officials did not pursue violations.¹⁶³

Excerpt from The Working Group, Special Report:
Packaging Ban Initiatives (January, 1990)



After being introduced in early August 1989, the single-use packaging ban was on course to be included on the ballot during the November 1990 midterm elections.¹⁶⁴ Despite being local in its scope, the Massachusetts ban represented a serious threat to plastics producers and a host of other industry interests. After garnering significant attention from national business interests, an industry-devised plan to kill the bill was in motion before it could be put to vote before the people of Massachusetts. Internal industry documents reveal a highly coordinated and sophisticated campaign in which a coalition of seemingly unrelated companies and trade associations directed strategy from behind the scenes while front groups acted as the public face of the opposition.

Excerpt from The Tobacco Institute: Memorandum
Re: Massachusetts Packaging Restriction Proposals (1989)



Within weeks of the release of the MassPIRG petition, lawyers from major plastic-producing and -using industries, including chemical, packaging, consumer products, and tobacco companies, were directly lobbying the Massachusetts attorney general (AG) to deny certification.¹⁶⁵ (As a memo notes, “[i]f either petition were passed in its current form ... current cigarette packaging might not be usable in Massachusetts[.]”)¹⁶⁶ By August 29, an organization called The Working Group, an apparent arm of conservative advocacy group Stateside Associates, developed a plan for an extended opposition campaign with input from industry leaders. The plan called for:

1. courting state labor organizations to oppose the bill,
2. challenging the MassPIRG proposal in the courts,
3. drafting alternative legislation to promote within the legislature with a focus on recycling and incineration, and
4. the creation of state-based organizations to provide a credible, public face for the legislative and messaging campaign.¹⁶⁷

The state attorney general certified the initiative in early September. By September 7, 1989, a “National Task Force” of companies and trade associations with diverse interests were coordinating with one another to beat back the proposed ban and implement an opposition strategy.¹⁶⁸ Over the following nine to ten months, the plan unfolded as designed.

Industry Members of the “National Task Force” to stop the ban on single-use packaging proposed in Massachusetts

- | | |
|---|---|
| <ul style="list-style-type: none"> • American Paper Institute* • Chemical Manufacturers Association* • Council for Solid Waste Solutions (CSWS)* • Direct Marketing Association • Direct Selling Association • Distilled Spirits Council of the US • Flexible Packaging Association* • Food Marketing Institute* • Food Service and Packaging Institute • Fort Howard Cup Company* • W. R. Grace and Co. (chemicals manufacturer from MD) • Grocery Manufacturers of America, Inc.* • Kraft General Foods, Inc.* | <ul style="list-style-type: none"> • Miller Brewing Co. • National Food Processors Association • National Restaurant Association* • National Soft Drink Association* • Pfizer Pharmaceuticals • Polystyrene Packaging Council • The Kamber Group (representing the Polystyrene Packaging Council)* • Procter & Gamble* • RJR Nabisco • Joseph E. Seagram & Sons, Inc. • The Soap and Detergent Association • Stateside Associates* • Steel Can Recycling Institute* • The Tobacco Institute |
|---|---|

* denotes participation in the National Task Force’s Steering Committee.

Industry Leaned on Labor

Recognizing the influence that organized labor had in state politics — and its ability to sway public opinion — industry made a concerted effort to court labor union officials to oppose the MassPIRG proposal. An internal memo states that the “position of Massachusetts labor organizations is paramount” and that “[a] comprehensive labor strategy will be a major component of the...opposition effort.”¹⁶⁹

Excerpt from The Tobacco Institute: Memorandum Re: Massachusetts Packaging Restriction Proposals (1989)

Labor

The position of Massachusetts labor organizations is paramount in any legislative or initiative battle in the state. Recognizing the importance of labor’s role in this issue, a resolution was submitted for consideration by the Massachusetts AFL-CIO at its annual convention in October. The resolution calls for labor’s opposition to any legislation or initiative petitions that mandate bans on the manufacturing and distribution of certain packaging in the state. A comprehensive labor strategy will be a major component of the Massachusetts opposition effort.

Proponents

The major proponents of the petitions are environmental groups, particularly MASSPIRG. Labor and consumer groups are natural allies to environmental organizations; however, efforts are underway to diffuse such alliances on this issue. The legislators who sponsored the 1989 packaging tax and recycling legislation also support the petitions.

The strategy paid off. Within a matter of weeks, the Executive Vice President of the Massachusetts chapter of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) submitted a draft resolution declaring the union’s opposition to the ban. The resolution — which posited that “arbitrary and unsound environmental mandates,” such as the proposed ban, would result in a “sacrifice” of current and future jobs — was ratified without alteration at the Union’s annual convention in October 1989.¹⁷⁰ The Tobacco Institute took credit for the success of the “labor resolution process,” which it saw as a key effort to drive a wedge between “[l]abor and consumer groups” and “environmental organizations,” groups it considered to be “natural allies” on the packaging issue.¹⁷¹

Excerpt from The Tobacco Institute: Memorandum Re: Massachusetts Packaging Restriction Proposals (1989)

Tobacco Industry Participation

The Institute is a member of the National Task Force and is also working closely with The Working Group on this issue. The Institute will continue to participate in the coordination of the state and national coalition efforts and provide resources and expertise when possible. For example, The Institute’s regional office staff and consultant were responsible for the success to date of the labor resolution process. We will be assessing further opportunities for our involvement in the Massachusetts coalition.

The tobacco manufacturers are represented by RJR Nabisco and Kraft General Foods in both The Working Group and in the National Task Force.

Conclusion

The business community is moving quickly to prepare its opposition strategy; however, it is still in the preliminary stages of forming an in-state coalition, identifying the appropriate coalition leader and developing strategy.

Excerpt from The Working Group, State Legislative Update (October, 1989)



THE WORKING GROUP, INC.

TWG UPDATE

October 13, 1989

Major items of interest this week include the passage of the AFL-CIO resolution in Massachusetts, the Environmental Protection Initiative of 1990 in California, Wisconsin S.B. 300 which includes a packaging ban, and the National League of Cities Resolution dealing with CFCs. All of these developments are detailed in this Update.

MASSACHUSETTS: The MassPIRG Initiative Petition 89-39 requires that all packaging used in Massachusetts after 1995 be "environmentally acceptable." Packaging must meet one of the following criteria: 1) Reusable (with proof that it has been, or is very likely to be, collected, refilled and reused five times); 2) Packaging composed of recycled materials (50% or more by weight); or 3) Recyclable (packager must prove that, for each type of material in the packaging, an annual recycling rate of 35% (50% after 2000) by weight of said material used in Massachusetts is being recycled. The petitions include hefty fines and jail terms for offending packagers and provide for citizen lawsuits. There are a few limited exceptions, such as prescription drug packaging. MassPIRG has agreed not to pursue signatures on 89-40, a similar petition that included a provision dealing with the escheat (unclaimed bottle deposits). The deadline for filing 50,000 signatures with local registrars is November 22 (November 27 in Boston), 1989. A meeting of the Massachusetts Packaging Ban Task Force was held in Boston on October 6. The group decided to form an official committee and selected a Chairman, Treasurer and Steering Committee. Further details about the meeting are available from Stateside Associates. The Massachusetts AFL-CIO resolution passed without changes on October 6. The resolution states that "this convention goes on record as opposing legislation and initiative petitions, including those now certified, that mandate bans on the manufacturing and distribution of certain [types] of packaging in the Commonwealth of Massachusetts." The signature challenge before the Ballot Law Commission was unsuccessful. This clears the way for MassPIRG to gather signatures on 89-39. On a related note, informal discussions are ongoing between business representatives and Representative Mark Roosevelt, author of long-pending legislation to impose a packaging tax. While the ban initiative

3

50763

Industry Front Groups Mobilized

From the outset, industry recognized the need for local business interests to serve as the public face of the opposition campaign. The Council for Solid Waste Solutions (CSWS), which has been described as a pure industry front "conceived, created, ... funded and controlled by plastics manufacturers wishing to improve their public image," was a key player in the opposition to the MassPIRG proposal.¹⁷² The battle over the single-use plastic packaging ban played out over the next three years (roughly 1989 - 1991) and included major plastic and resin producers such as Dow, DuPont, Exxon Chemical, Mobil Chemical, Amoco Chemical, and others, all as members of CSWS.¹⁷³

As a member of the industry's National Task Force, CSWS bridged their national interests, with the local business community operating as the public face of the campaign. CSWS facilitated the creation of the Massachusetts Coalition for Responsible Waste Management (MCRWM),¹⁷⁴ which proposed to represent the interests of the local business community. Together, their stated purpose was to derail the Massachusetts bills and actively promote alternative bills that would present recycling as a viable alternative.¹⁷⁵ As early as October 1989, CSWS and MCRWM had both sought input from consulting firm Temple, Barker & Sloane to develop a strategic plan for opposing legislative bans.¹⁷⁶ As the opposition campaign progressed, MCRWM acted as the public face of industry's legislative strategies and was the primary contact point for state legislators, while CSWS acted as the plaintiff for legal challenges to the ballot initiative.¹⁷⁷

Excerpt from The Working Group, Special Report: Packaging Ban Initiatives (January, 1990)



THE WORKING GROUP, INC.

TWG UPDATE

SPECIAL REPORT: PACKAGING BAN INITIATIVES

January 19, 1990

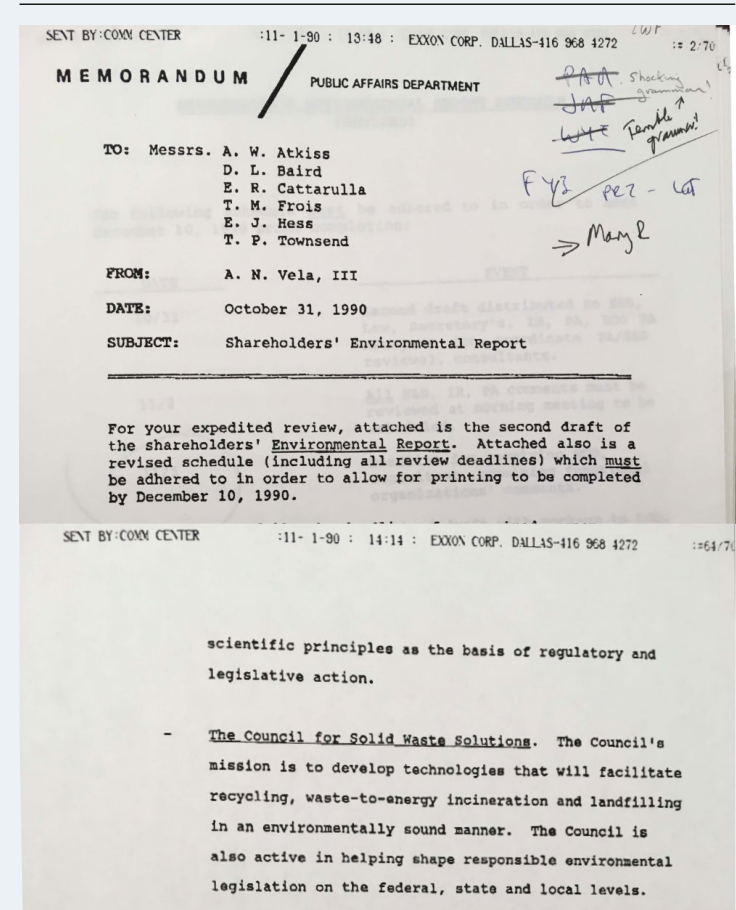
MASSACHUSETTS

INDUSTRY COALITION:

There are now two parallel industry organizations working on the opposition effort. The first is the Massachusetts Coalition for Responsible Waste Management, Inc. This is the nonprofit corporation which will coordinate the legislative battle. The Massachusetts Committee for Responsible Waste Management is the political committee which will handle the ballot question if the issue is not resolved in the legislature. The chairman of both organizations is Tom McCabe, President of the Massachusetts Restaurant Association. A request for proposals to coordinate all other aspects of the legislative campaign, including media and public relations, has been issued. The next meeting of the coalition is scheduled for January 24 in Boston. The coalition's legal committee met in December to discuss the possibility of future legal challenges. No recommendations were made at that time. Boston attorney Robert Rodophele is representing The Council for Solid Waste Solutions in its legal challenge. A recent action in this effort was the filing of a memorandum in the Supreme Judicial Court. The memorandum is in opposition to a motion by the Attorney General that urged dismissal of the pending appeal (the appeal of the Attorney General's original certification of the petition). There is also an appeal pending in the Superior Court, since the law is unclear as to which court has jurisdiction in this situation.

To: FEB - 2 1990
 Don F. —
 Kent W. —
 Jim O. —

Excerpt from Exxon Corp., Shareholders' Environmental Report (Oct, 1990)



Legislative and Litigation Strategies

By December 6, 1989, the MassPIRG petition had reached the required signature and certification thresholds. In January 1990, it was automatically sent to the state legislature for consideration as a proposed bill. The legislature had the option of adopting an alternative proposal to be included on the ballot.¹⁷⁸

During this period, MCRWM actively lobbied state lawmakers, attempting to water down the MassPIRG provisions and sell alternative bills to address the “solid waste” problem via recycling.¹⁷⁹ MCRMW recruited members of the Massachusetts AFL-CIO to offer witness testimony during committee hearings,¹⁸⁰ identified lawmakers amenable to a weaker version of the bill, and entered into negotiations with MassPIRG representatives about a potential compromise measure.¹⁸¹ By mid-June 1990, MCRWM had secured a confidential memorandum of understanding (MOU) with Massachusetts to address the solid waste problem — in large part by building out recycling infrastructure and seeking voluntary commitments from industry¹⁸² — effectively sidestepping the MassPIRG petition.

In parallel, CSWS pursued a legal strategy to invalidate the MassPIRG petition through the courts. With the help of tobacco industry lawyer Bob Rodophele, CSWS filed suit challenging the original nineteen signatures that accompanied the MassPIRG petition on technical grounds.¹⁸³ In short, CSWS argued that because the original signatures did not appear on the same page as the petition text, there was sufficient doubt as to whether signatories had actually reviewed the petition’s text and, thus, should be invalidated.¹⁸⁴ While this argument failed at the trial court, it was ultimately successful on appeal. In July 1990, the Massachusetts Supreme Judicial Court ultimately ruled that the original signatures were invalid and that the MassPIRG petition would not be put to vote before the people of Massachusetts.¹⁸⁵

Massachusetts Was Only a Microcosm

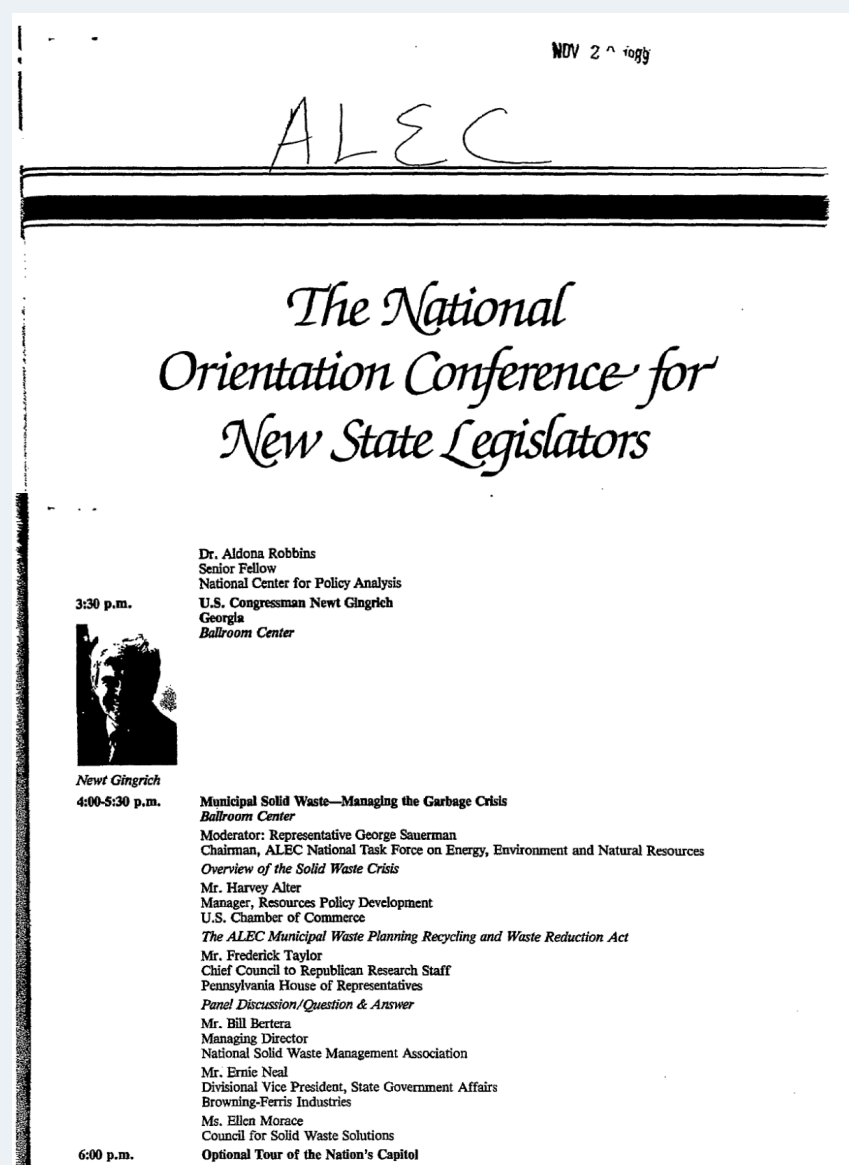
The fight over the MassPIRG initiative in Massachusetts was not an isolated event, but rather a single example of a broader campaign. Industry was dedicating substantial energy and resources to fight similar legislative measures across the country.

In the summer of 1988, more than a year before the MassPIRG initiative was introduced, the American Legislative Exchange Council (ALEC) considered the “solid waste issue” as potentially the “single most important environmental issue at the state level, [over] the next two years.”¹⁸⁶ ALEC called for a “comprehensive industry strategy” to counter the activity of “environmentalists” who were introducing “hundreds” of bills in state legislatures.¹⁸⁷ In September 1989, as the fight in Massachusetts was just getting underway, ALEC released a model bill that put the responsibility for addressing plastic waste squarely on local government, calling for investments in recycling infrastructure instead of limitations on production or use.¹⁸⁸ Later the same year, the issue and the model legislation were prominently featured at ALEC’s National Conference for State Legislators. A panel discussion on solid waste, featuring a representative of CSWS, followed immediately after a keynote address by then Congressman Newt Gingrich.¹⁸⁹



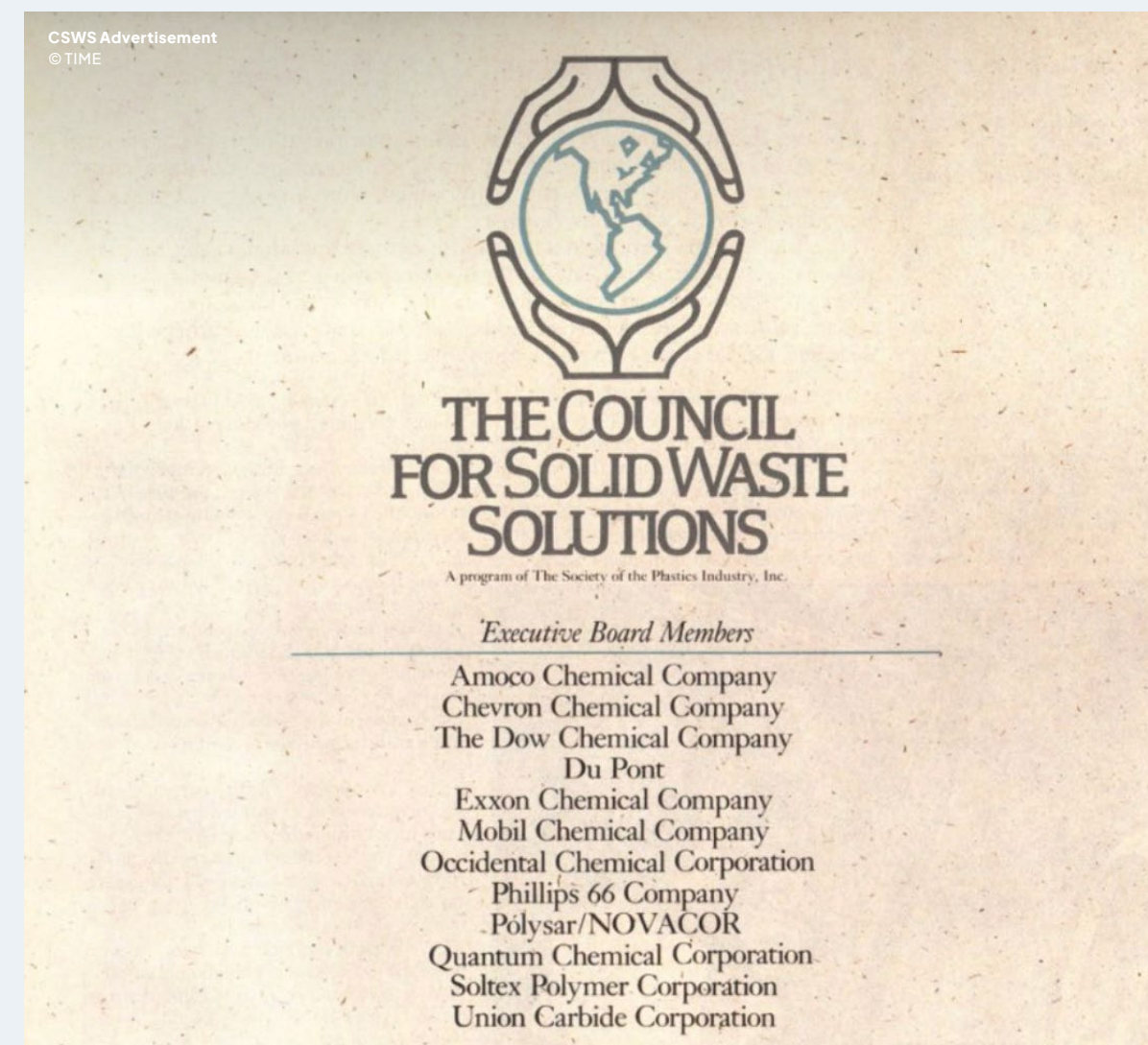
The national attention at ALEC was matched by other industry-backed think tanks, advocacy groups, and trade associations — including many that were active in the MassPIRG campaign — which supported campaigns to challenge proposed legislation in other states.¹⁹⁰ For example, both The Working Group and Stateside Associates, founded in 1988 by Constance Campanella, the former Executive Director of ALEC, were tracking legislative developments and coordinating industry opposition strategies across multiple states¹⁹¹ — including California, Oregon, and Wisconsin.¹⁹²

Excerpt from American Legislative Exchange Council (ALEC),
Agenda for National Orientation Conference for New State Legislators (Nov, 1989)



Notably, in Oregon, a ballot initiative “almost identical to [the] Massachusetts 89-39” MassPIRG proposal was under consideration as of January 1990.¹⁹³ The opposition strategy deployed by industry was also “almost identical” and even shared some of the same players and front groups. For starters, CSWS was a “key player” in the opposition campaign.¹⁹⁴ Similar to Massachusetts, a coalition purporting to represent local business interests was organized.¹⁹⁵ The “Oregon Committee for Recycling” included CSWS, Procter & Gamble, and “members of the plastics industry” among its earliest members.¹⁹⁶ The coalition recruited a public relations firm to develop a messaging strategy,¹⁹⁷ engaged labor leaders with the goal of recruiting them for “the opposition effort,”¹⁹⁸ and developed a legal strategy for challenging the ballot initiative through the courts.¹⁹⁹ As in Massachusetts, the financial and logistical backing of national industry was essential.²⁰⁰

In September 1990, the Oregon ballot initiative was also defeated in the courts by the industry coalition.²⁰¹



Industry's Present-Day Response to Mounting Pressure

Public awareness of the environmental harms and human health impacts associated with plastics has grown in recent years. Increased awareness has been accompanied by a corresponding rise in local legislation targeting plastic waste, such as bag bans and limitations on single-use plastics.²⁰² Globally, momentum continues to build as the world works toward a binding treaty to address plastic pollution.²⁰³ In the courts, both in the US and abroad, the first wave of litigation to hold the industry accountable is starting to materialize.²⁰⁴

In response to the mounting pressure and threats posed by litigation and regulation, the plastics industry's response closely mirrors its push for mechanical recycling in the 1980s - 90s. In addition to its lobbying efforts²⁰⁵ and offensive litigation campaigns,²⁰⁶ the plastics industry is now working to sell the public on a newly-rebranded false solution: "advanced recycling" also referred to as "chemical recycling."

American Chemistry Council Facebook Advertisement 2023 (Facebook Ad Library)



American Chemistry Council
Sponsored • Paid for by American Chemistry Council

Advanced recycling is a critical process, but legislators want to exclude it from NY senate bill 4246. Tell your legislators to oppose this bill and support advanced recycling.

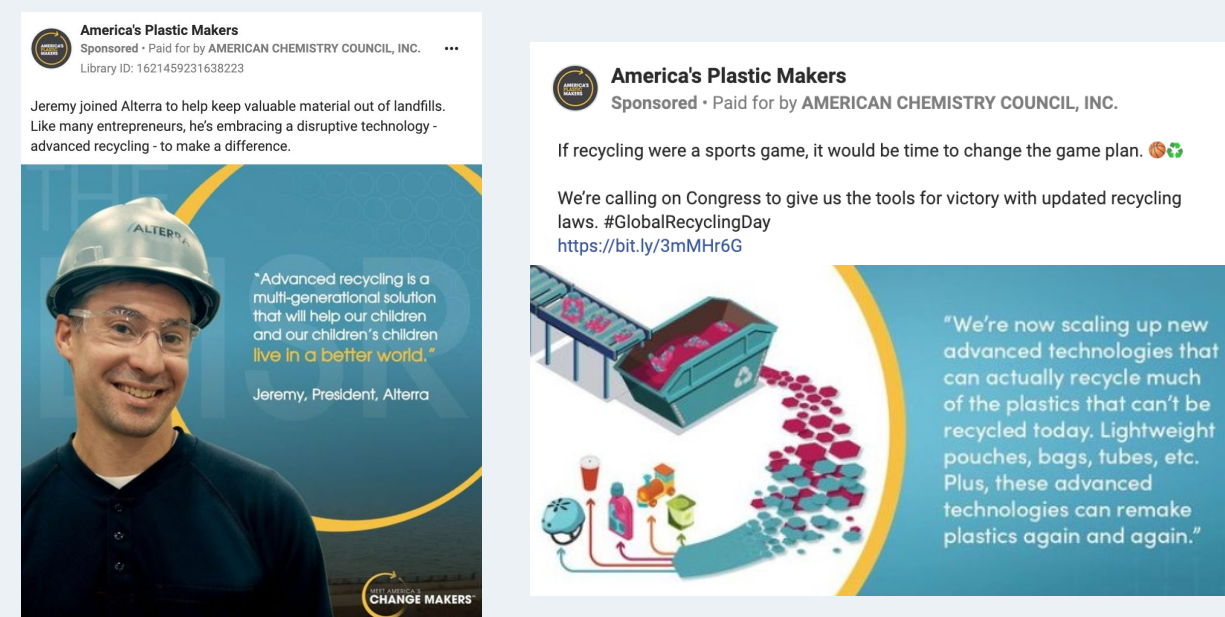
Advanced Recycling:

- Expands the products we can recycle
- Helps keep waste out of landfills
- Helps keep our communities clean

SUPPORT ADVANCED RECYCLING

"Advanced recycling," also referred to as "chemical recycling," is defined by proponents as a way of turning post-consumer plastics into "gas or liquid raw materials" in order to produce "brand new plastic for use in virtually any plastic product or packaging."²⁰⁷ In actuality, the term applies to a number of different processes that involve the intensive application of heat and chemicals to plastic waste — resulting in the inefficient production of energy or other chemicals rather than useful feedstocks for new plastics.²⁰⁸ These practices are not new, they have been around — and failing — for decades.²⁰⁹ Repeated evaluations of the process have shown that "advanced recycling," also known as "chemical recycling," is both resource and energy intensive, adds toxic emissions into the environment, and has a poor track record for producing useful recycle feedstocks.²¹⁰

America's Plastic Makers Facebook Ads 2023 (paid for by American Chemistry Council)



America's Plastic Makers
Sponsored • Paid for by AMERICAN CHEMISTRY COUNCIL, INC.
Library ID: 1621459231638223

Jeremy joined Alterra to help keep valuable material out of landfills. Like many entrepreneurs, he's embracing a disruptive technology - advanced recycling - to make a difference.

"Advanced recycling is a multi-generational solution that will help our children and our children's children live in a better world."
Jeremy, President, Alterra

America's Plastic Makers
Sponsored • Paid for by AMERICAN CHEMISTRY COUNCIL, INC.

If recycling were a sports game, it would be time to change the game plan. 🏆♻️

We're calling on Congress to give us the tools for victory with updated recycling laws. #GlobalRecyclingDay
<https://bit.ly/3mMhr6G>

"We're now scaling up new advanced technologies that can actually recycle much of the plastics that can't be recycled today. Lightweight pouches, bags, tubes, etc. Plus, these advanced technologies can remake plastics again and again."

Despite its well-documented and inherent shortcomings, the plastic industry's well-funded trade associations are presenting "advanced recycling" as a panacea for the plastic waste problem that the industry itself created. For instance, the American Chemistry Council (ACC), one of the foremost advocacy and trade associations for US-based chemical companies and plastics resin producers,²¹¹ has actively promoted "advanced recycling" through social media ads. From May 2018 – May 2024, the ACC's plastics division, advertising under the name "America's Plastic Makers," spent more than USD \$10 million on upward of 7,500 ads on Facebook alone.²¹² Of those advertisements, approximately 1,600 referenced "advanced recycling,"²¹³ with one analysis indicating upward of USD \$250,000 spent on advertising "advanced recycling," in 2022 alone.²¹⁴

Industry Insights

Industry's efforts in Massachusetts — though only one of many similar campaigns designed to derail legislation addressing plastic waste at the source²¹⁵ — present a useful case study for understanding how industry responds to threats. Industry typically deploys a combination of lobbying, marketing, and legal strategies, often through sympathetic trade associations and front groups. These same strategies are being repurposed in the modern context, and the plastics industry is attempting to sell the public on the false promise of chemical recycling.

Part III

Making Polluters Pay

Legal Foundations and Tools for Holding Plastic Polluters Accountable



Foundations for Accountability and Legal Responsibility

As the plastics crisis causes ever-greater harm to individuals, communities, and ecosystems, those affected can be expected to seek redress through the courts. **Litigation provides an opportunity to hold those responsible for the plastics crisis accountable, both to access compensation for damages and to enjoin additional destructive behavior.** State attorneys general and other public attorneys are in a unique position to bring such litigation, as they have access to legal and evidentiary tools that other potential litigants do not.

As described below, state attorneys have investigative powers reserved for government entities, which allow for additional tools in accessing relevant evidence and information. Moreover, public attorneys can represent states and municipalities as entities as well as the interests of their residents, providing wider paths to litigation. Not only can state attorneys pursue claims for direct financial harms to the state, but they can also act to seek remedy for accumulated and agglomerated harms that might prove more challenging to litigate among private litigants, even as a class.

The legal underpinnings for seeking accountability for plastic pollution are strong and backed by a long history of litigation for environmental, consumer, and toxic harms — with the law often evolving to meet the moment and grapple with harms that slip between the regulatory cracks. This has been demonstrated in cases concerning asbestos, tobacco, and polychlorinated biphenyls (PCBs) to name a few — and is currently being tested in cases pertaining to climate change, the newest in this line of legal challenges.

The three legal doctrines with the most promise for obtaining accountability for the harms of plastics are nuisance, products liability, and consumer protection.

The three legal doctrines with the most promise for obtaining accountability for the harms of plastics are nuisance, products liability, and consumer protection. Nuisance law — public nuisance in particular — allows state and local government plaintiffs to seek remedy and injunctive relief where the rights of the public have been infringed. Nuisance has been a remarkably versatile legal doctrine, evolving to account for new and unexpected harms as society evolves. Products liability allows plaintiffs to hold producers of products responsible for their impacts — including where the design of entire product lines is defective — or for failing to adequately warn consumers about the potential harms of their products. Finally, consumer protection laws prohibit false advertising and other misrepresentations. They provide rights of action on the part of the public in their role as consumers and ensure that misrepresenting product features and misleading people into buying products is recognized as a harm.



Litigation over responsibility for the plastics crisis has already begun, with two cases in particular serving as the first examples of corporate accountability pathways. As detailed below, current litigation invokes nuisance, products liability, and consumer protection claims, highlighting the promise and versatility of these legal doctrines.

The City of Baltimore and its Mayor filed a lawsuit against cigarette manufacturers to hold them accountable for the cleanup costs associated with tobacco product litter.²¹⁶ Cigarette filters are made from cellulose acetate, a plastic product, and contain a number of chemical additives.²¹⁷ Research suggests that cigarette butts cost an estimated USD \$26 billion a year in environmental pollution worldwide.²¹⁸ Baltimore calculated that it spent more than USD \$32 million per year to collect 2,600 tons of litter, in addition to USD \$5.3 million to mitigate cigarette filter litter. The lawsuit seeks to recover “expenditures and losses resulting from cigarette filter litter in the city, including cleanup and disposal costs, damage to natural resources, diminution in property values, loss of revenue, and substantial fines for dumping their litter in the city.”²¹⁹

New York’s attorney general filed suit against PepsiCo after finding a large portion of plastic packaging collected in the Buffalo River could be attributed to the company.²²⁰ Through its survey of plastic pollution, the Office of the Attorney General found that PepsiCo’s plastic packaging “far exceeded any other source of identifiable plastic waste, and it was three times more abundant than the next contributor.”²²¹ Simultaneously, the company had acknowledged the harms caused by its single-use plastic products and the public’s perception of plastic’s environmental impact. New York alleges in its complaint that PepsiCo’s actions amount to public nuisance, a failure to warn consumers of foreseeable risks, and a violation of New York General Business and Executive Laws.

These cases are likely only the beginning, as more states and municipalities grapple with the challenges of accumulating plastic waste and microplastics contamination, and seek recompense for the time, resources, and livelihoods damaged by plastics.

Nuisance

Nuisance provides a promising avenue for states and municipalities to seek remedy for the diverse harms caused by plastics. Nuisance doctrine has a long history of evolving to meet new societal challenges, including, very recently, significant environmental harms that fall outside the scope of existing federal environmental regulation. Many of plastics’ impacts may be suitable for claims under nuisance, including the inundation of waterways, toxification of water sources, lost economic activity, and more.

At its most basic level, a public nuisance involves “an unreasonable interference with a right common to the general public.”²²² Exactly which “rights” these include “elude[s] precise definition.”²²³ Similarly, there are no bright-line rules or universal tests to determine when an interference with said rights becomes “unreasonable.” This has caused some commentators to bemoan “public nuisance as an amorphous, undefined, and perhaps undefinable doctrine.”²²⁴

This flexibility and amorphousness of the nuisance doctrine should be viewed as a feature, not a bug. As our conceptions of cognizable rights have grown and shifted throughout history, the ambit of public nuisance claims has grown in tandem. As a doctrine, nuisance remains adaptable, helping to fill the gaps between regulations to meet the needs of the times.

A brief review of how the doctrine’s applications have changed over time provides clues about the types of claims that are likely to be viable and the direction the doctrine is heading.



© Matt Brown, Flickr - CCBY 2.0

Public Nuisance is Flexible and Evolving

In its earliest applications, which date back to the infancy of the English common law in the 1300s²²⁵ — public nuisance was invoked by organs of the state to clear obstructions to the King’s roads and waterways — and to abate community-wide annoyances, such as disruptive noises and vibrations,²²⁶ smoke,²²⁷ and foul odors.²²⁸

As the doctrine was incorporated into US jurisprudence through the common law, it adapted and grew over the intervening centuries to address a multitude of harmful things and activities that posed threats to the common good.

In the 1800s, nuisance claims involved disease-spreading ponds, the enclosure of public lands, hog pens, vicious dogs, gambling houses, noises that frighten horses, the unlicensed practice of medicine, the storage of explosives, double parking, and more.²²⁹

During industrialization, long before the adoption of federal environmental laws, public nuisance became a critical avenue for addressing novel harms of the time — such as water and air pollution from industrial operations.²³⁰

This theme extended into the environmental movement of the 1960s and 1970s, where the doctrine’s history of “addressing air and water pollution” made it “a natural place for litigants to look to address environmental ills.”²³¹ Successful litigation provided both motivation and “momentum for landmark legislation, such as the Clean Air Act and Clean Water Act.”²³²

In the modern era, public nuisance has seen yet another period of significant growth and adaptation as states grapple with how to address mass, societal harms attributable to consumer products, such as tobacco,²³³ asbestos,²³⁴ opioids,²³⁵ chemical products,²³⁶ and fossil fuels.²³⁷

State legislatures have also taken advantage of the flexibility that public nuisance provides. By the middle of the twentieth century, all states had passed public nuisance statutes. These often designate a wide variety of additional conduct and activities as nuisances based on the legislatures’ prerogatives.²³⁸ Just as the common law of the 1800s provided a flexible vehicle to address a multitude of harms that fell through the cracks of existing legislation, public nuisance statutes provide legislators with an avenue to respond to evergreen concerns as they arise.²³⁹ Nuisance statutes “amount to a legislative declaration that the conduct proscribed is an unreasonable interference with a public right.”²⁴⁰

Over the centuries and across its diverse applications, the through line of public nuisance claims is the *parens patriae* doctrine, which stands for the proposition that a state “has an interest independent of and behind the titles of its citizens, in all the earth and air within its domain,”²⁴¹ and may sue to assert its “quasi-sovereign interest in the health and well-being — both physical and economic — of its residents in general.”²⁴² At its root, this doctrine is a reflection of the general “police powers” retained by the states, a fundamental principle undergirding our constitutional framework.²⁴³

The through line of public nuisance claims is the *parens patriae* doctrine, which stands for the proposition that a state “has an interest independent of and behind the titles of its citizens, in all the earth and air within its domain.”

As the doctrine suggests, the “unreasonable interferences” at issue in public nuisance cases often involve public access to and enjoyment of water, air, and roadways, as well as threats to public health, safety, and well-being.

While the precise method for determining whether an interference is “unreasonable” can vary from state to state, the Second Restatement of Torts provides a non-exhaustive list of factors that are typically considered by reviewing courts. In broad strokes, “conduct” will be deemed unreasonable if it: 1) causes significant impacts on the public health, safety, peace, comfort, or convenience; 2) is proscribed by statute or regulation, or 3) produces a permanent or long-lasting effect, especially where the actor/defendant knows or has reason to know of that effect’s impact upon the public right at issue.²⁴⁴

“The essential element of an actionable nuisance is that persons have suffered harm or are threatened with injuries they ought not have to bear.”²⁴⁵ Unlike other doctrines — which require a threshold showing of a defendant’s intentional, reckless, or negligent conduct — nuisance primarily concerns a plaintiff’s unreasonable injury. Thus, in its most unrestricted form, “plaintiffs may recover in nuisance despite the otherwise non-tortious nature of the conduct” at issue.²⁴⁶ In essence, public nuisance acts as a strict liability tort.

Despite this default rule, there are differing opinions about the proper scope of nuisance law. In practice, state courts regularly depart from this permissive, strict liability formulation to varying degrees. Thus, the scope of the doctrine — and the showings plaintiffs must make to sustain a viable nuisance claim — will differ from state to state, with each jurisdiction falling somewhere along a spectrum of more to less permissive.

On the least permissive end of the spectrum, some courts have categorically rejected the availability of public nuisance claims where harms arise from the lawful sale of products.²⁴⁷ Other courts recognize products-based harms, but require some form of underlying tortious conduct — whether that be intentional, negligent, or a *per se* violation of statutory authorities.²⁴⁸ Some state courts seek to limit public nuisance to its “traditional” origins, requiring some connection between the harm alleged and the “land.”²⁴⁹ Under any of these formulations, there must be an adequate showing of proximate cause between the defendant’s conduct — or conditions for which the defendant is responsible — and the harms alleged.²⁵⁰

The result, as demonstrated below, is that the case law is varied — so much so that different jurisdictions may reach different results, even where the public rights and alleged interferences are functionally identical.

Nevertheless, where a strict liability approach is embraced by a given jurisdiction, the focus on the “condition” or “injury,” rather than the “conduct,” has important ramifications for the operation of statutes of limitations. Most tort claims accrue, meaning the clock begins to run, at the moment a tortious act is committed. Plaintiffs are, thus, required to bring a claim within a certain amount of time following that act.²⁵¹ Claims alleging public nuisance, on the other hand, remain viable as long as the offending or harmful condition persists; meaning that timely claims may be brought years, or potentially decades, after other causes of action have expired.²⁵²

Despite states’ heterogeneous approaches to public nuisance, the doctrine is well suited to address the community-wide harms caused by plastics. To navigate the variable treatment across jurisdictions, litigants can draw important parallels, distinctions, and strategic lessons from both the historical applications of public nuisance, as well as more recent efforts to leverage the doctrine in the context of mass consumer torts.

Plastics Nuisance in Practice

The inherent characteristics of plastic resins implicate traditional conceptions of the public rights and unreasonableness criteria central to a nuisance claim. For instance, all polymers are virtually impossible to biodegrade, meaning that they are functionally guaranteed to accumulate in the environment.²⁵³ The aggregation of plastics in waterways and the air interferes with traditional public rights concerning access and enjoyment of the environment.²⁵⁴ Moreover, the concentrations of plastics in the environment inevitably make their way into human bodies. Because plastics absorb and concentrate toxins and pathogens from the environment, they have the potential to act as potent vectors of risks to human health.²⁵⁵ The scale of plastic contamination is such that states’ interests in their natural resources and the well-being of their citizens are under threat. Likewise, the environmental, health, and economic harms associated with plastics are firmly rooted in both the historical and modern applications of public nuisance.



© Ben Powless



Harms from Plastic-Polluted Water

Included among the oldest and most-firmly-historical injuries recognized at common law are interferences with the public's right to clean water, or hindrances to the public's access, navigation, and enjoyment of public waterways.²⁵⁶

The accumulation of plastic waste in waterways and the contamination of municipal water supplies may create similar infringements on collective public rights. The accumulation of visible plastic waste in and along public waterways is well documented.²⁵⁷ To the extent masses of plastic products impact navigation or public enjoyment, the manufacturers and distributors of plastics may well be liable.²⁵⁸

As plastics degrade and leak into the environment, they contaminate municipal water supplies.²⁵⁹ Separate and apart from the aesthetic harms posed by visible plastics in public waterways, micro- and nanoplastics act as vectors for other pathogens and are toxic in and of themselves.²⁶⁰ These harms are much more akin to actionable harms posed by toxic chemicals, such as PCBs,²⁶¹ per- and polyfluoroalkyl substances (PFAs),²⁶² methyl tert-butyl ether (MTBE),²⁶³ or herbicides such as 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and paraquat dichloride (paraquat),²⁶⁴ which have resulted in widespread contamination of public waterways and municipal water supplies through their normal and intended use.²⁶⁵

In the *NY v. PepsiCo* case, plaintiffs' public nuisance arguments allege that Pepsi's contribution to widespread pollution via "its continued manufacturing, production, marketing, distribution, and sale of vast quantities of single-use plastic packaging" constitutes a "substantial interference with the exercise of a common right" by interfering with the public's use of public spaces and by "endangering or injuring the property, health, safety or comfort of a considerable number of persons."²⁶⁶

In response, PepsiCo raised defenses sounding in a lack of causation and control over the instrumentalities of the nuisance, placing responsibility for the alleged harms on third parties in the form of littering consumers and insufficient waste management operations. Defendants argue that the complaint fails to "allege that PepsiCo itself polluted the Buffalo River or has control over the third parties who did[,]" but rather that "PepsiCo engaged in the lawful 'manufacturing, production, marketing, distribution, and sale' of its products ... while the activity creating the alleged nuisance is 'plastic packaging being discarded' by independent third parties."²⁶⁷

The analysis in *Commonwealth v. Monsanto*, a PCB case, is particularly instructive. There, defendants argued that plaintiffs had failed to establish sufficient "control" to support a public nuisance claim whereby plaintiffs failed to allege that Monsanto "itself released, discharged, or

put PCBs into the Commonwealth's waters."²⁶⁸ In rejecting the control argument, the court noted that neither the Restatement nor Pennsylvania law "requires, in order to be found to have created a public nuisance, that the creator must at all times control the nuisance-creating product."²⁶⁹ In distinguishing the defendant's relied-upon cases, the court noted that the allegations sufficiently allege the defendant's responsibility where "[d]efendants knew that the uses for which they marketed, sold, and distributed PCB mixtures would result in leaching, leaking, and escaping their intended applications and contaminating (i.e., polluting)" state waters.²⁷⁰ "If Plaintiffs can prove their claims, Defendants should not be permitted to escape liability merely because they did not pour PCBs into the Commonwealth's environment first-hand."²⁷¹ The court found similar rulings from other jurisdictions persuasive.²⁷²

In addition to upstream resin producers, there may also be potential for liability among downstream actors. For instance, clothing containing plastic fibers is a demonstrable source of plastic in municipal water supplies.²⁷³ Plastic microfiber pollution produced by the laundering of synthetic textiles, which makes its way through municipal water treatment systems, is the main source of primary microplastics in the oceans — contributing up to 90 percent.²⁷⁴

At the end of their lifecycle, disposable plastics entering the waste stream can present another source of harm. Where landfills are likely contributing — via runoff and contamination of the local environment, including waterways — injunctive relief and remediation could be available.²⁷⁵ Damage to local ecosystems that support the local economy through tourism and fishery dollars may also be actionable,²⁷⁶ as are interferences with the ability to lead subsistence lifestyles.²⁷⁷

As with all modern consumer claims, litigants must take care to undertake a preemption analysis to ensure the availability of public nuisance claims has not been foreclosed or limited by federal statutes. Here, claims involving harms to waterways may implicate the Clean Water Act (CWA).²⁷⁸ While states retain some authority to establish liability for discharges within their boundaries, state nuisance claims are likely to be preempted where they seek to establish liability to an out-of-state point source that is permitted under the CWA.²⁷⁹ However, in instances such as these, the CWA itself can be a powerful tool for both private litigants and state's attorneys. For example, in 2018, the San Antonio Bay Estuarine Waterkeeper and Diane Wilson — a long-time environmental activist and 2023 Goldman Prize awardee — brought a suit against Formosa Plastics, alleging violations of the CWA involving the release of billions of pre-production plastic pellets, or "nurdles," into Lavaca Bay in Point Comfort, Texas.²⁸⁰ After the US District Court for

the Southern District of Texas found Formosa to be a “serial offender,”²⁸¹ Formosa Plastics Corp., Texas and Formosa Plastics Corp., USA settled the case for upward of USD \$50 Million — the largest settlement in the history of the CWA.²⁸²

While the CWA may apply to permitted discharges of plastics at the site of production, the CWA should not preclude claims concerning the inevitable leaching of plastics into the environment throughout their life cycle.²⁸³

Harms from Plastic–Polluted Air

A growing body of scientific evidence demonstrates how microscopic plastic particles suspended in the ambient air are a serious exposure pathway for humans and the environment.²⁸⁴

Like water pollution, air pollution is a cognizable harm firmly rooted in the nuisance jurisprudence.²⁸⁵ On the question of whether states have the ability to bring nuisance actions to curb industrial air pollution that harms public lands, the Supreme Court answered adamantly and affirmatively, yes.

“It is a fair and reasonable demand on the part of a sovereign that the air over its territory should not be polluted on a great scale by sulphurous acid gas, that the forests on its mountains, be they better

or worse, ... should not be further destroyed or threatened by the act of persons beyond its control, that the crops and orchards on its hills should not be endangered from the same source.”²⁸⁶

Because the federal Clean Air Act (CAA) governs some discharges of pollutants into the air, a preemption analysis needs to be conducted based on the specific harms alleged. However, micro- and nanoplastics are not currently covered in the CAA’s National Ambient Air Quality Standards (AAQS) for particulate matter,²⁸⁷ greatly reducing any risks of preemption for a variety of potential claims.

Recent climate litigation provides lessons about how litigants may navigate CAA preemption risks. Earlier cases raising nuisance claims under the *federal common law* were unsuccessful due to preemption barriers presented by the CAA for interstate CO₂ emissions.²⁸⁸ However, more recent suits have raised claims rooted in *state law* and have been comparatively successful at avoiding preemption — defeating industry attempts to remove cases to federal courts.²⁸⁹ Assuming no change to the status quo of existing EPA regulations under the CAA, presumably, federal common law claims for interstate air pollution from microplastics would not be displaced. Thus, it is possible that both state and federal public nuisance claims could be viable where causation could be established for specific defendants.

While more empirical work is yet to be done to map all of the major contributors to plastics air pollution, evidence exists with regard to the shed from tires.²⁹⁰ Assuming that mechanical recycling facilities fall outside of EPA regulations for stationary source review, proof of localized exposures caused by these facilities could also give rise to liability.²⁹¹

Because plastics are not subject to significant regulation under federal environmental laws, the risk of preemption in other contexts is relatively low.²⁹²

Plastic Pollution’s Public Health Impacts

One of the primary purposes of “public nuisance has been as a vehicle to enable public authorities to terminate conduct found to be harmful to the public health or welfare.”²⁹³ Over time, this has involved actions to *abate and prevent*²⁹⁴ harms posed by diseased animals,²⁹⁵ the maintenance of malarial ponds,²⁹⁶ contaminated food,²⁹⁷ lead paint,²⁹⁸ and more.²⁹⁹

One of the primary purposes of “public nuisance has been as a vehicle to enable public authorities to terminate conduct found to be harmful to the public health or welfare.”

Claims to address public health threats from consumer goods were famously brought into the public spotlight during the tobacco litigation of the 1990s. A number of states brought novel claims actions against major tobacco companies to recover health costs shouldered by their taxpayers, citing a provision of federal law concerning the liability of third parties responsible for the health costs of Medicaid recipients.³⁰⁰ While the underlying claims varied,³⁰¹ a number of states raised public nuisance claims in their complaints.³⁰² While the tobacco litigation is credited with normalizing this approach, all parties entered into a master settlement agreement before courts considered nuisance claims on the merits.³⁰³

The tobacco model has been replicated during the recent wave of pharmaceutical opioid litigation.³⁰⁴ While results at trial have been mixed,³⁰⁵ “the opioid litigation confirms the role of public nuisance as a *de facto* apparatus for addressing major public health issues.”³⁰⁶

Per Se Nuisance Defined by Statute

In addition to the traditional public rights recognized at common law, state and local legislative bodies have the ability to define specific acts or conditions that are *per se* violations. While nuisance originally developed through the courts, state and local legislatures have routinely adopted statutory definitions of the claim; these often involve a broad, generalized definition, which is sometimes accompanied by specific examples of conduct that falls within that umbrella.³⁰⁷ For instance, illegal drug use,³⁰⁸ gang activity,³⁰⁹ and maintaining breeding grounds for mosquitoes and bed bugs³¹⁰ are all specifically identified nuisances under various state laws.

The *per se* approach was recently applied to address climate harms in Multnomah County, Oregon, where the Board of County Commissioners passed a resolution declaring climate change a public nuisance, authorizing the County Attorney to pursue legal action to secure abatement and adaptation costs.³¹¹ That same day, the County filed suit against several oil majors, including Exxon Mobil, Shell, and Chevron, as well as the American Petroleum Institute (API).³¹² Removal arguments are ongoing, but assuming this case is returned to state court, as other climate cases have been, it could have far-reaching implications. By defining anthropogenic climate change as an ongoing public nuisance, the county has laid a clear path for alleging that the substantial emissions attributable to defendants represent an unreasonable interference with commonly held rights involving land and public health. If successful, the use of statutorily defined nuisances could be replicable to address the plastics crisis and pave the way for nuisance claims against its main contributors.

© Vitalii - stock.adobe.com



Nuisance and Plastics, What is on the Horizon

The New York and Baltimore cases represent the first wave of litigation to leverage the age-old common law tort of nuisance to address the wholly modern threats posed by the plastics industry. While these cases will continue to play out in court over the coming years, and their fate remains to be seen, they may ultimately serve as trailblazing examples that other states and localities can learn from and replicate.

Overall, the characteristics that have spurred the evolution and longevity of public nuisance — namely, its flexibility, adaptability, and a well-developed body of case law — are the same attributes that make it especially well suited for addressing the complex and far-reaching harms posed by the plastics crisis, which range from contamination of natural resources to threats to human health.

Products Liability

The harms inherent in plastics, and the industry’s collective failure to adequately warn of those harms across an enormous swath of consumer goods, provides fertile ground for a variety of products liability claims.

For any product liability claim to be viable, the product at issue must, 1) be defective, 2) that defect must have been present when it left the defendant’s control, and 3) the defect must be the proximate cause of the plaintiff’s injury.³¹³

There are three main types of defects that are raised in product liability suits: design defects, manufacturing defects, and warning/labeling defects.³¹⁴ Manufacturing defects occur when a product departs from its intended design, even if all possible care has been exercised.³¹⁵ For example, if a new car’s steering column fails,³¹⁶ or a clothing dryer suddenly catches on fire,³¹⁷ the defects at issue are likely to be malfunctions attributable to the assembly or construction of those individual items. A design defect occurs

when a product is manufactured according to its intended design, but the design specifications themselves create unreasonable risks.³¹⁸ Unlike manufacturing defect claims, which concern an individual product, design defects concern unreasonable risks presented across an entire product line.³¹⁹ A failure-to-warn defect occurs when reasonable instructions or warnings that could have reduced foreseeable risks of harm posed by the product were not provided.³²⁰

When alleging one of the three defects (design, manufacture, and warning), there are also multiple possible theories of recovery that may be available: negligence, strict liability, breach of warranty, and tortious misrepresentation.³²¹ Strict liability claims typically focus on the condition of the defective product, while negligence-based theories focus on the conduct of the parties.³²² Under a negligence theory, the analysis turns on whether 1) a defendant’s acts or failure to act caused an unreasonable risk of harm, and 2) whether the risk of harm was foreseeable.³²³ Strict liability claims, on the other hand, do not require plaintiffs to provide evidence of a defendant’s acts, omissions, and knowledge with the same level of specificity; instead, strict liability puts the onus on the manufacturer to prevent defective products from entering the stream of commerce.³²⁴ Since being articulated in the early 1960s, strict liability has become the prevailing approach to products liability litigation.³²⁵

Today, proving warranty, negligence, and strict liability may look strikingly similar in practical terms, but nuanced differences in how each theory is analyzed by courts of different jurisdictions should counsel plaintiffs to plead various theories in the alternative wherever possible.³²⁶

In the plastics context, where harms tend to flow from the accumulation of plastic waste or microplastics coming from multiple individual products, design and failure-to-warn defects will be most relevant.

Design Defects

Since most products may present dangers of some kind, courts have wrestled with how to determine whether unreasonable harms are attributable to a product’s design as opposed to some alternative or intervening cause. As product liability case law has matured, courts and commentators have attempted to categorize the various approaches to analyzing strict liability design defect cases, and articulate them through a series of legal tests.³²⁷ Courts will generally apply one of the following: the “consumer expectation” test,³²⁸ the “risk-utility” test,³²⁹ the “foreseeable use” test,³³⁰ or the “prudent manufacturer” test.³³¹ Sometimes, courts deploy a combination thereof.³³²

To date, the vast majority of product liability case law has been heavily influenced by the Second Restatement,³³³ which was primarily concerned with harms to consumers.³³⁴ Increasingly, courts are citing and considering portions of the Third Restatement, which clarifies that the universe of potential claimants extends beyond consumers to any person harmed by a defective product.³³⁵ While the restatements are not binding authority, they are regularly considered and adopted in whole or in part by reviewing courts. States and municipalities, therefore, may be able to consider product liability claims as consumers themselves,³³⁶ on behalf of their citizens and residents as consumers,³³⁷ or as affected third parties representing their own or their citizens’ interests.³³⁸ The shifting attitudes about who is eligible to bring strict liability claims, and to what extent negligence principles should extend into the realm of strict liability, are primary drivers of the shifting landscape of legal tests that may be deployed in any given jurisdiction³³⁹ and can have implications for the types of defenses available to defendants.³⁴⁰

Failure to Warn

Even where a product has been properly manufactured and designed, it may nevertheless be dangerous and likely to cause harm if improperly used. Under certain circumstances, a product may be deemed defective where warnings about its potentially dangerous applications or instructions for safe use are either absent or inadequate; these claims are generally categorized as “failure-to-warn” or “labeling” defects, which make up a large proportion of product liability claims.³⁴¹

A product is defective because of inadequate instructions or warnings when the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions or warnings, and the omission of the instructions or warnings renders the product not reasonably safe.³⁴² There is no duty to warn against “unknown or unknowable hazards,”³⁴³ and because liability is generally established at the time of manufacture and distribution, “state of the art” defenses may be available to defendants where harms are unknown.³⁴⁴ In some states, however, this does not abrogate a “post-sale duty to warn” as harms become known (or knowable).³⁴⁵ Moreover, there is also a duty “to adequately warn about dangers inherent in the product that are related to its ... reasonably foreseeable misuses.”³⁴⁶



© Michael, Flickr - CC BY 2.0

Design Defects and Failure to Warn in the Plastics Context

States and municipalities may increasingly turn to products liability to recoup damages or seek injunctive relief for the harms caused by plastics in their jurisdictions. Both the New York and Baltimore plastics cases have raised products liability claims to address harms caused by single-use plastic products.

The City of Baltimore includes both design defects and failure to warn in a suit concerning harms from cigarette butts. Baltimore argues that Defendants knew their product would result in litter “to an extent beyond which would be contemplated by an ordinary person” and that “cigarettes and their toxins lack the ability [to] deteriorate and would persist in the environment perpetually, rendering them defective and unreasonably dangerous to the flora and fauna of Baltimore City.”³⁴⁷

In its suit against PepsiCo, New York claims that consumers and the public at large are not aware of the “nature or extent of the harms caused by PepsiCo’s single-use plastic packaging,” and that PepsiCo failed, and continues to fail, “to adequately warn its consumers and the public of the known and foreseeable risks that follow from the intended use and foreseeable misuse of its single-use plastic packaging.”³⁴⁸

While these cases are in their infancy and are yet to be litigated on the merits — as are recent climate suits raising both design defect and failure-to-warn claims³⁴⁹ — they are well rooted in the products liability tradition, where suits involving plastics are not new.

Harms to Health

For instance, polyvinyl chloride — one of the earliest plastic polymers — emits toxic fumes when exposed to heat, and repeated exposures to those fumes can lead to chronic pulmonary disease and other health impacts.³⁵⁰

Where individual plaintiffs have been able to demonstrate discrete harms, manufacturers have been found liable for design and failure-to-warn defects where it was foreseeable that products would be exposed to high heat.³⁵¹ In at least one instance, workers in meat packaging plants brought successful claims where meat wrapping film cut by a hot wire caused routine exposures to toxic fumes, ultimately leading to a chronic lung condition colloquially referred to as meat wrapper’s asthma.³⁵² Sellers of products containing vinyl chloride have similarly been found liable under negligence and breach of warranty theories for subsequent injuries from toxic fumes.³⁵³

The human health impacts of plastics exposure may give rise to litigation as the medical and scientific communities are increasingly making connections between exposures to micro- and nanoplastics and individual health harms.³⁵⁴ While individual plaintiffs would face steep challenges in adequately showing causation,³⁵⁵ states and municipalities have the opportunity to aggregate healthcare costs and data in a manner beyond the capacity of individual persons. This approach was most notably effective in tobacco litigation,³⁵⁶ and as the health impacts of plastics are further identified³⁵⁷ and financially quantified,³⁵⁸ may prove valuable in the plastics context.

Environmental Harms

Other forms of environmental contamination may also be ripe for product liability claims. There are many examples of suits involving similarly widespread harms caused by PCBs,³⁵⁹ MTBE,³⁶⁰ and asbestos³⁶¹ surviving the motion to dismiss stage. Perhaps most instructive is the recent successful litigation brought by state and local entities raising products liability claims to address harms caused by PCBs, a class of synthetic chemicals that were used in hundreds of applications during the 20th century before ultimately being banned under the Toxic Substances Control Act (TSCA) in 1979.³⁶²

For example, Pennsylvania successfully raised design defects and failure-to-warn claims against Monsanto, the primary manufacturer of PCBs in the US from 1929 through 1979.³⁶³ The Commonwealth Court of Pennsylvania held that Pennsylvania had standing under the doctrine of *parens patriae*,³⁶⁴ and refused to artificially limit the doctrine’s application to public nuisance claims.³⁶⁵ In denying Monsanto’s objections to Pennsylvania’s product liability claims, the court cited well-pled allegations in the complaint that are strikingly similar to those one might expect to see raised in a future plastics case. For instance, design defect arguments were supported, in part, by the following facts:

- The “toxicity, ability to bio-accumulate, inability to be contained, and environmental persistence” of the defendants’ products rendered them “unreasonably dangerous at all times.”³⁶⁶
- At the time of manufacture and sale, Defendants “knew or should have known” that their products “were likely to ... cause toxic contamination of the Commonwealth’s natural resources”³⁶⁷ and knew they were unsafe because of “information and evidence available to [Defendants]” that associated exposures to their products “with adverse human and animal health effects,” and “the overwhelming seriousness of creating widespread environmental contamination.”³⁶⁸
- Practical and feasible alternative designs capable of reducing the Commonwealth’s injuries were available.³⁶⁹
- Ongoing injuries to the well-being of citizens and harms to the public’s “free use and comfortable enjoyment of the Commonwealth’s natural resources for commerce, navigation, fishing, recreation, and aesthetic enjoyment” were attributable to the Defendants’ conduct.³⁷⁰

Critically, Pennsylvania does not extend strict liability for foreseeable misuse, as other jurisdictions do.³⁷¹ Nonetheless, the court could not declare that “PCB dumping, spillage, and disposal” resulting in environmental contamination of the commonwealth “are not intended nor logical extensions of the actionable uses of Defendants’ PCB products.”³⁷² This conclusion may run parallel to the known and expected fate of plastics in the environment, a consequence of plastic production and sale that has been evident for decades.

Finally, resin producers and consumer goods companies have failed to warn the public about the true costs of managing plastic waste, the insurmountable challenges of recyclability, and plastics’ degradability and toxicity. There is increasing evidence that industry knew about many of these inherent dangers since the dawn of the post-WWII era.³⁷³ In the PCB context, similar industry knowledge was material to the success of failure-to-warn claims.³⁷⁴ Reviewing courts have accepted allegations that despite industry’s knowledge of the dangers inherent in PCBs as early as the 1930s, defendants not only failed to provide adequate warnings, but “intentionally concealed information in order to maximize profits,” and “knowingly failed to issue warnings or instructions concerning the environmental and human health dangers of” their products.³⁷⁵

Moreover, not only are there serious questions about whether industry labeling practices have communicated risks, but labeling practices have likely sown confusion in consumers about recyclability.³⁷⁶ It is plausible that reviewing courts, as they did in early asbestos cases, could find that warnings have failed to adequately communicate risks in a manner fit for the gravity of the harms presented.³⁷⁷ As knowledge about the harms of plastics grows, manufacturers may have a “continuing duty to warn of dangers” they become aware of after their products are sold.³⁷⁸

Consumer Protection, Unfair Practices, and Greenwashing

States and municipalities may seek to use consumer protection laws to directly address harms resulting from misrepresentations made by the plastics industry as a whole, or its members. While elements of misrepresentation can factor into nuisance and products liability claims, the set of laws protecting consumers from deceptive advertising, unfair business practices, and corporate greenwashing provide a route to directly engage with such misrepresentations. With respect to plastic, claims about the recyclability and likelihood of products being recycled, the nature of their contributions to microplastic pollution, and the toxicity of certain plastics may be ripe for claims under consumer protection law.

Various consumer protection laws, both state and federal, prohibit fraudulent, deceptive, and misleading statements made to promote products for sale to consumers. To date, these laws have been central in high-profile litigation and enforcement efforts concerning consumer products such as tobacco³⁷⁹ and prescription opioids.³⁸⁰

In the plastics context, these laws may be relevant where instances of greenwashing are alleged. To date, plastic producers, FMCG companies, and their trade associations have marketed, promoted, and sold their products to consumers while simultaneously promoting recycling to create an impression that recycling was the solution to the plastics crisis. To the extent industry makes public misrepresentations about the recyclability, sustainability, or safety of their products, these statutes could be implicated.

False and deceptive advertising is governed at the federal level through law and regulation. The Lanham Act prohibits false advertising and provides a private right of action for plaintiffs.³⁸¹ Additionally, the Federal Trade Commission

Act (FTC Act) prohibits “unfair or deceptive acts or practices,” which it defines as acts that are likely to mislead consumers or would cause substantial and unavoidable injuries to consumers.³⁸² Corresponding federal regulations, colloquially referred to as the ‘Green Guides,’ specifically prohibit misrepresentations about the recyclability and recycled content of consumer goods.³⁸³ While the FTC Act does not provide a private right of action for civil litigants,³⁸⁴ individuals may petition the FTC to initiate investigations,³⁸⁵ and successful enforcement actions can result in hefty penalties.³⁸⁶

In the early 1990s, the FTC examined the presence of resin identification codes on consumer products.³⁸⁷ The design of the resin codes was suggestive of the “chasing arrows” recycling symbol and arguably created confusion with the general public about the recyclability of plastic containers ubiquitous in everyday life, such as food packaging and disposable plastic bottles.

In addition to federal authorities, every state has its own consumer protection laws restricting unfair and deceptive acts or practices in commerce.³⁸⁸ Typically, state attorneys general are tasked with enforcing these laws, and, in some instances, state attorneys may bring claims on behalf of a class of affected consumers.³⁸⁹ Many of these laws provide civil causes of action for private litigants, and some states, such as California, have explicitly incorporated the FTC’s Green Guides into state law.³⁹⁰

There are already examples of consumer protection laws being deployed in plastics litigation where misleading statements with regard to recyclability, compostability, or biodegradability are alleged. In *Smith v. Keurig Green Mountain*, a challenge under California law concerning the claimed recyclability claims of K-Cups’ single-use, disposable coffee pods resulted in a monetary settlement and mandatory disclaimers on Keurig products about the inability to recycle in many localities.³⁹¹ In other instances, cognizable claims have been raised where products are marketed

as recyclable while being incompatible with local recycling facilities. Such claims include instances where products lack resin identification codes, making them impossible to be sorted and processed,³⁹² or where the type of plastic resin used in the material cannot be processed.³⁹³

States and municipalities may seek to use consumer protection laws to directly address harms resulting from misrepresentations made by the plastics industry as a whole, or its members.

Finally, as climate litigation progresses, there may be lessons to learn about how disinformation campaigns and industry efforts to obscure widespread harm from their products might be challenged in court. In the climate space, investigative reporting has shined a light on the oil and gas industry’s knowledge of climate change, and their decades-long disinformation campaign to obscure the role fossil fuels have played in the climate crisis.³⁹⁴ Now, attorneys general from several states are leveraging state consumer protection laws to address associated harms to the public. For instance, California alleges that industry defendants affirmatively misled the public and cast doubt on climate science.³⁹⁵ Similarly, the City of Chicago argues that its defendants “had abundant knowledge that fossil fuel products and their derivatives caused and continue to cause Climate-Related Harms, and actively campaigned to keep that knowledge from becoming open and obvious.”³⁹⁶ Additional states and localities raising consumer protection claims in the climate context include: Vermont,³⁹⁷ Massachusetts,³⁹⁸ Connecticut,³⁹⁹ New York City,⁴⁰⁰ and Washington D.C.⁴⁰¹ Similar litigation strategies may already be feasible and will only become more viable as similar false and misleading statements, or material omissions with regard to plastic products’ negative effects on the environment, come to light.

Legal Tools Available for Cities and States

As plastic pollution accumulates, and its associated harms increasingly come into focus, states and municipalities are uniquely positioned to develop a robust factual record toward successful cases. States and municipalities have the opportunity to gather information and acquire evidence that is distinct from, or may be unavailable to, other impacted groups, individuals, or entities. In particular, they have a great structural ability to quantify harms that affect community landscapes and municipal systems, as well as the legal tools to access information from would-be defendants.

Quantifying Plastics’ Harms

States and municipalities have important opportunities to quantify the harms caused by plastic within their jurisdictions, and doing so can lay the basis for legal claims. As the entities with responsibility and oversight of waste management, public spaces, waterways, drainage systems, and more — governments have the ability to track the consolidated impacts of plastic pollution. This can include costs to purchase, maintain, repair, or replace any equipment or infrastructure impacted by plastics, tabulation of the quantifiable natural resource damage that plastics cause, or calculation of labor costs for public employees’ time and effort put into the collection of plastic waste and cleaning of public spaces.

Methodologies for tracking plastic waste have been developed and are already being used in litigation.⁴⁰² The Break Free From Plastic brand audits, as well as other forms of public waste collection, have demonstrated that the sources of waste can be identified and individuated, and that plastic waste can be measured and weighed by jurisdiction to make evident the burden of plastic on public systems.⁴⁰³ Quantifying plastic waste by jurisdiction can build evidence upon which plastic resin producers and FMCG companies can be held accountable for their roles in the plastics crisis.

It is critical that cities and states not only measure the plastic itself, but also the financial impact of managing or responding to plastic pollution. Audits and budget reviews can reveal financial impacts such as additional costs for waste management, cleanup costs, damages to waste management equipment, fishery productivity, natural resource damages, or even changes in tourism. The documentation and quantification of these resources can put numbers to the impacts that plastics have on a specific jurisdiction.

Acquiring Evidence

As more evidence emerges, there is the opportunity to better understand the role of corporate actors in the plastics crisis. Some of this evidence will result from ongoing litigation, whereby cases already in progress shed light on behavior affecting other jurisdictions beyond those party to the litigation. However, public attorneys have additional opportunities to seek evidence where there is likelihood of wrongdoing before litigation even begins. Through the use of civil investigative demands, states and municipalities may find the factual records needed to identify avenues for redressing harm.

Public attorneys have significant powers of enforcement and investigation.

Public attorneys have significant powers of enforcement and investigation. In the course of investigating certain violations of law, state attorneys general and city attorneys can issue civil investigative demands (CIDs) for the production of reports and documentary material or evidence, and to interview witnesses under oath, among other actions.

State laws on CIDs vary but generally allow the attorney general, or other public attorneys, to investigate violations prior to a complaint and formal discovery process. This authority is often seen in the context of, but is not limited to, consumer protection law. Authorizing statutes generally provide a great deal of discretion to initiate investigations on the belief that violations of law may have occurred, may be occurring, or may occur. CIDs must comply with the law around subpoenas generally, such as “those against self-incrimination, unreasonable search and seizure, and due process of law.”⁴⁰⁴ Noncompliance with CIDs generally provides grounds to seek a court order to compel compliance, and further noncompliance would be grounds for punishment as contempt of court.

Recent experience has shown courts willing to enforce such demands in the climate context. The Commonwealth of Massachusetts brought a consumer and investor fraud lawsuit against ExxonMobil, alleging the company misled consumers and investors about its role in the climate crisis.⁴⁰⁵ After serving ExxonMobil with a civil investigative demand,⁴⁰⁶ which requested documentation and testimony under oath, the company failed to comply with the investigation and sued the Commonwealth in state and federal court. The Massachusetts Superior Court, however, eventually ordered ExxonMobil to comply with the State’s investigation.⁴⁰⁷ Similarly, when the State of New York initiated a similar investigation of ExxonMobil, the company was ordered to produce the requested documents.⁴⁰⁸



In the plastics context, as of this writing (June 2024), California Attorney General Rob Bonta has launched an investigation and subpoena against ExxonMobil for its role in the global plastics crisis.⁴⁰⁹ The Office of the Attorney General states that the petrochemical and fossil fuel industries have promoted the development of plastics for decades, and campaigned to undermine consumers’ understanding of how dangerous their plastic products are. In California specifically, Attorney General Bonta states that plastics have blighted the landscapes, caused harm to wildlife, poisoned the environment, infiltrated the state’s waterways, and polluted the state’s beaches, rivers, bays, and ocean waters. In the investigation, the state is examining the role played by fossil fuel and petrochemical industry actors in their efforts to deceive the public.⁴¹⁰ This investigation targets specifically those companies that have caused and exacerbated the plastic pollution

crisis, as well as their role in perpetuating false claims about recycling, given the low recycling rate in the country.⁴¹¹ This type of investigation can be replicated and specified based on unique harms to the respective jurisdiction.

Public attorneys may also make use of evidentiary and analytical resources beyond their immediate offices, as appropriate, and in coordination with other government agencies. This can expand the ability of attorneys’ offices to process evidence when factual records are significant or complex. One notable example of this kind of assistance comes from tobacco litigation, where New York State auditors, via the state’s comptroller, assisted several states’ attorneys general in preparing evidence.⁴¹² Though capacities are not identical, such resources do exist and can be effectively employed.



© Johnny Silvercloud, Flickr - CCBY-SA 2.0

Conclusion and Recommendations

The harms of the plastics crisis are numerous, diverse, costly, and rapidly growing. State, county, and municipal governments are currently at the forefront of assessing, addressing, and paying for these harms. Governments spend time, money, and resources to combat an issue created by the companies that produce and market plastics and disposable plastic products. Substantial and rising evidence indicates these companies have known, or should have known for decades, about the negative impacts that would result from their products, their operations, as well as their marketing and public relations campaigns.

Resin producers and FMCG companies have sought to shift blame and responsibility to consumers for the plastics crisis that they, in fact, created. For decades, the plastic industry has deflected responsibility, implying that everyone, and thus no one, is equally responsible for the plastics crisis. They have propped this evasion up by perpetuating the myth that recycling plastics can, and will, sufficiently manage the end-of-life disposal of their products. But plastic recycling

is an overwhelming failure amid an ever-rising tide of throwaway plastics. This should be unsurprising to the plastics industry, which has known of recycling's deficiencies for decades. Meanwhile, municipal, county, and state waste management systems are left overburdened and unequipped to handle the increased waste and the concomitant microplastic pollution flowing from plastic proliferation.

As states and municipalities evaluate whether, and from whom, to seek compensation and redress for the costs and impacts of plastic pollution, they are likely to turn to courts. Longstanding and well-established legal doctrines governing public and private nuisance, products liability, and consumer protection provide promising pathways for public actors in determining whether, and to what degree, corporate actors may be accountable for any or all harms caused by plastic pollution in its many forms. By calculating and quantifying the material impacts of the plastics crisis, states and municipalities can expand the factual, methodological, evidentiary, and legal bases for claims to hold companies responsible for the harms they have caused. Such legal efforts are significantly advanced in the climate context and are already underway in the realm of plastics.

© University College London, Flickr - CC BY 2.0



In light of the foregoing, states, counties, and municipalities grappling with the impacts of the plastics crisis should consider, *inter alia*, the following measures:

1.

Quantify and keep record of costs related to plastic pollution. This can include, but is not limited to:

- **Waste management costs**, especially additional collection and disposal costs for plastics that are unrecyclable, or have no market into which to be recycled.
- **Cleanup costs for plastic pollution**, including visible plastic waste in public areas, microplastics in water treatment facilities, or spills of pre-production plastic pellets.
- **Drainage and water management expenses**, including additional costs to remove plastics from waterways and water management systems, as well as the damages from plastic-exacerbated flooding.
- **Infrastructure investments** required to manage or adapt to the pervasive presence of plastic pollution, both within and outside waste streams, water treatment and supply systems, as well as floodwater prevention and management systems.
- **Economic loss** from reduced tourism, impacts to fisheries, and other economic activities bespoiled by plastic pollution.
- **Ecosystem preservation and restoration costs** for environments and natural resources damaged by an inundation of macro- or microplastics.
- **Healthcare costs**, including testing and monitoring costs, for illnesses known or suspected to be caused or exacerbated by plastic pollution — such as some cancers and cardiovascular disease.

2.

Build a public record of the resin types, product forms, and brands of plastic waste found during cleanups and over the course of waste management. This can include the incorporation of citizen science — such as Break Free From Plastic brand audits,⁴¹³ or other public cleanup efforts — into official records, supported by the application of formal governmental procedures and chains of custody for data and evidence.

3.

Consider declaring forms of plastic pollution a public nuisance to codify public concern over existing harms and improve opportunities for redress.

4.

Consider initiating investigations for jurisdiction-specific malfeasance on the part of resin manufacturers or fast-moving consumer goods companies, if appropriate. While the public record of industry behavior grows by the day, state- and municipality-specific knowledge and actions on the part of specific companies may vary by location.

Endnotes

- See Laura Sullivan, *How Big Oil Misled The Public Into Believing Plastic Would Be Recycled*, NPR, Sep. 11, 2020, <https://www.npr.org/2020/09/11/897692090/how-big-oil-misled-the-public-into-believing-plastic-would-be-recycled>.
- See e.g., CIEL, *Plastic Industry Awareness of the Ocean Plastics Problem*, 5 (2017), <https://www.ciel.org/wp-content/uploads/2017/09/Fueling-Plastics-Plastic-Industry-Awareness-of-the-Ocean-Plastics-Problem.pdf>; JOHN HOCEVAR, *Circular Claims Fall Flat: Comprehensive U.S. Survey of Plastics Recyclability*, (2020), <https://www.greenpeace.org/usa/wp-content/uploads/2020/02/Greenpeace-Report-Circular-Claims-Fall-Flat.pdf>; DAVIS ALLEN ET AL., *The Fraud of Plastic Recycling: How Big Oil and the Plastics Industry Deceived the Public for Decades and Caused the Plastic Waste Crisis*, (2024), <https://climateintegrity.org/uploads/media/Fraud-of-Plastic-Recycling-2024.pdf>.
- BASEL ACTION NETWORK, *US Export Data: 2023 Annual Summary*, (2024), <https://www.ban.org/plastic-waste-project-hub/trade-data/usa-export-data-annual-summary> (last visited Mar 29, 2024).
- Id.
- OECD, *GLOBAL PLASTICS OUTLOOK: ECONOMIC DRIVERS, ENVIRONMENTAL IMPACTS AND POLICY OPTIONS 34* (2022), https://www.oecd-ilibrary.org/environment/global-plastics-outlook_de747aef-en (last visited Apr 22, 2024).
- Fredric Bauer et al., *Petrochemicals and Climate Change: Powerful Fossil Fuel Lock-Ins and Interventions for Transformative Change*, 130 ENVIRON. ENERGY SYST. STUD. LUND UNIV., 18 (2023), https://lucris.lub.lu.se/ws/portalfiles/portal/146757003/LU_IVL_2023_petrochem_web.pdf. See also ALEXANDRA SHAYKEVICH ET AL., *Feeding the Plastics Industrial Complex: Taking Public Subsidies, Breaking Pollution Limits*, 54–56 (2024), <https://environmentalintegrity.org/wp-content/uploads/2024/03/Feeding-the-Plastics-Industrial-Complex-3.14.24.pdf>.
- CIEL, *How Fracked Gas, Cheap Oil and Unburnable Coal Are Driving the Plastics Boom*, 3 (2017), <https://www.ciel.org/wp-content/uploads/2017/09/Fueling-Plastics-How-Fracked-Gas-Cheap-Oil-and-Unburnable-Coal-are-Driving-the-Plastics-Boom.pdf>; Beth Gardiner, *Europe's Plastics Industry Is about to Boom. U.S. Fracking Is Driving It.*, NATIONAL GEOGRAPHIC, Mar. 25, 2021, <https://www.nationalgeographic.com/environment/article/europe-plastics-industry-about-to-boom-us-fracking-driving-it> (last visited Mar 29, 2024).
- Roland Geyer, Jenna R. Jambeck & Kara Lavender Law, *Production, Use, and Fate of All Plastics Ever Made*, 3 SCI. ADV. (2017), <https://www.science.org/doi/10.1126/sciadv.1700782> (last visited Apr 22, 2024).
- OECD, *supra* note 5, at 19.
- Geyer, Jambeck, and Law, *supra* note 8, at Table SI.; HANNAH RITCHIE, VERONIKA SAMBORSKA & MAX ROSER, *Plastic Pollution*, (2023), <https://ourworldindata.org/plastic-pollution> (last visited May 10, 2024).
- See CIEL ET AL., *Plastic & Climate: The Hidden Costs of a Plastic Planet*, 8 (2019), <https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf>. See also PLASTICS EUROPE, *Plastics – the Fast Facts 2023*, 2 (2023), <https://plasticseurope.org/knowledge-hub/plastics-the-fast-facts-2023/> (last visited Mar 29, 2024) (identifying only 0.5% of plastics as bio-based).
- CIEL, *Untested Assumptions and Unanswered Questions in the Plastics Boom*, 5 (2018), <https://www.ciel.org/wp-content/uploads/2018/04/Fueling-Plastics-Untested-Assumptions-and-Unanswered-Questions-in-the-Plastics-Boom.pdf>. See also NIHAN KARALI, NINA KHANNA & NIHAR SHAH, *Climate Impact of Primary Plastic Production*, (2024), <https://escholarship.org/uc/item/12s624vf>. See also CIEL, *Beyond Recycling: Reckoning with Plastics in a Circular Economy*, (2023), <https://www.ciel.org/reports/circular-economy-analysis/>.
- See CIEL, *supra* note 12.
- AMERICAN CHEMISTRY COUNCIL, *2019 Guide to the Business of Chemistry*, 20 (2019), <https://www.americanchemistry.com/chemistry-in-america/data-industry-statistics/resources/2019-guide-to-the-business-of-chemistry> (last visited May 13, 2024) (reported as 108,183 million pounds).
- AMERICAN CHEMISTRY COUNCIL, *2023 Guide to the Business of Chemistry*, 26 (2023), <https://www.americanchemistry.com/chemistry-in-america/news-trends/press-release/2023/acc-publishes-2023-guide-to-the-business-of-chemistry> (last visited May 13, 2024). See also AMERICAN CHEMISTRY COUNCIL, *2022 Resin Situation and Trends*, (2023), <https://www.americanchemistry.com/chemistry-in-america/data-industry-statistics/statistics-on-the-plastic-resins-industry/resources/2022-resin-situation-and-trends> (last visited Mar 29, 2024).
- INTERNATIONAL ENERGY AGENCY, *World Energy Outlook 2021: Fuels: Old and New*, 73 (2021), <https://www.iea.org/reports/world-energy-outlook-2021/fuels-old-and-new> (last visited Mar 29, 2024).
- WORLD HEALTH ORGANIZATION, *Dietary and Inhalation Exposure to Nano- and Microplastic Particles and Potential Implications for Human Health*, (2022), <https://www.who.int/publications/i/item/9789240054608>.
- See CIEL, *Sowing a Plastic Planet: How Microplastics in Agrochemicals Are Affecting Our Soils, Our Food, and Our Future*, (2022), <https://www.ciel.org/reports/microplastics-in-agrochemicals/>; CIEL, *Breathing Plastic: The Health Impacts of Invisible Plastics in the Air*, (2023), <https://www.ciel.org/reports/airborne-microplastics-briefing/>.
- OECD, *supra* note 5, at 19.
- U.S. ENVIRONMENTAL PROTECTION AGENCY, *Draft National Strategy to Prevent Plastic Pollution*, 6 (2023), https://www.epa.gov/system/files/documents/2023-04/Draft_National_Strategy_to_Prevent_Plastic_Pollution.pdf.
- Id.
- OECD, *supra* note 5, at 20.
- Id.
- CIEL ET AL., *Plastic & Health: The Hidden Costs of a Plastic Planet*, 18 (2019), <https://www.ciel.org/wp-content/uploads/2019/02/Plastic-and-Health-The-Hidden-Costs-of-a-Plastic-Planet-February-2019.pdf>.
- Id. at 44.
- John N. Hahladakis et al., *An Overview of Chemical Additives Present in Plastics: Migration, Release, Fate and Environmental Impact during Their Use, Disposal and Recycling*, 344 J. HAZARD. MATER. 179, 184 (2018), <https://linkinghub.elsevier.com/retrieve/pii/S030438941730763X> (last visited Apr 22, 2024).
- WORLD HEALTH ORGANIZATION, *Microplastics in Drinking-Water*, (2019), <https://www.who.int/publications/i/item/9789241516198>.
- See Philippa D. Darbre, *Chemical Components of Plastics as Endocrine Disruptors: Overview and Commentary*, 112 BRTH DEFECTS RES. 1300 (2020), <https://onlinelibrary.wiley.com/doi/10.1002/bdr2.1778> (last visited Apr 22, 2024).
- See Tracey J. Woodruff, *Health Effects of Fossil Fuel–Derived Endocrine Disruptors*, 390 N. ENGL. J. MED. 922 (2024), <http://www.nejm.org/doi/10.1056/NEJMra2300476> (last visited Apr 22, 2024).
- Food & Drug Administration, *Indirect Food Additives: Polymers* (77 FR 41899), 21 CFR 177.41899 (2012), <https://www.federalregister.gov/documents/2012/07/17/2012-17366/indirect-food-additives-polymers>.
- Food Packaging Forum, *European Commission Publishes Bisphenol Restriction Proposal for FCMS*, Feb. 12, 2024, <https://www.foodpackagingforum.org/news/european-commission-publishes-bisphenol-restriction-proposal-for-fcms> (last visited Apr 26, 2024).
- See Maddison Carbery, Wayne O'Connor & Thavamani Palanisami, *Trophic Transfer of Microplastics and Mixed Contaminants in the Marine Food Web and Implications for Human Health*, 115 ENVIRON. INT. 400 (2018), <https://linkinghub.elsevier.com/retrieve/pii/S0160412017322298> (last visited Apr 22, 2024). See also Luca Gallitelli, Agnese Zauli & Massimiliano Scalici, *Another One Bites the Plastics*, 12 ECOL. EVOL. e9332 (2022), <https://onlinelibrary.wiley.com/doi/10.1002/ece3.9332> (last visited Apr 22, 2024).
- Rakesh Kumar et al., *Impacts of Plastic Pollution on Ecosystem Services, Sustainable Development Goals, and Need to Focus on Circular Economy and Policy Interventions*, 13 SUSTAINABILITY 9963, 9968 (2021), <https://www.mdpi.com/2071-1050/13/17/9963> (last visited Apr 22, 2024).
- Sumei Li et al., *Pollution and Distribution of Microplastics in Grassland Soils of Qinghai–Tibet Plateau, China*, 11 TOXICS 86, 9–10 (2023), <https://www.mdpi.com/2305-6304/11/1/86> (last visited Apr 22, 2024). See also Patrick Baan & Theo Elzenga, *Microplastic Pollution in Dry Floodplain Grassland: Impact on Plant Community Structure and Oxidative Stress* MSC Report (2023), <https://rgdoi.net/10.13140/RG.2.2.26783.64163> (last visited Apr 22, 2024); Nasrin Gharahi & Rasool Zamani-Ahmad-mahmoodi, *Effect of Plastic Pollution in Soil Properties and Growth of Grass Species in Semi-Arid Regions: A Laboratory Experiment*, 29 ENVIRON. SCI. POLLUT. RES. 59118 (2022), <https://link.springer.com/10.1007/s11356-022-19373-x> (last visited Apr 22, 2024).
- See Collin J. Weber, Matthias C. Rillig & Moritz Bigalke, *Mind the Gap: Forest Soils as a Hidden Hub for Global Micro- and Nanoplastic Pollution*, 3 MICROPLASTICS NANOPLASTICS 19 (2023), <https://microplastics.springeropen.com/articles/10.1186/s43591-023-00067-1> (last visited Apr 22, 2024). See also Neelabh Datta, *Forests and Plastic Wastes: A Natural Parasitic Relationship with the Concept of Sustainable Forestry*, 2 J. SUSTAIN. MATER. PROCESS. MANAG. 47 (2022), <https://publisher.uthm.edu.my/ojs/index.php/jstpm/article/view/11114/4936>.
- Hongwei Yu et al., *Microplastic Residues in Wetland Ecosystems: Do They Truly Threaten the Plant-Microbe-Soil System?*, 156 ENVIRON. INT. 106708, 8 (2021), <https://linkinghub.elsevier.com/retrieve/pii/S0160412021003330> (last visited Apr 22, 2024). See also: Niu Li et al., *A Review on Microplastics Pollution in Coastal Wetlands*, 5 WATERSHED ECOL. ENVIRON. 24 (2023), <https://linkinghub.elsevier.com/retrieve/pii/S2589471422000213> (last visited Apr 22, 2024); Sylvester T. Cortes & Julie B. Otadoy, *Drivers and Impacts of Microplastics in Estuaries*, 8 J. SCI. ENG. TECHNOL. JSET 41 (2020), <https://journals.southernmex-testateu.edu.ph/index.php/jset/article/view/61> (last visited Apr 22, 2024).
- H.P.S. Jayapala et al., *Ecological Ramifications of Marine Debris in Mangrove Ecosystems: Estimation of Substrate Coverage and Physical Effects of Marine Debris on Mangrove Ecosystem in Negombo Lagoon, Sri Lanka*, 201 MAR. POLLUT. BULL. 116184, 6 (2024), <https://linkinghub.elsevier.com/retrieve/pii/S0025326X24001619> (last visited May 14, 2024).
- Melanie Bergmann et al., *Plastic Pollution in the Arctic*, 3 NAT. REV. EARTH ENVIRON. 323, 330–332 (2022), <https://www.nature.com/articles/s43017-022-00279-8> (last visited Apr 22, 2024).
- Marcus Eriksen et al., *The Plight of Camels Eating Plastic Waste*, 185 J. ARID ENVIRON. 104374 (2021), <https://linkinghub.elsevier.com/retrieve/pii/S0140196320302731> (last visited Apr 22, 2024).
- OECD, *The Cost of Preventing Ocean Plastic Pollution*, 190 16 (2022), https://www.oecd-ilibrary.org/environment/the-cost-of-preventing-ocean-plastic-pollution_5c41963b-en (last visited Apr 22, 2024).
- Stephanie B. Borrelle et al., *Predicted Growth in Plastic Waste Exceeds Efforts to Mitigate Plastic Pollution*, 369 SCIENCE 1515, 1516 (2020), <https://www.science.org/doi/10.1126/science.aba3656> (last visited Apr 26, 2024).
- Marcus Eriksen et al., *A Growing Plastic Smog, Now Estimated to Be over 170 Trillion Plastic Particles Afloat in the World's Oceans—Urgent Solutions Required*, 18 PLOS ONE e0281596, 5 (2023), <https://dx.plos.org/10.1371/journal.pone.0281596> (last visited Apr 22, 2024).
- See Joleah B. Lamb et al., *Plastic Waste Associated with Disease on Coral Reefs*, 359 SCIENCE 460 (2018), <https://www.science.org/doi/10.1126/science.aar3320> (last visited Apr 22, 2024); Hudson T. Pinheiro et al., *Plastic Pollution on the World's Coral Reefs*, 619 NATURE 311 (2023), <https://www.nature.com/articles/s41586-023-06113-5> (last visited Apr 22, 2024); U.S. Environmental Protection Agency, *Tiny Plastics, Big Threat: How Are Microplastics Impacting Our Coral Reefs?*, SCIENCE MATTERS (Nov. 30, 2021), <https://www.epa.gov/sciencematters/tiny-plastics-big-threat-how-are-microplastics-impacting-our-coral-reefs> (last visited Mar 29, 2024).
- See Javier Lloret et al., *Salt Marsh Sediments Act as Sinks for Microplastics and Reveal Effects of Current and Historical Land Use Changes*, 4 ENVIRON. ADV. 100060 (2021), <https://linkinghub.elsevier.com/retrieve/pii/S2666765721000314> (last visited Apr 22, 2024).
- Klára Cverenkárová et al., *Microplastics in the Food Chain*, 11 LIFE 1349, 4–6 (2021), <https://www.mdpi.com/2075-1729/11/12/1349> (last visited Apr 22, 2024).
- FAO, *Microplastics in Fisheries and Aquaculture*, 3 (2017), <https://openknowledge.fao.org/server/api/core/bitstreams/4bcd8844-c17b-42ff-97da-d2e540733118/content>.
- See Meredith Evans Seeley et al., *Microplastics Exacerbate Virus-Mediated Mortality in Fish*, 866 SCI. TOTAL ENVIRON. 161191 (2023), <https://linkinghub.elsevier.com/retrieve/pii/S004896972208295X> (last visited Apr 22, 2024).
- Matthew S. Savoca et al., *Odours from Marine Plastic Debris Induce Food Search Behaviours in a Forage Fish*, 284 PROC. R. SOC. B BIOL. SCI. 20171000 (2017), <https://royalsocietypublishing.org/doi/10.1098/rspb.2017.1000> (last visited May 17, 2024).
- Cverenkárová et al., *supra* note 45.
- N K Y Susanti, A Mardiatusti & Y Wardiatno, *Microplastics and the Impact of Plastic on Wildlife: A Literature Review*, 528 IOP CONF. SER. EARTH ENVIRON. SCI. 012013, 4 (2020), <https://iopscience.iop.org/article/10.1088/1755-1315/528/1/012013> (last visited Apr 22, 2024).
- Yelim Moon et al., *What Type of Plastic Do Sea Turtles in Korean Waters Mainly Ingest? Quantity, Shape, Color, Size, Polymer Composition, and Original Usage*, 298 ENVIRON. POLLUT. 118849 (2022), <https://linkinghub.elsevier.com/retrieve/pii/S026974912200063X> (last visited Apr 22, 2024).
- Laura J. Zantis et al., *Marine Mammals and Microplastics: A Systematic Review and Call for Standardisation*, 269 ENVIRON. POLLUT. 116142 (2021), <https://linkinghub.elsevier.com/retrieve/pii/S0269749120368317> (last visited Apr 22, 2024).
- Janice Brahney et al., *Plastic Rain in Protected Areas of the United States*, 368 SCIENCE 1257 (2020), <https://www.science.org/doi/10.1126/science.aaz5819> (last visited Jun 10, 2024).
- SUSAN MORSE, *Oceans of Trash: Marine Debris Threatens Our Oceans and Wildlife. Here's How You Can Help.*, <https://www.fws.gov/story/oceans-trash> (last visited Mar 29, 2024).
- Jim Kurth, *Marine Debris and Wildlife: Impacts, Sources, and Solutions*, (2016), <https://www.doi.gov/oc/marine-debris> (last visited Mar 29, 2024).
- See generally CIEL, *supra* note 18.
- Yize Wang et al., *Airborne Hydrophilic Microplastics in Cloud Water at High Altitudes and Their Role in Cloud Formation*, 21 ENVIRON. CHEM. LETT. 3055 (2023), <https://link.springer.com/10.1007/s10311-023-01626-x> (last visited Apr 22, 2024).
- GREGORY WETHERBEE, AUSTIN BALDWIN & JAMES RANVILLE, *It Is Raining Plastic.*, (2019), <https://doi.org/10.3133/ofr20191048>. See also Alex R. Aves et al., *First Evidence of Microplastics in Antarctic Snow*, 16 THE CRYOSPHERE 2127 (2022), <https://tc.copernicus.org/articles/16/2127/2022/> (last visited Apr 22, 2024).
- Lourens J. J. Meijer et al., *More than 1000 Rivers Account for 80% of Global Riverine Plastic Emissions into the Ocean*, 7 SCI. ADV. (2021), <https://www.science.org/doi/10.1126/sciadv.aaz5803> (last visited Apr 22, 2024).
- Fernanda Avelar Santos et al., *Plastic Debris Forms: Rock Analogues Emerging from Marine Pollution*, 182 MAR. POLLUT. BULL. 114031 (2022), <https://linkinghub.elsevier.com/retrieve/pii/S0025326X22007135> (last visited Apr 22, 2024).
- MARI WILLIAMS ET AL., *No Time to Waste: Tackling the Plastic Pollution Crisis before It's Too Late*, (2019), <https://learn.tearfund.org/-/media/learn/resources/reports/2019-tearfund-consortium-no-time-to-waste-en.pdf>.
- TEARFUND, *Plastic Pollution and Flood Risk*, (2023), https://uploads.guim.co.uk/2023/05/24/5797_Global_Impact_of_plastics_on_flooding_-_Summary_-_FINAL_-_Tearfund.pdf.
- Albert A. Koelmans et al., *Microplastics in Freshwaters and Drinking Water: Critical Review and Assessment of Data Quality*, 155 WATER RES. 410 (2019), <https://linkinghub.elsevier.com/retrieve/pii/S0043135419301794> (last visited Apr 22, 2024).
- CIEL, *supra* note 18, at 7.
- Id. at 5.
- Dunmei Lin et al., *“Microplastics Negatively Affect Soil Fauna but Stimulate Microbial Activity: Insights from a Field-Based Microplastic Addition Experiment.”* Proceedings of the Royal Society B: Biological Sciences 287, no. 1934 (September 2, 2020): 20201268, <https://doi.org/10.1098/rspb.2020.1268>.

144. *Id.* at 3.
145. *Id.* at 2.
146. *Id.* at 3.
147. Thomas B. Becnel, *Wastes from Plastic Packaging*, in *PROCEEDINGS: FIRST NATIONAL CONFERENCE ON PACKAGING WASTES 85, 85* (1971), <https://nepis.epa.gov/Exec/zyPDF.cgi/2000Q54D.PDF?DocKey=2000Q54D.PDF>.
148. E.S. Nuspliger, *Plastics in the Environment*, 35 *THE AMERICAN BIOLOGY TEACHER*, Apr. 1973, at 230, <https://online.ucpress.edu/abt/article-abstract/35/4/230/2687/Plastics-in-the-Environment?redirectedFrom=fulltext> (last visited Mar 29, 2024).
149. Regina Johnson, *An SPI Overview of Degradable Plastics*, in *PROCEEDINGS OF SYMPOSIUM ON DEGRADABLE PLASTICS 6* (1987), <https://p2info-house.org/ref/27/26560.pdf> (last visited Mar 29, 2024).
150. CIEL, *supra* note 2, at 5.
151. Samantha Maldonado, Bruce Ritchie & Debra Kahn, *Plastic Bags Have Lobbyists. They're Winning.*, *POLITICO*, Jan. 20, 2020, <https://www.politico.com/news/2020/01/20/plastic-bags-have-lobbyists-winning-100587> (last visited Mar 29, 2024).
152. Hiroko Tabuchi, Michael Corkery & Carlos Mureithi, *Big Oil Is in Trouble. Its Plan: Flood Africa With Plastic.*, *THE NEW YORK TIMES*, Aug. 30, 2020, <https://www.nytimes.com/2020/08/30/climate/oil-kenya-africa-plastics-trade.html> (last visited Mar 29, 2024).
153. Sandra Laville, *'Privileged Access': Pro-Plastic Lobbyists at UN Pollution Talks Increase by a Third*, *THE GUARDIAN*, Apr. 25, 2024, <https://www.theguardian.com/environment/2024/apr/25/fears-grow-over-rising-number-of-oil-lobbyists-at-un-plastic-pollution-talks> (last visited May 8, 2024).
154. See generally ALLEN ET AL., *supra* note 2.
155. Sullivan, *supra* note 1. See also Alejandro de la Garza, *Big Oil Sold the World on a Plastics Recycling Myth. It May Be Too Late to Undo the Damage*, *TIME*, May 5, 2022, <https://time.com/6173859/plastic-recycling-big-oil-damage/> (last visited Mar 29, 2024).
156. *Say so long to recycling code arrows*, *PLASTICS NEWS*, Jun. 11, 2013, <https://www.plasticsnews.com/article/20130611/NEWS/130619978/say-so-long-to-recycling-code-arrows>.
157. Matt Stonecash, *FTC Panels Discuss the Green Guides, Recyclability, and Consumer Perception*, *PLASTICS TECHNOLOGY MAGAZINE*, May 31, 2023, <https://www.ptonline.com/blog/post/ftc-panels-discuss-the-green-guides-recyclability-and-consumer-perception> (last visited Mar 29, 2024).
158. American Beverage Association, *Every Bottle Back*, <https://www.innovationnaturally.org/every-bottle-back/> (last visited Mar 29, 2024).
159. Alliance to End Plastic Waste, *Our Purpose: Enabling a Circular Economy*, <https://endplasticwaste.org/en/our-purpose> (last visited Mar 28, 2024).
160. CIEL, *supra* note 12, at 8.
161. Joe Brock, Valerie Volcovici & John Geddie, *The Recycling Myth: A Plastic Waste Solution Littered with Failure*, *REUTERS*, Jul. 29, 2021, <https://www.reuters.com/investigates/special-report/environment-plastic-oil-recycling/> (last visited Mar 29, 2024).
162. James Shannon, Massachusetts Attorney General, *Summary of Petition 89-39: An Act to Promote Environmentally Acceptable Product Packaging*, (1989), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=zplj0044> (last visited Mar 29, 2024) (“Any packaging would have to be [1] reusable at least five times for the same or similar packaging use; [2] composed of 50% or more recycled materials; or [3] composed of materials, each type of which is recycled at an annual rate of at least 35%, by weight, before December 31, 2000, and 50% thereafter.”). The initiative provided for exceptions for packaging related to medication, to comply with U.S. FDA regulations, or where the state Department of Environmental Protection found the restrictions caused an undue hardship for residents (beyond the increased cost of packaging).
163. Kurt Malmgren, *Memorandum Re: Massachusetts Packaging Restriction Proposals*, 9 (1989), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=zplj0044> (last visited Mar 29, 2024) (Each packaged item not in compliance with the law would be considered a violation and could result in a \$1,000 fine. Fines would be capped at \$100,000 per “shipment” of goods with illegal packaging. The criminal sanctions contemplated by the initiative were capped at a maximum of 1 month imprisonment per violation).
164. Department of the Attorney General, *Proposed Initiative Petition: An Act to Promote Environmentally Acceptable Plastic Packaging*, 13, 16, 46 (1989), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=yfmb0047>.
165. Malmgren, *supra* note 163, at 4 (Under a header entitled “Tobacco Industry Participation,” the memo states “industry counsel presented legal arguments to the Attorney General against certification of the petitions during the certification process”).
166. *Id.* at 2.
167. *Id.* at 2, 57.
168. See Table 1; See also *Id.* at 4, 57 (Noting that “tobacco manufacturers are represented by RJR Nabisco and Kraft General Foods in both The Working Group and in the National Task Force”).
169. *Id.* at 3.
170. *Id.* at 64–65 (The draft resolution, dated September 5, 1989, included the following language: “Whereas, existing and potential jobs should not be sacrificed for arbitrary and unsound environmental mandates...this convention goes on record as opposing legislation and initiative petitions, including those now certified, that mandate bans on the manufacturing and distribution of certain of [sic] packaging in the Commonwealth of Massachusetts.”).
171. *Id.* at 3 (“Labor and consumer groups are natural allies to environmental organizations; however, efforts are underway to diffuse such alliances on this issue.”). Also *Id.* at 4 (“The [Tobacco] Institute’s regional office staff and consultant were responsible for the success to date of the labor resolution process.”).
172. Mark Megalli & Andy Friedman, *Masks of Deception: Corporate Front Groups in America*, 4 (1991), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=klw10000> (last visited Mar 29, 2024). See also Karl Kamena, *Personal Profile*, 1 (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=lgnb0047> (last visited Mar 29, 2024) (Kamena, the director of government affairs and public issues for Dow Plastics, Dow U.S.A., also worked with CSWS and other coalition groups focused on plastics issues).
173. Megalli and Friedman, *supra* note 172, at 95.
174. The Working Group, *Special Report: Packaging Ban Initiatives*, 2 (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=xlwk0094> (last visited Mar 29, 2024). [Note: There were actually two groups that shared the same acronym and leadership. The Massachusetts Committee for Responsible Waste Management was in charge of “coordinat[ing] the legislative battle,” while the Massachusetts Coalition for Responsible Waste Management was a political committee that would “handle the ballot question if the issue [was] not resolved in the legislature.”]
175. Malmgren, *supra* note 163, at 18 (“to oppose legislative mandates and offer reasonable alternatives”). See also, Coalition for Responsible Waste Management, *Technical Committee Meeting*, (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=ynnj0031> (last visited Mar 29, 2024).
176. Temple, Barker, & Sloane, Inc., *Analysis of Initiative 89-39 for The Council for Solid Waste Solutions*, (1989), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=lpnj0031> (last visited Apr 29, 2024).
177. The Working Group, *supra* note 174, at 2.
178. Malmgren, *supra* note 163, at 3.
179. See Coalition for Responsible Waste Management, *supra* note 175, at 8.
180. The Working Group, *TWG Update*, March 16, 3 (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=klwk0094> (last visited Mar 29, 2024).
181. The Working Group, *TWG Update*, May 11, 5 (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=ytdk0094> (last visited Mar 29, 2024).
182. Michael S. Dukakis, *Memorandum of Understanding between the Commonwealth of Massachusetts and The Massachusetts Coalition for Responsible Waste Management*, (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=nlmj0031> (last visited Mar 29, 2024).
183. The Working Group, *supra* note 174, at 2 (“Robert Rodophele is representing the Council for Solid Waste Solutions in its legal challenge”). See also: David M. Powers, *Document 1*, (2000), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=ptxp0189> (last visited Mar 29, 2024) (“Despite persistent pressure from one of the country’s most organized and powerful anti-smoking communities, Bob has managed to stave off any major adverse legislation for the past five sessions.”).
184. Malmgren, *supra* note 163, at 3.
185. The Working Group, *Memorandum to TWG Principals*, 2 (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=ptdk0094> (last visited Mar 29, 2024).
186. ALEC Solid Waste Working Group, (1988), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=rrnl0039> (last visited Mar 29, 2024).
187. *Id.* (According to ALEC, the corporations interested in participating in its Solid Waste Working Group included the American Petroleum Institute, Society of Plastics Industry, McDonalds, Phillip Morris, Proctor and Gamble, RJ Reynolds, and FMC Corporation, among others). See also American Legislative Exchange Council, *F.Y.I. Special Bulletin*, (Unknown), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=sthv0033> (last visited Mar 29, 2024) (cataloging state legislative initiatives and noting that “[l]egislative concern about solid waste disposal has intensified in recent years,” and “that an overwhelming majority of Americans believe that waste disposal poses the most serious threat to the environment and to their personal health and safety.”).
188. American Legislative Exchange Council, *Environmental Monitor*, (1989), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=mqnn0134> (last visited Mar 29, 2024) (In September 1989, the American Legislative Exchange Council adopted a model bill on Solid Waste Management that put the onus on cities and counties to maintain at least 10 years of solid waste disposal capacity, recognizes the need for waste recovery [i.e. incinerators] in meeting waste management and energy needs, puts the onus on cities and counties to establish recycling programs, expressly requires recycling be voluntary for the public, and “Preempts local packaging bans, restrictions, or mandates.”).
189. American Legislative Exchange Council, *The National Orientation Conference for New State Legislators*, 4 (1989), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=mhbl0026> (last visited Mar 29, 2024).
190. See, e.g., F.Y.I. Special Bulletin: *Anti-Consumer Extremists Launch Legislative ‘Wilding’ On Consumer Packaging*, 1 (1991), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=xfxv0033> (last visited Mar 29, 2024) (highlighting “PIRG Clones” legislation modeled after the Oregon ballot in seven states: Hawaii, Illinois, Massachusetts, New Hampshire, New Mexico, New York and Vermont).
191. Steve Horn, *Records Show State Policy Network Was Created by ALEC*, *The Progressive Magazine*, Dec. 2013, <https://progressive.org/latest/records-show-state-policy-network-created-alec/> (last visited Mar 29, 2024). See also Margaret Rita, *Memorandum to Herb Estreicher, Esq.: Recycling Legislation Laws*, (1992), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=hvfv0026> (last visited Mar 29, 2024) (discussing TWG and CSWS tracking of state “solid waste/recycling/packaging legislation”).
192. The Working Group, *TWG Update*, October 13, 2–4 (1989), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=xmwx0094> (last visited Mar 29, 2024).
193. *Id.* at 4.
194. The Working Group, *supra* note 174, at 3.
195. *Id.* at 4.
196. *Id.*
197. Public Affairs Counsel, *Correspondence on Oregon Campaign*, (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=frpj0031> (last visited Mar 29, 2024).
198. The Working Group, *supra* note 174, at 4.
199. *Id.* (Legal challenges brought on behalf of the Oregon Committee for Recycling were coordinated by attorney James Gardner of Lindsay, Hart, Neil and Weigler).
200. Public Affairs Counsel, *supra* note 197, at 3 (Even without the financial support of CSWS, “[w]e believe Oregon industry with allied national support can raise the money necessary to conduct a successful campaign” and are “able to identify today at least \$1,000,000 in funds that would be available”).
201. Amy Faulkner (Stateside Associates), *Memorandum to TWG Principals on Oregon Packaging Ban Initiative*, (1990), <https://www.industrydocuments.ucsf.edu/tobacco/docs/#id=lzdm0029> (last visited Mar 29, 2024) (“A fiscal impact statement, required by law, was not included with the description of the initiative on the ballot. Since ballots have already been printed ... [the court ruled] the measure will remain on the ballot but that the votes will not be tabulated”).
202. See ENVIRONMENT AMERICA, US PIRG, & FRONTIER GROUP, *Plastic Bag Bans Work*, (2024), <https://publicinterestnetwork.org/wp-content/uploads/2024/01/Plastic-Bag-Bans-Work-January-2024.pdf>; NATIONAL CONFERENCE OF STATE LEGISLATURES, *State Plastic Bag Legislation*, (2021), <https://www.ncsl.org/environment-and-natural-resources/state-plastic-bag-legislation> (last visited Mar 29, 2024).
203. Jennifer McDermott, *At Plastics Treaty Talks in Canada, Sharp Disagreements on Whether to Limit Plastic Production*, *AP NEWS*, Apr. 30, 2024, <https://apnews.com/article/plastic-pollution-treaty-negotiations-ottawa-united-nations-e291d64f4f55846973be4f78f33f0fd> (last visited May 10, 2024); Intergovernmental Negotiating Committee on Plastic Pollution, *Fourth Session (INC-4) in Ottawa, Canada*, (2024), <https://www.unep.org/inc-plastic-pollution/session-4> (last visited May 10, 2024).
204. See COMMISSION ON HUMAN RIGHTS OF THE PHILIPPINES, *National Inquiry on Climate Change Report 2022*, (2023), <https://www.ciel.org/wp-content/uploads/2023/02/CHRP-NICC-Report-2022.pdf>. See also *Compl.* at 34, *New York v. Pepsico, Inc.*, No. 8146822023 (N.Y. Sup. Ct. 2023); California Office of the Attorney General, *Attorney General Bonta Announces Investigation into Fossil Fuel and Petrochemical Industries for Role in Causing Global Plastics Pollution Crisis*, (2022), <https://oag.ca.gov/news/press-releases/attorney-general-bonta-announces-investigation-fossil-fuel-and-petrochemical> (last visited Mar 29, 2024).
205. See Laville, *supra* note 153 (The fossil fuel and chemical industries sent 196 lobbyists to the 4th round of negotiations for the global plastics treaty). See also Maldonado, Ritchie, and Kahn, *supra* note 151.
206. See, e.g., *Save the Plastic Bag Coalition v. City of Manhattan Beach*, 181 Cal.App.4th 521 (Supreme Court of California 2011), <https://leap.unep.org/en/countries/us/national-case-law/save-plastic-bag-coalition-plaintiff-and-respondent-v-city-manhattan> (last visited Mar 29, 2024); Keshia Clukey, *New York Ban on ‘Scourge’ of Plastic Bags Upheld by Judge*, *BLOOMBERG LAW*, Aug. 20, 2020, <https://news.bloomberglaw.com/environment-and-energy/new-york-ban-on-scourge-of-plastic-bags-upheld-by-judge> (last visited Mar 29, 2024).
207. America’s Plastics Makers, *Advanced Recycling Technologies*, <https://plasticmakers.org/our-solutions/advanced-recycling-technologies/> (last visited Mar 29, 2024).
208. CIEL, *supra* note 12, at 8.
209. LEE BELL, *Chemical Recycling: A Dangerous Deception*, (2023), https://static.squarespace.com/static/5eda91260bbb7e7a4b528d8/t/655791f76ad9bb07d10e1290/1700237880522/10-30-23-Chemical-Recycling-Report_web.pdf (last visited May 28, 2024).
210. SIMON HANN & TOBY CONNOCK, *Chemical Recycling: State of Play*, (2020), <https://chemtrust.org/wp-content/uploads/Chemical-Recycling-Eunomia.pdf> (last visited Mar 29, 2024).
211. American Chemistry Council Profile: Summary, *OPENSECRETS*, <https://www.opensecrets.org/orgs/american-chemistry-council/summary?contribcycle=2022&id=D000000365&lobcycle=2022&outspendcycle=2022&topnumcycle=A&topprecycle=2024> (last visited Apr 17, 2024). See also American Chemistry Council - Nonprofit Explorer, *PROPUBLICA*, <https://projects.propublica.org/nonprofits/organizations/530104410> (last visited May 9, 2013).
212. See Meta Ad Library, <https://www.facebook.com/ads/library/report/> (last accessed Apr. 20, 2024). (Click “Ad Library Report,” then search for “America’s Plastic Makers” for “All dates.”)

213. See Meta Ad Library, <https://www.facebook.com/ads/library/>, (last accessed Apr. 20, 2024). (Search “America’s Plastic Makers,” keyword search “advanced recycling”).
214. See Jordan Wolman, *Advanced Recycling Mines the Meta-Verse*, POLITICO, Jan. 5, 2023, <https://www.politico.com/newsletters/the-long-game/2023/01/05/advanced-recycling-goes-digital-00076537> (last visited Mar 29, 2024).
215. See Public Affairs Counsel, *supra* note 197 (A contract/leadership dispute surrounding a similar industry initiative in Oregon demonstrates the degree of control that CSWS expected to exercise over these “local” opposition efforts).
216. Mayor Brandon M. Scott, *City of Baltimore Files a First of Its Kind Lawsuit Against Tobacco Companies for Cigarette Filter Waste*, (2022), <https://mayor.baltimorecity.gov/news/press-releases/2022-11-21-city-baltimore-files-first-its-kind-lawsuit-against-tobacco-companies> (last visited Mar 29, 2024).
217. Dannielle S. Green et al., *Time to Kick the Butt of the Most Common Litter Item in the World: Ban Cigarette Filters*, 865 SCI. TOTAL ENVIRON. 161256 (2023), <https://linkinghub.elsevier.com/retrieve/pii/S0048969722083607> (last visited Apr 22, 2024).
218. Deborah K. Sy, *Tobacco Industry Accountability for Marine Pollution: Country and Global Estimates*, TOB. CONTROL (2023), <https://tobacco-control.bmj.com/lookup/doi/10.1136/tc-2022-057795> (last visited Apr 22, 2024).
219. In January of 2024, the case was remanded to state court after defendants’ attempt to remove the case to federal courts on preemption grounds was denied. Plaintiffs win remand/preemption arguments. Dist MD sent the case back to state court. See Tom Pryor, *Victory for Baltimore in Tobacco Waste Lawsuit: Case Returns to State Court*, PUBLIC HEALTH LAW CENTER, Jan. 2024, <https://www.publichealth-lawcenter.org/commentary/240126/1/25/24-victory-baltimore-to-bacco-waste-lawsuit-case-returns-state-court> (last visited Mar 29, 2024).
220. *Pepsico*, No. 814682/2023, *supra* note 204, at 34.
221. *Pepsico*, No. 814682/2023, *supra* note 204.
222. Restatement (Second) of Torts, AM. L. INST. §821B (1979).
223. *City of Chicago v. Festival Theatre Corp.*, 438 N.E.2d 159 (Ill. 1982). See also *Donaldson v. Cent. Ill. Pub. Serv. Co.*, 767 N.E.2d 314, 337 (Ill. 2002) (defining public nuisance as “the doing of or the failure to do something that injuriously affects the safety, health or morals of the public, or works some substantial annoyance, inconvenience or injury to the public”) (internal citations omitted).
224. Engstrom and Rabin, *Pursuing Public Health Through Litigation: Lessons from Tobacco and Opioids*, 83 OH ST J, 70 (2022), https://moritzlaw.osu.edu/sites/default/files/2022-06/12.Dana_v83-1_pp61-115_1.pdf.
225. See Leslie Kendrick, *The Perils and Promise of Public Nuisance*, 132 YALE LAW J 702 (2023), https://www.yalelawjournal.org/pdf/132.3.Kendrick_w6oxvj7i.pdf, quoting Restatement (Second) of Torts, *supra* note 222, §821B cmt. a (noting that as early as the mid-1300’s, public nuisance was being applied to community wide harms and to defend against various harms such as “interference with the operation of a public market or smoke from a lime-pit that inconvenienced a whole town”).
226. See, e.g., *Transcon. Gas Pipe Line Corp. v. Gault*, 198 F.2d 196 (4th Cir. 1952) (noise and vibrations from defendant’s compressor gas station that greatly disturbed neighbors created a public nuisance).
227. See, e.g., *Atlanta Processing Co. v. Brown*, 179 S.E.2d 752 (Ga. 1971) (stating that a jury was justified in finding that the defendant’s animal processing plant emitting gasses, fumes, and smoke with a “strong, pungent and nauseating odor,” was a public nuisance).
228. See, e.g., *City of Fort Smith v. Western Hide & Fur Co.*, 239 S.W. 724, 725-26 (Ark. 1922) (defendant’s hide and fur sales operation, which emitted offensive odors and attracted flies, was a public nuisance, even though it possessed a license from the city; the distinction between public and private nuisance “lies merely in the extent of the injury or annoyance ...”). See also *Aldred v. Benton*, 77 Eng. Rep. 816, 9 Co Rep 57 b (1610) (defendant’s production of odors deprived the plaintiff’s right to enjoy his home).
229. Kendrick, *supra* note 225, at 719.
230. See, e.g., *People v. Gold Run Ditch & Mining Co.*, 4 P. 1152 (Cal. 1884) (dumping debris and waste into river); *Chenoweth v. Hicks*, 5 Ind. 224 (Ind. 1854) (slaughterhouse wastes dumped into waterway); *Luning v. State*, 2 Wis. 215 (Wis. 1849) (erection of dam creating mill-pond with stagnant waters); *Commonwealth v. Brown*, 54 Mass. 365 (Mass. 1847), <https://www.courtlistener.com/opinion/6535175/commonwealth-v-brown/> (unwholesome smokes and vapors from manufacture of neat’s foot oil; indictment held invalid due to plaintiff’s failure to plead source of nuisance with particularity); *Smiths v. McConathy*, 11 Mo. 517 (Mo. 1848) (vapors from distillery and hog waste); *Price v. Grantz*, 11 A. 794 (Pa. 1888) (dust from manufacture of lead pipe and shot).
231. Kendrick, *supra* note 225, at 722.
232. *Id.*
233. See, e.g., *Compl., Moore ex rel. State of Mississippi v. Am. Tobacco Co.*, No. 1994CV01429 WL 17112350 (Miss. Ch. Ct. 1994) (Mississippi Attorney General Mike Moore is the first of many state attorneys general to assert parens patriae interests in filing suit against tobacco manufacturers); *McClendon v. Georgia Dept of Cmty. Health*, 261 F.3d 1252, 1254-55 (11th Cir. 2001) (discussing Georgia’s release of negligence and other claims in its settlement with big tobacco); *THE MASTER SETTLEMENT AGREEMENT: AN OVERVIEW*, (2019), <https://www.publichealthlawcenter.org/sites/default/files/resources/MSA-Overview-2019.pdf>.
234. See *Northridge Co. v. W.R. Grace & Co.*, 556 N.W.2d 345, 351-52 (Wis. Ct. App. 1996) (holding asbestos manufacturers liable under public nuisance theory).
235. See *State ex rel. Hunter v. Purdue Pharma L.P.*, No. CJ-2017-816, WL 4019929 *26 (Okla. Dist. Ct. 2019) (“Defendants engaged in false and misleading marketing of both their drugs and opioids generally” and “this conduct constitutes a public nuisance”).
236. See *infra*, nn.262-66, 269-73.
237. See, e.g., *Mayor of Balt. v. BP P.L.C.*, 952 F.3d 452 (4th Cir. 2020) (decided on jurisdictional and removal grounds), vacated and remanded, *Mayor of Balt. v. BP P.L.C.*, 141 U.S. 1532 (2021), *Mayor of Balt. v. BP P.L.C.*, 31 F.4th 178 (4th Cir. 2022) (upon reconsideration, holding no grounds argued by defendants warranted removal and affirming remand to state court); *County of San Mateo v. Chevron Corp.*, 960 F.3d 586 (9th Cir. 2020) (decided on jurisdictional and removal grounds), vacated and remanded, *County of San Mateo v. Chevron Corp.*, 141 U.S. 2666 (2021) (mem.), *County of San Mateo v. Chevron Corp.*, 32 F.4th 733 (9th Cir. 2022) (affirming remand upon reconsideration); *Bd. of Cnty. Comm’rs v. Suncor Energy (U.S.A.) Inc.*, 965 F.3d 792 (10th Cir. 2020) (decided on jurisdictional and removal grounds), vacated and remanded, *Bd. of Cnty. Comm’rs v. Suncor Energy (U.S.A.) Inc.*, 141 U.S. 2667 (mem.), *Bd. of Cnty. Comm’rs of Boulder Cnty. v. Suncor Energy (U.S.) Inc.*, 25 F.4th 1238 (10th Cir. 2022) (affirming remand); *Rhode Island v. Chevron Corp.*, 393 F.Supp.3d 142 (D. R. I. 2019); *City of New York v. BP P.L.C.*, 325 F.Supp.3d 466, 475-78 (S.D.N.Y. 2018); *City of Oakland v. BP P.L.C.*, 325 F.Supp.3d 1017 (N.D. Cal. 2018), vacated, *City of Oakland v. BP P.L.C.*, 960 F.3d 570 (9th Cir. 2020), amended by, *City of Oakland v. BP P.L.C.*, 969 F.3d 895 (9th Cir. 2020); *King County v. BP P.L.C.*, No C18-758 2018 WL 9440497 (W.D. Wash. 2018).
238. Kendrick, *supra* note 225, at 721.
239. Statutorily defined public nuisances address concerns as diverse (and often mundane) as black currant bushes that harbor pests, Restatement (Second) of Torts, *supra* note 222, § 821B cmt. c., to un-sanctioned lotteries, abandoned cottages, and fireworks, 4 WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND *167-69. See also, *infra*, nn.308-11 (citing contemporary statutory definitions of public nuisances such as bed bugs and gang activity).
240. Restatement (Second) of Torts, *supra* note 222, § 821B cmt. c (emphasis added).
241. See *Georgia v. Tenn. Copper Co.*, 206 U.S. 230 (1907).
242. *Alfred L. Snapp & Son, Inc. v. Puerto Rico, ex rel., Barez*, 458 U.S. 592, 607 (U.S. 1982). See also *Commonwealth ex rel. Corbett v. Citizens All. for Better Neighborhoods, Inc.*, 983 A.2d 1274, 1277 (Pa. Commw. Ct. 2009) (“The Commonwealth has parens patriae standing whenever it asserts quasi-sovereign interests, which are interests that the Commonwealth has in the well-being of its populace.”).
243. See, e.g., U.S. CONST. amend. X (“The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”). See also *Brown v. Maryland*, 25 U.S. 419, 444 (1827) (finding powers not held by the federal government are reserved to the general “police power, which unquestionably remains, and ought to remain, with the states”).

244. Restatement (Second) of Torts, *supra* note 222, § 821B.
245. Donald G. Gifford, *Public Nuisance as a Mass Products Liability Tort*, 71 U. CIN. L. REV. 2055, 741, 774 (2003), https://digitalcommons-law.umaryland.edu/cgi/viewcontent.cgi?article=1424&context=fac_pubs.
246. *Id.* See also, e.g., *United States v. Hooker Chems. & Plastics Corp.*, 722 F.Supp. 960, 968 (W.D.N.Y. 1989), quoting *Sts. v. Schenectady Chems., Inc.*, 117 Misc 2d 960, 970 (1983) (“New York public nuisance law is clear that, in an action brought by the State in the exercise of its police powers for either abatement or restitution, ‘fault is not an issue, the inquiry being limited to whether the condition created, not the conduct creating it, is causing damage to the public’”).
247. See e.g. *In re Lead Paint Litig.*, 924 A.2d 484, 494 (N.J. 2007) (suggesting that product-based nuisance cases “would create a new and entirely unbounded tort antithetical to the meaning and inherent theoretical limitations of the tort of public nuisance”).
248. Gifford, *supra* note 245, at 828-30.
249. *Id.* at 831 n. 429.
250. See *City of Chicago v. Beretta U.S.A. Corp.*, 821 N.E.2d 1099, 1134 (Ill. 2004) (“Legal cause will be found if reasonable persons...would have seen the creation of the nuisance...as a likely result of their conduct ... [But] will not be found where the criminal acts of third parties have broken the causal connection...”).
251. There are a number of potential exceptions to this general rule, and both state and federal courts have developed a handful of doctrines that pause the accrual of the statute of limitations and thereby allow a plaintiff to bring a claim that might otherwise be untimely. For instance, the “discovery rule” generally provides that a limitations period will not begin to ‘count down’ until a plaintiff knows, or reasonably should know, that a claim exists. See, e.g., *Merck & Co. v. Reynolds*, U.S. 633, 645 (U.S. 2010). This can be especially important in toxic tort cases where the discovery of harms occurs long after a defendant’s tortious acts. Likewise, the doctrine of equitable estoppel will prevent a defendant from invoking the statute of limitations where they took active steps to prevent the plaintiff from bringing timely litigation. See, e.g., *Wall v. Const. & Gen. Lab. Union, Local 230*, 224 F.3d 168, 176 (2d. Cir. 2000). This might involve, for instance, a defendant’s fraudulent concealment of their role in the harmful activities. Finally, equitable tolling may extend a limitations period where a plaintiff has diligently pursued their claims, but was prevented from filing in time due to extreme circumstances unrelated to the defendant, or submitted a timely, but defective filing that could not be cured within the limitations period. See *Young v. U.S.*, 535 U.S. 43, 49-50 (U.S. 2002).
252. See *Hoery v. United States*, 64 P.3d 214, 218 (2003) (en banc) (answering certified questions from the 10th Circuit Court of Appeals and holding that groundwater contamination through the migration of toxic chemicals constitutes a continuing nuisance under Colorado Law).
253. See *supra* Section 2.D.
254. See *supra* at 21 & nn.106-108 (impacts on recreation and enjoyment of public lands and waters); at 21 & nn.109-13 (impacts on local economic well being via damage to fisheries and tourism); 22 & nn.114-16 (contamination of municipal water supplies); 22-23 & nn.117-26 (human exposures to micro and nano-plastics and associated public health risks).
255. See generally CIEL ET AL., *supra* note 24.
256. See, e.g., Connor J. Fraser, *The Public Plastic Nuisance: Life in Plastic, Not so Fantastic*, 98 NYU REV, 2104-05 (2023), <https://www.nyulaw-review.org/wp-content/uploads/2023/12/98-NYU-L-Rev-2055.pdf>; *Illinois v. City of Milwaukee*, 406 U.S. 91, 107 (1972) (“It may happen that new federal laws and new federal regulations may in time pre-empt the field of federal common law of nuisance. But until that comes to pass, federal courts will be empowered to appraise the equities of the suits alleging creation of a public nuisance by water pollution.”).
257. See *supra* Sections 3.B and 3.C
258. *Woodruff v. North Bloomfield Gravel Mining Co.*, 18 F. 753, 769 (9th Cir. 1884) (introduction of large amounts of sediment into public waterways by mining operation unreasonably interfered with public’s navigation and enjoyment of public river).
259. See *supra* Section 3.B.
260. See *supra* Section 3.E.
261. See, e.g., *Mayor of Baltimore v. Monsanto Co.*, 2020 U.S. Dist. LEXIS 55265, at *18-22, 27 (D. Md. Mar. 31, 2020) (stating widespread water pollution is a public nuisance; defendant created or substantially participated in that nuisance by manufacturing, distributing, marketing and promoting its PCB products; and persistence of chemicals in state waterways constitutes a continuing harm, tolling the statute of limitations). See also *Commonwealth v. Monsanto Co.*, 269 A.3d 623, 647-53 (Pa. Commw. Ct. 2021).
262. *Weirton Area Water Bd. v. 3M Co.*, 520-CV-102, *15-17 (N.D.W. Va. 2020) (finding contamination of the municipal water supply with PFAs an interference with a right common to the general public).
263. See, e.g., *Rhode Island v. Atl. Richfield Co.*, 357 F.Supp.3d 129, 142-43 (D.R.I. 2018) (allowing nuisance claims to proceed against company for chemical pollution of state waters with MTBE gasoline additive); *Maryland v. Exxon Mobil Corp.*, 406 F. Supp. 3d 420, 467-69 (D. Md. 2019) (same).
264. Paraquat is “highly poisonous” herbicide and its use is restricted to licensed applicators in the U.S. See U.S. Centers for Disease Control and Prevention (CDC), *Facts About Paraquat*, (2018), <https://emergency.cdc.gov/agent/paraquat/basics/facts.asp> (last visited May 17, 2024). TCPA is a highly toxic herbicide and defoliation agent that was a component of Agent Orange. See U.S. ENVIRONMENTAL PROTECTION AGENCY, *CompTox Chemicals Dashboard: Chemical Details, 2,4,5-Trichlorophenoxyacetic Acid*, <https://comptox.epa.gov/dashboard/chemical/details/DTXSID5021388> (last visited May 17, 2024).
265. *Compare State v. Fermenta ASC Corp.*, 160 Misc.2d 187, 194-96 (N.Y. Sup. Ct. 1994) (declining to dismiss claim involving groundwater contamination of herbicide TCPA) and *Fox v. Cheminova, Inc.*, 387 F.Supp.2d 160, 172 (E.D.N.Y. 2005) (denying pesticide manufacturer’s motion for summary judgment on public nuisance claim because causation remained a genuine issue of fact), with *In re Paraquat Prods. Liab. Litig.*, Case No 321-Md-3004-NJR MDL No 3004, *33-34 (S.D. Ill. 2022) (finding no public right implicated where alleged chemical exposures occurred during individualized applications of pesticide, and finding insufficient showing of control by defendant where exposures occurred through normal consumer purchase and use of product).
266. *Compl. at ¶¶10, 103, Pepsico, No. 814682/2023, supra* note 204.
267. *Mem. ISO Defs’ MTD at *3, New York v. Pepsico, Inc. 814682/2023 (N.Y. Sup. Ct. 2024)*, ECF No. 29 (internal citations and quotations omitted).
268. *Monsanto, 269 A.3d, supra* note 262, at 649 (first citing *Diess v. Pennsylvania Dept’ of Transp.*, 935 A.2d 895 (Pa. Cmwlth. 2007), then citing *City of Philadelphia v. Beretta U.S.A., Corp.*, 126 F.Supp.2d 882, 906 (E.D. Pa. 2000)).
269. *Id.*
270. *Id.* at 652.
271. *Id.*
272. See e.g., *Oregon v. Monsanto Co.*, No. 18-CV-00540, 2019 WL 11815008, at *14 (Or. Cir. Ct. 2019); *Mayor of Baltimore v. Monsanto Co.*, Civ No RDB-19-0483 at *10 (D. Md. 2020); *City of Spokane v. Monsanto Co.*, WL 6275164 at *7 (E.D. Wash. 2016).
273. See Christine Gaylarde, Jose Antonio Baptista-Neto & Estefan Monteiro Da Fonseca, *Plastic Microfibre Pollution: How Important Is Clothes’ Laundering?*, 7 HELIYON (2021), <https://linkinghub.elsevier.com/retrieve/pii/S2405844021012081> (last visited May 22, 2024).
274. *Id.*
275. See *Village of Wilsonville v. SCA Serv., Inc.*, 426 N.E.2d 824, 837 (Ill. 1981) (upholding anticipatory injunction of landfill’s operation where highly probable that toxic materials would escape the site through migration, subsidence or groundwater contamination).
276. In *Columbia River Fishermen’s Protective Union*, the Oregon Supreme Court sided with fishermen in a nuisance case, where river pollution killed fish and damaged nets, causing plaintiffs to suffer significant and specialized injuries. *Columbia River Fishermen’s Protective Union v. City of St. Helens*, 87 P.2d 195 (Or. 1939).

277. *In re Exxon Valdez*, 104 F.3d 1196, 1198 (9th Cir. 1997) (“There is no dispute concerning the Alaska Natives’ right to recover economic damage flowing from loss of fishing resources,” but finding no specialized, differentiated injury to specific class of tribal members for harms to subsistence lifestyle where “the right to obtain and share wild food, enjoy uncontaminated nature, and cultivate traditional, cultural, spiritual, and psychological benefits in pristine natural surroundings is shared by all Alaskans”) (internal quotations omitted, emphasis added).
278. 33 U.S. CODE § 1251 et seq.
279. *Int’l Paper v. Ouellete*, 479 U.S. 481, 493–94, 497–500 (U.S. 1987). See also *City of Milwaukee v. Illinois*, 451 U.S. 304, 328 (1981) (suggesting that “[s]tates may adopt more stringent limitations ... through state nuisance law, and apply them to in-state dischargers”).
280. See CIEL, CTR. FOR BIO. DIVERSITY & EARTHWORKS, *Formosa Plastics Group: A Serial Offender of Environmental and Human Rights*, 39–40 (2021), <https://www.ciel.org/wp-content/uploads/2021/10/Formosa-Plastics-Group-A-Serial-Offender-of-Environmental-and-Human-Rights.pdf>.
281. *Mem. and Order, San Antonio Bay Estuarine Waterkeeper v. Formosa Plastics Corp.*, No 617-CV-004717 (S.D. Tex. 2019), https://static.texastribune.org/media/files/193f5484368b30dcd2e6dd1b30a1eec/Formosa.pdf?_ga=2.234290846.1472866916.1611945936-46317650.1611945936.
282. Texas RioGrande Legal Aid, *Press Release: Formosa Plastics Agrees to Pay \$50 Million Settlement for Polluting Texas Waterways*, (2019), <https://www.trla.org/news-releases/formosa-plastics-agrees-to-pay-50-million-settlement-for-polluting-texas-waterways> (last visited Jun 11, 2024).
283. See CONG. RSCH. SERV., *RL30030, Clean Water Act: A Summary of the Law*, 6 (2016), <https://crsreports.congress.gov/product/pdf/RL/RL30030> (“Nonpoint sources of pollution ... are not subject to CWA permits or other regulatory requirements under federal law. They are covered by state programs for the management of runoff, under Section 319 of the act.”).
284. See *supra* Section 3.E
285. Restatement (Second) of Torts, *supra* note 222, § 821B cmt. b. See also *Smiths v. McConathy*, *supra* note 230 (vapors from distillery and hog waste); *Price v. Grantz*, *supra* note 230 (dust from manufacture of lead pipe and shot); *State v. Lead Indus. Ass’n*, 951 A.2d 428 (R.I. 2008) (holding that public rights include rights to “indivisible resources shared by the public at large, like air, water, or public rights of way”).
286. *Georgia v. Tenn. Copper Co.*, *supra* note 241, at 238.
287. MARGARET SPRING, ET AL., *Existing U.S. Federal Authorities to Address Plastic Pollution: A Synopsis for Decision Makers*, 53–62 (2024), https://www.eli.org/sites/default/files/files-pdf/Final_ELI%20Plastics%20Report_v3_03_20_24.pdf (discussing various provisions of the CAA which could be leveraged to address plastics air pollution from a variety of sources along the plastic lifecycle).
288. See, e.g., *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 424–29 (U.S. 2011) (holding that the Clean Air Act preempted federal common-law public-nuisance suits against utility companies for interstate carbon pollution, but reserving state public-nuisance claims for remand); *Native Vill. of Kivalina v. ExxonMobil Corp.* (“Kivalina II”), 696 F.3d 849, 858 (9th Cir. 2012) (dismissing plaintiffs’ federal common law public nuisance damage and abatement actions).
289. See, e.g., *supra* note 238.
290. See, e.g., Pieter Kole, et al., *Wear and Tear of Tyres: A Stealthy Source of Microplastics in the Environment*, 14(10) INT. J. ENV. RES. PUBLIC HEALTH (2017), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5664766/>.
291. Erina Brown et al., *The Potential for a Plastic Recycling Facility to Release Microplastic Pollution and Possible Filtration Remediation Effectiveness*, 10 J. HAZARD. MATER. ADV. 100309 (2023), <https://linkinghub.elsevier.com/retrieve/pii/S2772416623000803> (last visited May 28, 2024).
292. For further discussion of existing federal laws that could be used to regulate plastics, see SPRING, ET AL., *supra* note 287. For an overview of federal preemption case law, see CONG. RSCH. SERV., *R45825, Federal Preemption: A Legal Primer*, (2023), <https://crsreports.congress.gov/product/pdf/R/R45825> (last visited Mar 29, 2024).
293. Gifford, *supra* note 245, at 781.
294. *Mugler v. Kansas*, 123 U.S. 623, 673 (1887) (“[Courts of equity] can not only prevent nuisances that are threatened, and before irreparable mischief ensues, but arrest or abate those in progress, and, by perpetual injunction, protect the public against them in the future ...”).
295. See, e.g. *Durand v. Dyson*, 111 N.E. 143, 145 (Ill. 1915) (keeping diseased animals as public nuisance); *Fevold v. Bd. of Supervisors*, 210 N.W. 139, 147 (Iowa 1926) (same).
296. Restatement (Second) of Torts, *supra* note 222, § 821B cmt. b.
297. Restatement (Third) of Torts: Products Liability, § 1 cmt. a (1997) (“As early as 1266, criminal statutes imposed liability upon victualers, vintners, brewers, butchers, cooks, and other persons who supplied contaminated food and drink.”).
298. *People v. ConAgra Grocery Prods. Co.*, 227 Cal. Rptr. 3d 499 (Cal. Ct. App. 2017). See also *County of Santa Clara v. Atl. Richfield Co.*, 137 Cal. App. 4th 292, 328 (Cal. Ct. App. 2006) (“[L]iability is premised on defendants’ promotion of lead paint for interior use with knowledge of the hazard that such use would create. This conduct is distinct from and far more egregious than simply producing a defective product or failing to warn of a defective product; indeed, it is quite similar to instructing the purchaser to use the product in a hazardous manner”).
299. The remedies available to states are not strictly equitable in nature. States are empowered to seek monetary damages as well. See Kendrick, *supra* note 225, at 724 & n.108 (“Some early American cases allowed recovery of remediation costs, and modern courts have permitted damages for decades”) (citing cases). See also *Monsanto*, 269 A.3d, *supra* note 261, at 638–41, 648–53 (citing cases).
300. 42 U.S. CODE § 1396a(a)(25).
301. States generally alleged that tobacco manufacturers had tortiously concealed the addictive nature of nicotine and the negative health effects of tobacco products, and were thus responsible for associated health costs. The claims raised by various states included the following: conspiracy, fraudulent misrepresentation, breach of warranty, unjust enrichment, design defect, nuisance, and violation of state consumer protection laws. Cliff Sherrill, *Tobacco Litigation: Medicaid Third Party Liability and Claims for Restitution*, 19 U ARK LITTLE ROCK REV. 505–506 & nn.75–79 (1997), <https://core.ac.uk/download/pdf/235515804.pdf>.
302. E.g., *Compl., State ex rel. Woods v. Am. Tobacco Co., Inc.*, No CV-96-14769 (Super. Ct. Ariz 1996); *Compl., State v. Philip Morris*, (No. 96-L13146), (Cir. Ct. Ill. 1996); *Compl., State v. R.J. Reynolds Tobacco Co.*, No CL71048 (Dist. Ct. Iowa 1996), <https://web.archive.org/web/20050503183743/http://www.library.ucsf.edu/tobacco/litigation/ia/jacomplaint.pdf>; *Compl., State v. R.J. Reynolds Tobacco Co.*, No C.J96-1499 (Dist. Ct. Okla. 1996), <https://web.archive.org/web/20070426065200/http://www.library.ucsf.edu/tobacco/litigation/ok/okcomplaint.html>; *Compl., Texas v. Am. Tobacco Co.*, No 5-96CV91 (E.D. Tex. 1997), <https://ucsf.app.box.com/s/yhsh30niruvilmzg2plbknejmrcq06/file/68836873913>; *Compl., State v. R.J. Reynolds Tobacco Co.*, No 96 CV 0829W (D. Utah 1996), <https://ucsf.app.box.com/s/yhsh30niruvilmzg2plbknejmrcq06/file/68836975093>.
303. The cases were ultimately settled under a master settlement agreement which included a payment of roughly \$365.5 billion (USD) from the tobacco majors. See *Tobacco Master Settlement Agreement*, (1998), <https://www.naag.org/wp-content/uploads/2020/09/2019-01-MSA-and-Exhibits-Final.pdf>.
304. For a summary of the origins of the opioid litigation. See Kendrick, *supra* note 225, at 727–36. See also Jacob Hedgpeth, *The Bankruptcy of Purdue Pharma in the Wake of Big Tobacco*, 94 UNIV. CO. L. REV. 33, 41 (2023), https://scholar.law.colorado.edu/cgi/viewcontent.cgi?article=1003&context=lawreview_forum (noting state AG suits alleging public nuisance among other claims).
305. See Sarah Maslin Nir, Jan Hoffman & Lola Fadulu, *Pharmaceutical Company Is Found Liable in Landmark Opioid Trial*, THE NEW YORK TIMES, Dec. 30, 2021, <https://www.nytimes.com/2021/12/30/nyregion/teva-opioid-trial-verdict.html>. For trial decisions rejecting state public nuisance claims, see, e.g., *State ex rel. Hunter v. Johnson & Johnson*, 499 P.3d 719 (Okla. 2021); *People v. Purdue Pharma L.P.*, No 30-2014-00725287 at *4 (Cal. Super. Ct. 2021) (rejecting four California counties’ suit against four drug companies); *City of Huntington v. AmerisourceBergen Drug Corp.*, 609 F.Supp.3d 408 (S.D.W. Va. 2022) (rejecting claims by the city and county against drug distributors). For decision and jury verdicts vindicating public nuisance claims see, e.g., *In re Nat’l Prescription Opiate Litig.*, Case No. 1:17-MD-2804, MDL 2804 (N.D. Ohio 2020) (upholding public nuisance claims by County of Lake, Ohio and County of Trumbull, Ohio); *San Francisco v. Purdue Pharma*, 620 F.Supp.3d 936 (N.D. Cal. 2022) (holding “Walgreens substantially contributed to an opioid epidemic with far-reaching and devastating effects across San Francisco,” and setting a second trial to determine responsibility for abatement).
306. Kendrick, *supra* note 225, at 736.
307. See, e.g., *Mayor & City Council of Baltimore v. BP P.L.C.*, 31 F.4th 178, 211 (4th Cir. 2022) (holding that the question of which acts constitute an “unreasonable-interference” may be fulfilled by showing the conduct at issue is proscribed by “a statute, ordinance or administrative regulation”); Restatement (Second) of Torts, *supra* note 222, § 821B cmt. c (“[A]ll of the states have numerous special statutes declaring certain conduct or conditions to be public nuisances because they interfere with the rights of the general public... These statutes amount to a legislative declaration that the conduct proscribed is an unreasonable interference with a public right.”).
308. See, e.g., WASH. REV. CODE RCW § 7.43.10 (2013).
309. See, e.g., N.C. GEN. STAT. § 14-50.42, 43 (2013).
310. See, e.g., TEX. HEALTH & SAFETY CODE ANN. § 341.011.
311. Multnomah County Board of Commissioners, *Resolution Declaring Climate Change a Public Nuisance and Authorizing the Office of County Attorney to Pursue Legal Remedies for Damages Caused by Climate Change*, https://multco-web7-psh-files-usw2-s3-us-west-2.amazonaws.com/s3fs-public/Resolution%20Declaring%20Climate%20Change%20a%20Public%20Nuisance%20Authorizing%20Litigation_6.22.23_1.pdf (the county defined public nuisance as “any conduct or action that unreasonably interferes with the health, life, property, well-being and rights of the members of the Multnomah County community.” Because the county found that climate change is “an ongoing threat that interferes with the community’s use and enjoyment of natural resources and disrupts the general welfare, causing harm to our common environmental, social, health, economic, and political interests,” climate change fits within their definition for public nuisance and laid the path to litigation).
312. *Compl., County of Multnomah v. Exxon Mobil Corp.*, 23CV25164 (Or. Cir. Ct. 2023).
313. 1 PRODUCTS LIABILITY PRACTICE GUIDE (JOHN F. VARGO ED., MATTHEW BENDER, 1987), § 6.03[5][a], at 6–44 (Release No. 69 ed.). Note that the Restatement (Second) includes a requirement that a product be “unreasonably dangerous.” Many courts treat “defective” and “unreasonably dangerous” as interchangeable or coextensive elements. See *Id.* § 6.04[4] nn.37-38 (citing cases).
314. See CONG. RSCH. SERV., *R40148, Products Liability: A Legal Overview*, 1–4 (2014), https://www.everycrsreport.com/files/20140128_R40148_73b84d8c0b03e61b9c2d64dedac6f8b44742acc5.pdf.
315. LAWRENCE G. CETRULO, *TOXIC TORTS LITIGATION GUIDE* Sec 2:9, at 43 (2023).
316. See *Moraca v. Ford Motor Co.*, 332 A.2d 599 (N.J. 1977).
317. See *Cassisi v. Maytag Co.*, 396 2d 1140 (Fla. Dist. Ct. App. 1981).
318. *Id.* (noting the “consumer expectation” and “risk/utility” tests).
319. See CONG. RSCH. SERV., *supra* note 314, at 2.
320. *Id.* at 44.
321. 1 PROD. LIAB. PRAC. GUIDE (VARGO ED.), *supra* note 313, at 6–1, 6–2, 6–5.
322. *Id.* at 6–47.
323. *Id.* at 6–47.
324. *Id.* at 6–62.
325. *Id.* See also *Greenman v. Yuba Power Products, Inc.*, 377 P.2d 897 (Cal. 1963); Restatement (Second) of Torts, *supra* note 222, § 402A; Gifford, *supra* note 245, at 744 (the development of strict products liability has been described as “the most radical and spectacular in American tort law during the twentieth century,” first emerging in the 1960s and being into the law by “virtually every state” by the mid-1980s).
326. 1 PROD. LIAB. PRAC. GUIDE (VARGO ED.), *supra* note 313, at 6–5. See also, *Id.* at 6–18, citing *Fleck v. Titan Tire Corp.*, 177 F.Supp.2d 605, 622 (E.D. Mich. 2001) (noting that in Michigan, implied warranty claims may allow recovery where a product is not reasonably fit for uses intended or foreseeable even where it does not have a traditional “defect”).
327. See, e.g., 1 PROD. LIAB. PRAC. GUIDE (VARGO ED.), *supra* note 313, § 6.04[5] at 6-76, 77.
328. Under the consumer expectation test, a product is defective in design or formulation when it is more dangerous than an ordinary consumer would expect when used in an intended or reasonably foreseeable manner. Restatement (Second) of Torts, *supra* note 222, § 402A and cmt. i (defining “unreasonably dangerous” as “the article sold must be dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics.”). See also Kristine Karnezis, *Products Liability: Modern Cases Determining Whether Product Is Defectively Designed*, 96 A.L.R.3d, § 2[a] (1979) (“...the focus for determining defectiveness should be on the consumer’s reasonable expectations of a product’s safety, considering the product’s nature, the risks involved in its use, and the precautions that would be effective to protect against such risks”).
329. As its name suggests, the risk-utility test seeks to balance the various risks of a product against its relative utility. In doing so, seven factors are to be considered: 1) the utility of the product to the public as a whole and to the individual user; 2) the likelihood it will cause injury; 3) the feasibility of a safer design; 4) the potential for designing and manufacturing the product so that is safe, but remains functional and reasonably priced; 5) the ability of the plaintiff to avoid injury by careful use of the product; 6) the awareness of the potential danger which reasonably can be attributed to the plaintiff; and 7) the manufacturer’s ability to spread the cost related to improving the safety of the design. 1 Prod. Liab. Prac. Guide (Vargo ed.), *supra* note 313, § 6.04[5][b] at 6-80.1-80.3. See also *Voss v. Black & Decker Mfg. Co.*, 450 N.E.2d 204 (N.Y. 1983). See also Restatement (Third) of Torts: Products Liability, *supra* note 297, § 2 cmt d (adopting a reasonableness, risk-utility balancing, as the standard for judging the defectiveness of product designs).
330. Under the foreseeable use test, a product is defective in design when the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a reasonable alternative design by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the alternative design renders the product not reasonably safe. See Karnezis, *supra* note 328, § 4, at 87 (citing cases applying the “foreseeable use” test). In some states, plaintiffs may be able to bring a closely related claim for breaching an implied warranty of merchantability. Even where a traditional defect is not present, the implied warranty may be breached where a product is not reasonably fit for its intended uses. See, e.g., *Fleck v. Titan Tire Corp.*, 177 F.Supp.2d 605, 622 (E.D. Mich. 2001).
331. In response to critiques that the consumer expectation test is rooted more firmly in contract than tort principles, and the risk-utility test applies traditional negligence principles in a strict liability context, some courts have adopted the prudent manufacturer test. Under this test, a product is unreasonably dangerous if a reasonably prudent manufacturer would not have put the product on the market if aware of its actual condition—this essentially imputes the benefit of hindsight onto a manufacturer and applies an objective test as to whether the manufacturer would have sold the product with that knowledge. 1 PROD. LIAB. PRAC. GUIDE (VARGO ED.), *supra* note 313, § 6.04[5], 6-76, 6-80.3, citing *Morales v. Amer. Honda Motor Co.*, 71 F.3d 531, 536 (6th Cir. 1995).
332. See, e.g., *Barker v. Lull Eng’g Co.*, 573 P.2d 443 (Cal. 1978); *Hardeman v. Monsanto Co.*, 216 F.Supp.3d 1037 (N.D. Cal. 2016) (applying California law); *Tincher v. Omega Flex*, 104 3d 328 (Pa. 2014) (adopting composite consumer expectation/risk-utility standard).
333. See JEAN MACCHIAROLI EGGEN, *TOXIC TORTS IN A NUTSHELL* 24–27 (6th ed. 2019).

334. Restatement (Second) of Torts, *supra* note 222, § 402A. 1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if (a) the seller is engaged in the business of selling such a product, and (b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold. (2) The rule stated in Subsection (1) applies although (a) the seller has exercised all possible care in the preparation and sale of his product, and (b) the user or consumer has not bought the product from or entered into any contractual relation with the seller.
335. It states in relevant part that sellers and distributors are liable for “harm to persons or property” caused by a product’s defect (Restatement (Third) of Torts: Products Liability, *supra* note 297, § 1), and that design defects turn on the foreseeable risks of harm posed by a product which could have been reduced or avoided by “the adoption of a reasonable alternative design” (Id. § 2).
336. See *City of Greenville v. W.R. Grace & Co.*, 827 F.2d 975 (4th Cir. 1987) (city as purchaser of asbestos).
337. *Monsanto*, 269 A.3d, *supra* note 261, at 657 (upholding claim where “it is not clear that Defendants did not owe a duty to Plaintiffs or the general public to make their products safe for the environment”).
338. *In re MTBE Products Liab. Litig.*, 725 F.3d 65, 123–24 (2d Cir. 2013) (upholding city’s failure to warn claim, noting that the “duty to warn extends to third persons exposed to a foreseeable and unreasonable risk of harm by the failure to warn”).
339. For discussion of these tensions in design defect jurisprudence, see: *Phillips v. Cricket Lighters*, 841 2d 1000 (Pa. 2003); *Berrier v. Simplicity Mfg.*, 563 F.3d 38, 54 (3d Cir 2009).
340. For instance, a limited class of products are deemed to be “unavoidably unsafe,” and are exempted from strict liability in most cases on the grounds that they serve some public utility and are incapable of being made safe for their intended and ordinary use. These typically include contraceptive pills, vaccines, and other prescription drugs with known risks. Restatement (Second) of Torts, *supra* note 222, § 402A, cmt. k. Similar arguments have been made to dispose of certain design defect claims involving guns. Compare *Moore v. R.G. Indus., Inc.*, 789 F.2d 1326 (9th Cir. 1986) (finding harms posed by handguns attributable to their use rather than their nature or design) with *Halliday v. Sturm, Ruger & Co.*, 792 A.2d 1145 (Md. App. Ct. 2002) (lack of a “safety” on a gun is a design defect).
341. Allan E. Korpela, *Failure to Warn as Basis of Liability under Doctrine of Strict Liability in Tort*, 53 A.L.R. 3d, §§ 1[a]-2[a] (1973). The doctrine is expressed in detail in *Greenman v. Yuba Power Products, Inc.*, *supra* note 325. While adequacy is generally a question of fact reserved for the jury, the factors typically considered include the following: 1) the dangerous nature of the product; 2) the use of the product; 3) the form and placement of the warning; 4) the reliability of third parties responsible for conveying warnings; 5) the burden that would be imposed on the defendant in providing a warning; and 6) whether the warning adequately communicates the relevant information to the ultimate user. 1 PROD. LIAB. PRAC. GUIDE (VARGO ED.), *supra* note 313, § 6.03[4][c], at 6–37 & n.74 (citing cases).
342. Restatement (Third) of Torts: Products Liability, *supra* note 297, § 1.
343. 1 PROD. LIAB. PRAC. GUIDE (VARGO ED.), *supra* note 313, § 6.03[4][c], at 6–38 & n.56.1.
344. Id. § 6.03[4][c], at 6–39 & n.59. In some cases, there may also be no duty to warn where the danger is open and obvious, or where the injured person, his employer, or an expert or technically trained person under whom he was working, knew of the danger and was responsible for communicating that danger. Korpela, *supra* note 341, § 2[a] (internal citations omitted).
345. Id. at 6–39 & nn.61–65.
346. 1 PROD. LIAB. PRAC. GUIDE (VARGO ED.), *supra* note 313, § 6.03[4][c], at 6–37 (emphasis added). Citing Restatement (Second) of Torts, *supra* note 222, § 388. See also *Spruill v. Boyle-Midway, Inc.*, 308 F.2d 397 (4th Cir. 1962).
347. *Mayor of Baltimore v. Philip Morris USA, Inc.*, 24-C-22-004904 at 30, 31 (Md. Cir. Ct. City of Balt. 2022), <https://www.publichealthlawcenter.org/sites/default/files/case/Baltimore-v-Philip-Morris-Complaint.pdf>.
348. *Pepsico*, No. 814682/2023, *supra* note 204, at 35.
349. For example, Puerto Rican municipalities have argued, under the foreseeable use test, that the products made by fossil fuel companies, when “used in a manner for which they were intended ... or misused in a manner foreseeable to defendants ... result[ed] [in] ... the addition of CO₂ emissions to the global atmosphere with attendant global and local consequences.” Compl., Municipalities of Puerto Rico v. Exxon Mobil Corp., 322-Cv-01550 240 (D.P.R. 2022), https://climatecasechart.com/wp-content/uploads/case-documents/2022/20221122_docket-322-cv-01550_complaint.pdf. Similarly, the state of Rhode Island, under the consumer expectation test, alleges fossil fuel products (including plastics) “have not performed as safely as an ordinary consumer would expect them to, and have been unreasonably dangerous for their intended, foreseeable, and ordinary use...” Compl. at 123-24, *Rhode Island v. Chevron Corp.*, PC-2018-4716 (R.I. Super. Ct. 2018), https://climatecasechart.com/wp-content/uploads/case-documents/2020/20200113_docket-PC-2018-4716_motion-to-dismiss.pdf.
350. John P. Ludington, *Products Liability: Polyvinyl Chloride*, 59 A.L.R. 4TH, § 2[a] (1988).
351. Id.
352. *Borden, Inc. v. Cyphers*, 486 N.E.2d 635 (Ind. Ct. App. 1986), https://scholar.google.com/scholar_case?case=15444466577876776512&hl=en&as_sdt=20006 (failure to warn).
353. *Ferragamo v. Massachusetts Bay Transp. Auth.*, 481 NE 2d 477 (Mass. 1985), [https://scholar.google.com/scholar_case?case=8222788627338206990&q=Ferragamo+v+Massachusetts+Bay+Transp.+Authority.+481+NE2d+477&hl=en&as_sdt=2003#r\[2\]](https://scholar.google.com/scholar_case?case=8222788627338206990&q=Ferragamo+v+Massachusetts+Bay+Transp.+Authority.+481+NE2d+477&hl=en&as_sdt=2003#r[2]) (where decedent’s likely cause of death was vinyl chloride poisoning resulting from the use of an acetylene torch to disassemble out-of-service trolley cars, the seller, MBTA, could be held liable for strict liability breach of warranty).
354. As medical and scientific literature continues to investigate potential links between plastic exposures and variety of potential health impacts, new theories of liability may arise. See CIEL ET AL., *supra* note 24. Even without a demonstrable injury or illness, in some cases plaintiffs may be able to recover damages for the emotional distress caused by the fear of developing cancer from certain negligent toxic exposures. See, e.g., *Norfolk & Western Ry. Co. v. Ayers*, 538 U.S. 135 (2003) (mental anguish damages resulting from fear of developing cancer may be recovered under Federal Employers’ Liability Act [FELA] by railroad worker suffering from actionable injury asbestosis caused by work-related exposure to asbestos).
355. First, a plaintiff must show general causation, meaning that a product’s defect is capable of causing a specific harm. Second, the plaintiff must adequately demonstrate specific causation, meaning that whether a specific condition or substance caused by the defect is responsible for that particular individual’s injury. So, even where a design defect has been proven, defendants can challenge whether there is sufficient proof that the defect is the proximate cause of a plaintiff’s injury. See *King v. Burlington Northern Santa Fe Ry. Co.*, 762 N.W.2d (Neb. 2009) (discussing the distinction between general and specific causation in the context of epidemiological evidence).
356. See *supra* nn.294-296
357. Ian Sample, *Microscopic Plastics Could Raise Risk of Stroke and Heart Attack, Study Says*, THE GUARDIAN, Mar. 6, 2024, <https://www.theguardian.com/environment/2024/mar/06/microscopic-plastics-could-raise-risk-of-stroke-and-heart-attack-study-says> (last visited Mar 29, 2024).
358. Leonardo Trasande et al., *Chemicals Used in Plastic Materials: An Estimate of the Attributable Disease Burden and Costs in the United States*, 8 J. ENDOCR. SOC. (2024), <https://academic.oup.com/ies/article/doi/10.1210/jendso/bvad163/7513992> (last visited Apr 22, 2024).
359. See, e.g., *Order, Burlington Sch. Dist. v. Monsanto Co.*, 222-Cv-00215-Wks (D. Vt. 2023) (denying Monsanto’s motion to dismiss).
360. *In re MTBE Products Liab. Litig.*, 725 F.3d, *supra* note 338, at 123–25 (upholding failure to warn claim). See also, *Maryland v. Exxon Mobil Corp.*, 406 F. Supp. 3d 420 (D. Md. 2019), *supra* note 263 (denying dismissal of claims, including those alleging strict liability defective design, failure to warn, and abnormally dangerous activity); *Rhode Island v. Atl. Richfield Co.*, *supra* note 263 (allowing state to proceed with common law tort claims, strict liability — failure to warn, nuisance, and trespass actions against various oil and chemical companies for the widespread MTBE contamination of the state’s waters); *New Hampshire v. Exxon Mobil Corp.*, 126 A.3d 266 (N.H. 2015) (raising negligence, strict liability for design defect, and strict liability for failure to warn, and seeking damages for groundwater contamination caused by MTBE).
361. *City of Greenville v. W.R. Grace & Co.*, *supra* note 336 (upholding defect claims against seller of asbestos on negligence and breach of warranty theories).
362. U.S. Env’t Prot. Agency (EPA), *Polychlorinated Biphenyls (PCBs): Learn about Polychlorinated Biphenyls (2024)*, <https://www.epa.gov/pCBS/learn-about-polychlorinated-biphenyls>.
363. See *Monsanto*, 269 A.3d, *supra* note 261. The case ultimately resulted in a settlement for roughly \$100 Million USD. See Andrew Cummings, Pa. to Get \$100M Settlement from Monsanto over PCB Contamination of Waterways, 90.5 WESA, Sep. 13, 2023, <https://www.wesa.fm/courts-justice/2023-09-13/pa-100m-settlement-monsanto-pcb-contamination-waterways>.
364. *Monsanto*, 269 A.3d, *supra* note 261, at 636–41. The court found additional grounds for standing via the state constitution’s Environmental Rights Amendment, which establishes the Commonwealth as the trustee of the natural resources held as the common property of the people of the state. Id. at 641–42 (citing PA. CONST. ART. I, § 27).
365. *Monsanto*, 269 A.3d, *supra* note 262, at 638–39 (noting that quasi-sovereign interests had been recognized in suits involving consumer claims, unjust enrichment, fraud, product liability, and more) (citing *Commonwealth ex rel. Pappert v. TAP Pharm. Prods., Inc.*, 885 A.2d 1127 (Pa. Cmwith. 2005) (“TAP II”)).
366. Id. at 660.
367. Id.
368. Id. at 660–61.
369. Id. at 661.
370. Id.
371. *Compare Pennsylvania Dept of Gen. Servs. v. U.S. Min. Prods. Co.*, 898 A.2d 590, 600–01 (Pa. 2006), with Restatement (Second) of Torts, *supra* note 222, § 388.
372. *Monsanto*, 269 A.3d, *supra* note 261, at 662.
373. *Supra* at 27–28 & nn.144–50.
374. Given the availability of alternative designs for many consumer goods manufactured out of plastics, industry knowledge of potential harms and risks of widespread environmental contamination could also have implications for defective design claims sounding in negligence. Factors that may be considered in such a claim include “the knowledge available at the time the product in question was designed, including evidence of alternative designs, unreasonable danger posed by a product’s design ..., the safety, generally, of a product for its intended or reasonably foreseeable use ..., and the inherent risks versus the benefits of a particular design ...” *Karnezis*, *supra* note 328, § 2[a] (citations omitted).
375. *Monsanto*, 269 A.3d, *supra* note 261, at 665.
376. Oliver Milman, *Universal ‘Chasing Arrows’ Recycling Symbol Could Be Dumped in US*, THE GUARDIAN, May 18, 2023, <https://www.theguardian.com/environment/2023/may/18/recycling-universal-symbol-chasing-arrows>. See also U.S. FED. TRADE COMM’N (“FTC”), *In Re Environmental Guideline Review* (Transcript), Dkt No. P954501, (1995), https://www.ftc.gov/sites/default/files/documents/public_events/environmental-marketing-guides-workshop/eg120795.pdf.
377. *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076, 1104 (5th Cir. 1973) (warning that inhalation of asbestos “‘may be harmful’ conveys no idea of the extent of the danger[s],” such as fatal conditions such as mesothelioma and other cancers).
378. *Monsanto*, 269 A.3d, *supra* note 261, at 663.
379. In *United States v. Philip Morris*, the government asserted that tobacco industry defendants and their co-conspirators “knowing violations of their duty under the state consumer protection statutes to refrain from engaging in unfair, unconscionable, deceptive, and misleading trade practices had the tendency to deceive consumers. *United States v. Philip Morris, Inc.*, 449 F.Supp.2d 1, 56–57 (D.D.C. 2006), https://www.justice.gov/sites/default/files/civil/legacy/2014/09/11/DOJ%20Web%20-%20Amended%20Complaint_0.pdf.
380. In the State of Oklahoma’s opioid complaint, the state asserted that opioid industry defendants engaged in unfair trade practices by downplaying the risks of their products, overstating their efficacy, and misrepresenting their necessity. Orig. Pet. at 24-25, *State of Oklahoma, ex. rel. Hunter v. Purdue Pharma, L.P.*, No. CJ-2017-816, 2017 WL 8234419 (Okla. Dist. Ct. 2017).
381. See 15 U.S. CODE § 1125(a).
382. Id. § 45(n) (“[D]eceptive acts as those that are likely to mislead consumers acting reasonably under the circumstances” and “[u]nfair acts are ... those that cause substantial injury to consumers, are not outweighed by any countervailing benefits, and are injuries that consumers could not reasonably have avoided.”).
383. U.S. FED. TRADE COMM’N (“FTC”), *Guides for the Use of Environmental Marketing Claims (“The Green Guides”)*, 16 C.F.R. § 260.12-260.13 (2024), <https://www.ecfr.gov/current/title-16/chapter-I/subchapter-B/part-260>. See also U.S. FED. TRADE COMM’N (“FTC”), *Environmental Claims: Summary of the Green Guides*, <https://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguidessummary.pdf>.
384. See *Moore v. New York Cotton Exch.*, 270 U.S. 593, 603 (U.S. 1926).
385. See, e.g., U.S. FED. TRADE COMM’N (“FTC”), *Legal Library: Other Applications, Petitions, and Requests*, <https://www.ftc.gov/legal-library/other-applications-petitions-requests/list> (last visited Jun 6, 2024) (“This list includes petitions from ... consumer organizations, and others asking the FTC to revise rule-makings, initiate investigations, or take other action) (emphasis added). See also Greenpeace, *Greenpeace Jointly Files FTC Complaint against Chevron*, (Mar., 2021), <https://www.greenpeace.org/usa/news/greenpeace-jointly-files-ftc-complaint-against-chevron/>.
386. U.S. FED. TRADE COMM’N (“FTC”), *FTC Publishes Inflation-Adjusted Civil Penalty Amounts for 2024*, (2024), <https://www.ftc.gov/news-events/news/press-releases/2024/01/ftc-publishes-inflation-adjusted-civil-penalty-amounts-2024> (capping the maximum civil penalty for violations at \$51,744).
387. U.S. FED. TRADE COMM’N (“FTC”), *supra* note 376.
388. See NATIONAL CONSUMER LAW CENTER, *Consumer Protection in the States: A 50-State Evaluation of Unfair and Deceptive Practices Laws*, (2018), https://www.nclc.org/wp-content/uploads/2022/09/UDAP_rpt.pdf.
389. See, e.g., ALA. CODE § 8-19-10; MICH. COMP. LAWS SERV. § 445.910.
390. See, e.g., CAL. BUS. & PROF. CODE § 17580.5; MINN. STAT. § 325E.41. In states that also provide consumers with a private right of action for deceptive advertising there could be opportunities to give the FTC Green Guides teeth through state litigation. For example, in California, multiple statutes – such as the Consumer Legal Remedies Act, Cal. Civ. Code § 1750 et. seq., the False Advertising Law, Cal. Bus. & Prof. Code § 17500 et seq., and the Unfair Competition Law – provide avenues for consumers to bring suit for misleading marketing claims and labels.
391. Claims asserted included breach of express warranty under the Cal. Commercial Code § 2313; false representations under the California Consumers Legal Remedies Act (“CLRA”); and fraudulent, unlawful and unfair acts and practices under Cal. Bus. and Prof. Code § 17200. These claims were based upon allegedly misleading claims regarding the recyclability of Keurig’s plastic single-serve coffee pods (“K-cups”); in reality, the complaint alleged, the pods typically ended up in landfills because municipal recycling facilities were incapable of sorting and recycling the pods, and even if recycling were feasible, no market existed to reuse the products or convert the pods into material that could be reused. Upon settling in July of 2022, defendants paid \$10 million in damages and now face restrictions on the ability to represent K-cups as recyclable without clearly and prominently including a revised qualifying statement, “Check Locally – Not Recycled in Many Communities,” in close proximity. *Order, Smith v. Keurig Green Mountain, Inc.*, 18-Cv-06690-HSG (N.D. Cal 2022), https://climatecasechart.com/wp-content/uploads/case-documents/2022/20220708_docket-418-cv-06690_memoandum-and-order.pdf.
392. *Order, Curtis v. 7-Eleven, Inc.*, No 21-Cv-6079, *35-36 (N.D. Ill. 2022), <https://stateimpactcenter.org/files/curtis.v.7.11.sep.13.order.pdf>.
393. *Order, Connecticut v. Reynolds Consumer Products, Inc.*, No X03-CV22-6156769-S (Conn. Super. Ct. 2023), <https://civillinquiry.jud.ct.gov/DocumentInquiry/DocumentInquiry.aspx?DocumentNo=25406181> (denying defendant’s motion to strike where hefty trash bags branded with the word “recycling” could not be processed by local recycling facilities).
394. See, e.g., Nicholas Kusnetz, *Exxon Accurately Predicted Global Warming, Years Before Casting Doubt on Climate Science*, INSIDE CLIMATE NEWS, Jan. 12, 2023, <https://insideclimatenews.org/news/12012023/exxon-doubt-climate-science/>; Banerjee & Song, *Exxon’s Own Research Confirmed Fossil Fuels’ Role in Global Warming Decades Ago*, INSIDE CLIMATE NEWS, Sep. 16, 2015, <https://insideclimatenews.org/news/16092015/exxons-own-research-confirmed-fossil-fuels-role-in-global-warming/>.

395. California v. ExxonMobil Corporation, CGC-23-609134 126-27 (Cal. Super. Ct. 2023).
396. City of Chicago v. BP P.L.C., No 2024CH01024 177 (Ill. Cir. Ct. 2024).
397. Compl., Vermont v. Exxon Mobil Corp., (no case number assigned in state proceeding before motion to remove case to federal court in the D.Vt., case number 221-cv-00260-wks) (Vt. Super. Ct. 2021), https://climatecasechart.com/wp-content/uploads/case-documents/2021/20210914_docket-na_complaint.pdf.
398. Compl., Massachusetts v. Exxon Mobil Corp., 1984CV03333 (Mass. Super. Ct. 2019).
399. Compl., Connecticut v. Exxon Mobil Corp., HHDCV206132568S (Conn. Super. Ct. 2020), https://climatecasechart.com/wp-content/uploads/case-documents/2020/20200914_docket-HHDCV206132568S_complaint.pdf.
400. Compl., City of New York v. BP P.L.C., 118-Cv-00182-JFK (S.D.N.Y. 2018), https://climatecasechart.com/wp-content/uploads/case-documents/2018/20180109_docket-118-cv-00182_complaint-1.pdf.
401. Compl., District of Columbia v Exxon Mobil Corp., 2020 CA 002892 B (D.C. Super. Ct. 2020), https://climatecasechart.com/wp-content/uploads/case-documents/2020/20200625_docket-2020-CA-002892-B_complaint-1.pdf.
402. Pepsico, No. 814682/2023, supra note 204, at 34.
403. Win Cowger et al., Global Producer Responsibility for Plastic Pollution, 17 Sci. Adv. (2024), <https://www.science.org/doi/10.1126/sciadv.adj8275>.
404. United States v. Morton Salt Co., 338 U.S. 632, 642 (U.S. 1950).
405. Massachusetts Office of the Attorney General, AG Healey Sues Exxon for Deceiving Massachusetts Consumers and Investors, (2019), <https://www.mass.gov/news/ag-healey-sues-exxon-for-deceiving-massachusetts-consumers-and-investors>.
406. Massachusetts Office of the Attorney General, Civil Investigative Demand No. 2016EPD36, (2016), <https://www.mass.gov/files/documents/2016/10/op/ma-exxon-cid-.pdf>.
407. Order, In Re Civil Investigative Demand no. 2016-EPD-36, No 2016-1888-F (Mass. Super. Ct. 2017), <https://www.mass.gov/files/documents/2017/01/px/order-on-emergency-motion-superior-court.pdf>.
408. People v. PricewaterhouseCoopers LLP, No 4519622016 (N.Y. Sup. Ct. 2018), <https://climatecasechart.com/case/people-v-pricewaterhouse-coopers-llp/>; Commonwealth v. Exxon Mobil Corp., No 1984-CV03333-BLS1 (Mass. Super. Ct. 2021).
409. California Office of the Attorney General, supra note 204.
410. Id.
411. U.S. ENVIRONMENTAL PROTECTION AGENCY, National Overview: Facts and Figures on Materials, Wastes and Recycling, (2023), <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials>.
412. See THE OXFORD HANDBOOK OF NEW YORK STATE GOVERNMENT AND POLITICS, 289 (Gerald Benjamin ed., 2012) (“As the state’s lead auditor the comptroller assisted the nation’s attorneys general as they prepared a class action suit against the tobacco industry. States won the right to reclaim a portion of their Medicaid expenses from the industry because of business and marketing practices that historically hid the negative health impacts of tobacco from the public. The comptroller’s auditors helped prepare evidence to support those claims.”).
413. BREAK FREE FROM PLASTIC, Branded: Holding the World’s Worst Plastic Polluters Accountable Annually Since 2018, (2023), <https://brandaudit.breakfreefromplastic.org/>.

Making Plastic Polluters Pay

How Cities and States Can Recoup the Rising Costs of Plastic Pollution

© June 2024



ciel.org

Instagram
@ciel_org

Twitter
@ciel_tweets

LinkedIn
linkedin.com/ciel.org