

TOXIC BATTERY: POLLUTION AS A DIGNITARY TORT

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Abstract: Corporate interests have contaminated the world and our bodies with chemical pollutants in pursuit of profit. In this Article, I argue that this contamination of our bodies with chemicals constitutes an offensive battery, a violation of our right to be free from nonconsensual contacts. I describe how our bodies are contaminated via factory discharges, train derailments and chemical spills, our use of consumer goods, and the workplace. I argue that traditional toxic tort and statutory environmental law do nothing to prevent this and in fact encourage polluting behaviors by limiting the polluters' right to pollute only when the pollution can be scientifically shown to cause us physical harm. I discuss how pollution in the absence of physical harm still violates our interest in bodily integrity and autonomy and treats us as less than, as mere means for corporate interests to realize their profits. I analyze the *prima facie* case for treating pollution as an offensive battery, focusing on the elements of voluntary act, intent, and offense. I evaluate consent and necessity as possible defenses and conclude that they do not hold in most cases of chemical pollution. I discuss the remedies available for pollution victims, including compensatory damages for those who need medical monitoring, punitive damages to punish the polluters who wantonly disregard our rights for their own profits, and injunctive relief to stop ongoing polluting behaviors and inform the public about the chemicals to which they are exposed through consumer goods.

In sum, this Article is an attempt at a first step to putting up meaningful boundaries on the cavalier polluting behaviors that have gotten us to this point. There is an urgent need to curtail the discharge of novel substances, in particular, and toxic offensive battery is a theory of liability that could be employed to hold polluters accountable. It is also a theory of liability that reflects a different way of

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thinking about our relationship to pollution, something we desperately need after more than fifty years of ineffective policies.

“PFAS [per- and polyfluoroalkyl substances] are found in the blood of people and animals all over the world.”¹ “Most people in the United States have been exposed to PFAS and have PFAS in their blood.”²

—U.S. Centers for Disease Control and Prevention

“Our study is the first indication that we have polymer particles [microplastics] in our blood.”³

—Professor Dick Vethaak

“You have to realize, the argument that DuPont says, ‘So what? It’s in your blood.’ . . . And my position would be, ‘You have no right to pollute my blood.’”⁴

—Glenn Evers, former DuPont Chemist, Parkersburg, West Virginia

INTRODUCTION

Imagine you are a frequent customer of a restaurant that has been in business for more than fifty years. The restaurant produces the most unique and delectable food in the world. No other restaurant comes close. One day, after ordering takeout, you see a receipt attached to your order. On that receipt, you see a “NOTICE” at the bottom that reads:

Dear valued customer,

With this notice, we are hereby informing you that all meals ever cooked and sold by us have released nonharmium into the environment as a by-product of their creation. Nonharmium accumulates in the human body when ingested and does not break down over time. We have known about our discharge of nonharmium and its bioaccumulative properties since the opening of our restaurant. However, you need not be concerned because according to our in-house tests, nonharmium is not harmful to human health.

¹ *What Are PFAS?*, AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY (Jan. 18, 2024), <https://www.atsdr.cdc.gov/pfas/health-effects/overview.html> [<https://perma.cc/6VQJ-7Q52>].

² *PFAS in the U.S. Population*, AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY (Jan. 18, 2024), <https://www.atsdr.cdc.gov/pfas/health-effects/us-population.html> [<https://perma.cc/EP3M-X9NR>].

³ Damian Carrington, *Microplastics Found in Human Blood for First Time*, THE GUARDIAN (Mar. 24, 2022), <https://www.theguardian.com/environment/2022/mar/24/microplastics-found-in-human-blood-for-first-time> [<https://perma.cc/5CSR-RTVC>].

⁴ THE DEVIL WE KNOW (Cinetic Media 2018).

Nonharmium is now found around the world, and every human being has nonharmium in their blood. All because a single restaurant decided to discharge nonharmium in the pursuit of cooking and selling its (admittedly, uniquely delectable) food.

Although nonharmium is a fictional substance, the theme of this story is very real. Despite repeated calls for precaution and accountability since the beginning of the modern environmental movement, private interests continue to discharge hazardous⁵ and novel substances⁶ broadly into the environment in pursuit of their own self-interests.⁷ There are approximately 350,000 chemicals, and mixtures of chemicals, on the global market, with the majority of those substances not subject to any oversight.⁸ Many of these substances demonstrate an affinity for biopersistence and bioaccumulation, which poses special concern for the integrity of Earth's systems.⁹ When one chemical is regulated or banned, industry has many more waiting to take its place.¹⁰ Pollution, often undetectable by our senses, continues to evolve and thrive in the twenty-first century.¹¹

This evolution calls for a reconceptualization of pollution. Pollution should not be considered to be a phenomenon that occurs only in the environment,

⁵ See *infra* Part II.B.3.

⁶ Novel substances include “new substances, new forms of existing substances and modified life forms” as well as “chemicals and other new types of engineered materials or organisms not previously known to the Earth system as well as naturally occurring elements (for example, heavy metals) mobilized by anthropogenic activities.” Linn Persson et al., *Outside the Safe Operating Space of the Planetary Boundary for Novel Entities*, 56 ENV'T SCI. & TECH. 1510, 1510 (2022) (quoting Will Steffen et al., *Planetary Boundaries: Guiding Human Development on a Changing Planet*, SCIENCE, Feb. 13, 2015, at 1259855-1, 1259855-1, 1259855-7).

⁷ See Clare Asher, *Novel Chemical Entities: Are We Sleepwalking Through a Planetary Boundary?*, MONGABAY (Sept. 23, 2021), <https://news.mongabay.com/2021/09/novel-entities-are-we-sleepwalking-through-a-planetary-boundary> [<https://perma.cc/4QAH-CWW8>] (“[Rachel] Carson’s cautionary tale went largely unheeded, and so has been repeated over the decades with other novel entities across the globe, as companies rushing to market new products, or municipalities and nations determined to avoid regulation, committed unforeseen assaults on the environment and citizenry.”); see also *infra* Part I.A (discussing how the law permits much pollution as of right to the polluter).

⁸ See Persson et al., *supra* note 6, at 1512.

⁹ See *id.* at 1510–11.

¹⁰ See Asher, *supra* note 7 (“Where one chemical is banned, hundreds or thousands more soon take its place. [Dichloro-diphenyl-trichloroethane (DDT)] itself rose to popularity as a replacement for the toxic pesticide lead arsenate. After *Silent Spring*, DDT was gradually replaced by chlorpyrifos, which has since been replaced by neonicotinoid pesticides, which are now seeing bans in the EU . . . due to harm to bees and other pollinators.”).

¹¹ For example, microplastics are not detectable by human senses. See Steve Allen et al., *Micro(nano)plastics Sources, Fate, and Effects: What We Know After Ten Years of Research*, 6 J. HAZARDOUS MATERIALS ADVANCES, May 2022, at 1, 2 (“However, micro and nano plastic are generally invisible to the naked eye and, in a similar manner to climate change, have been seen as a distal problem by many due to the lack of direct personal impact or visibility.”).

something that harms sensitive life forms, such as amphibians¹² or birds.¹³ Pollution is not just a phenomenon that makes some people, who are unlucky enough to live near polluters, sick.¹⁴ Pollution should be rethought of as something that we all are currently experiencing on a daily basis in our own bodies.

When polluters discharge their substances, both place and person are contaminated.¹⁵ Polluters have long been using our physical bodies just like the rest of the natural world, as a dumping ground for the chemicals and substances generated by their activities. The law permits this widespread pollution of our bodies as a matter of right to polluters because legal liability for the pollution of a human being is predicated on the requirement that the pollution cause physical harm, such as human disease or physical injury.¹⁶ Most pollution fails to satisfy this requirement.

Some may be tempted to say, “no harm, no foul,” and brush off the contamination of our bodies without our knowledge or consent as a non-issue.¹⁷ Such a position, however, completely disregards one of the oldest and most important legal interests we all possess: our dignitary interest in our bodily security and autonomy. We all possess a right to be free of nonconsensual contacts by others, even though those contacts cause us no physical harm. The law has protected this interest for hundreds of years through the action of offensive battery in tort.¹⁸

¹² For example, the industrial herbicide atrazine has consistently been shown to have negative effects on amphibians and fish. See Jason R. Rohr & Krista A. McCoy, *A Qualitative Meta-Analysis Reveals Consistent Effects of Atrazine on Freshwater Fish and Amphibians*, 118 ENV'T HEALTH PERSP. 20, 30 (2010) (“[F]or freshwater vertebrates, atrazine consistently reduced growth rates, had variable effects on timing of metamorphosis that were often nonmonotonic, elevated locomotor activity, and reduced antipredator behaviors. Amphibian and fish immunity was reliably reduced by ecologically relevant concentrations of atrazine, and this was regularly accompanied by elevated infections. Atrazine exposure induced diverse morphologic gonadal abnormalities in fish and amphibians and was associated with altered gonadal function, such as modified sex hormone production. This suggests that atrazine should be considered an endocrine-disrupting chemical.”).

¹³ The insecticide DDT is now well-known to cause eggshell thinning in birds, which historically played a role in the decline of several bird species populations, including bald eagles, brown pelicans, and ospreys. *The Case of DDT: Revisiting the Impairment*, ENV'T PROT. AGENCY, <https://www.epa.gov/caddis-vol1/case-ddt-revisiting-impairment> [https://perma.cc/3FG2-QYKF] (Feb. 28, 2024).

¹⁴ See, e.g., Jill Johnston & Lara Cushing, *Chemical Exposures, Health and Environmental Justice in Communities Living on the Fenceline of Industry*, 7 CURRENT ENV'T HEALTH REP. 48, 48 (2020) (“New and legacy industries, coupled with climate change, present unique health risks to communities living near industry due to the release of toxic chemicals.”).

¹⁵ See *infra* Part I.A.

¹⁶ See *infra* Parts I.B & C.

¹⁷ Perhaps this reaction shares similarities with the “I have nothing to hide” reaction to increasing government surveillance of one’s activities. Privacy from one’s government is not desirable only if one is committing crimes, just as freedom from physical contamination with chemicals is not desirable only to prevent disease.

¹⁸ See *People v. Medina*, 705 P.2d 961, 968 (Colo. 1985) (“The common law over the centuries has always protected individuals from unwanted intentional contacts with their person. It has been

My position in this Article is that polluters regularly disregard our dignitary interest in being free from nonconsensual contacts through their polluting behaviors. To look at our pollution problems through the lens of offensive battery is to begin to articulate why polluters' behavior is wrong. It is to begin to give reasons for our discomfort at knowing how many chemicals and other substances are being put into our bodies all the time by private interests.¹⁹ It is to give victims of localized pollution an avenue for compensation for the increased risks of physical harm with which they must live.

This Article is not an attempt to answer the question of which pollution should be permissible and which pollution should not. It does not purport to suggest how we go about cleaning up the pollution to which we have already been subject.²⁰ This Article is an attempt at a first step of putting up meaningful boundaries on the cavalier polluting behaviors that have gotten us to this point.²¹ There is an urgent need to curtail the discharge of novel substances, in particular,²² and toxic offensive battery is a theory of liability that could be employed to hold polluters accountable. It is also a theory of liability that reflects a different way of thinking about our addiction to technological advancements in chemical and materials science and the pollution that invariably follows those discoveries, something that we desperately need.²³

In defense of my position, the Article proceeds as follows. In Part I, I begin by providing some details on just how much pollution is in our bodies and the common ways in which it gets there.²⁴ I discuss why traditional toxic tort and statutory environmental law have failed to create adequate boundaries on this widespread contamination of our bodies. In Part II, I put forward the

observed that 'there is perhaps no right which is older than a person's right to be free from unwarranted personal contact.'" (quoting *Davis v. Hubbard*, 506 F. Supp. 915, 930 (N.D. Ohio 1980))).

¹⁹ The current pollution of our bodies is so bad that it is inescapable. See CARL F. CRANOR, *LEGALLY POISONED: HOW THE LAW PUTS US AT RISK FROM TOXICANTS* 3 (2011) ("We cannot escape contamination.").

²⁰ This is an extremely difficult problem.

²¹ In some respects, this Article is a challenge to DuPont's entitled position, "So what [our chemical] is in your blood?" See *THE DEVIL WE KNOW*, *supra* note 4; *infra* Part I.A.

²² See Persson et al., *supra* note 6, at 1517 (concluding that "we are now in a zone of exceedance of the Planetary Boundary for novel entities").

²³ For example, at the end of 2023, Google announced that its artificial intelligence tool, GNoME, discovered over 2.2 million new crystal structures, of which 380,000 are expected to be stable. See Amil Merchant & Ekin Dogus Cubuk, *Millions of New Materials Discovered with Deep Learning*, GOOGLE: DEEPMIND (Nov. 29, 2023), <https://deepmind.google/discover/blog/millions-of-new-materials-discovered-with-deep-learning/> [<https://perma.cc/2QWC-UADQ>]. Such a discovery is claimed to represent an estimated eight hundred years' worth of materials science discovery. *Id.* To fully appreciate the magnitude of this threat, recall that all human history has only produced an estimated 350,000 substances on the global market. See Persson et al., *supra* note 6, at 1512. In one fell swoop, GNoME has more than doubled this number.

²⁴ See *infra* notes 28–161 and accompanying text.

prima facie case for recognizing toxic battery as a dignitary tort.²⁵ Of particular importance is what counts as intent in “diffuse pollution cases” and why discharging chemicals and substances into our bodies counts as offensive contact. In Part III, I discuss the defenses of consent and necessity that a polluter might put forward to justify its polluting behaviors and conclude that these defenses hold no weight.²⁶ In Part IV, I conclude with a brief discussion of the remedies for toxic offensive battery and the incentives imposing such liability would produce going forward for polluters.²⁷

I. WHAT’S BATTERY GOT TO DO WITH POLLUTION?

It has been more than sixty years since the release of Rachel Carson’s *Silent Spring*,²⁸ more than fifty years since the first Earth Day, and more than forty years since the enactment of a wide array of federal environmental statutes. One might think that there has been plenty of time for battery to emerge as a viable mechanism for addressing pollution. Why turn to battery now?

Before making the affirmative case for pollution as offensive battery, I want to offer some motivation for looking to battery to address pollution in this Part. In Section A, I start with a discussion of the contamination of our bodies with chemicals and substances, even though most of us cannot show that we have suffered physical harm from that contamination.²⁹ My focus is on the fact that this pollution was done knowingly (and sometimes deliberately) without our knowledge or consent. In Section B, I turn to traditional toxic tort and discuss how the requirements of physical harm and causation severely curtail pollution victims’ ability to obtain redress for the polluting behaviors that have contaminated their bodies.³⁰ Finally, in Section C, I note that the focus on physical harm has played a role in making our statutory environmental laws ineffective at curtailing pollution as well.³¹

A. Physical Contamination Without Physical Harm

Which chemicals are found in our bodies and how did they get there? Of the 1,400 chemicals and chemical groups that are currently classified as known or likely human carcinogens, 420 have been detected in human blood samples

²⁵ See *infra* notes 162–298 and accompanying text.

²⁶ See *infra* notes 299–329 and accompanying text.

²⁷ See *infra* notes 330–349 and accompanying text.

²⁸ RACHEL CARSON, *SILENT SPRING* (50th Anniversary ed., 2012) (1962).

²⁹ See *infra* notes 32–95 and accompanying text.

³⁰ See *infra* notes 96–123 and accompanying text.

³¹ See *infra* notes 124–161 and accompanying text.

in the United States.³² Our exposure to most of these chemicals is below cancer-causing levels.³³ Simultaneously, we are exposed to chemicals whose risk to human health is unknown, so we have no information on whether, or how much, exposure causes physical harm.³⁴ Routes of exposure include discharges from a fixed source, either a factory discharge or chemical spill, exposure through consumer goods, and exposure in the workplace.³⁵ I cannot discuss every chemical that can be detected in our bodies in this Article, so I will limit my focus here to some of the ones we know most about.

Perhaps the most notorious chemical group that has contaminated our bodies is per- and polyfluoroalkyl substances (PFAS). These chemicals have contaminated the entire planet.³⁶ We have been exposed to PFAS in each of the three ways just mentioned. First, PFAS are used widely in consumer goods, including nonstick cookware,³⁷ waterproof garments,³⁸ stain-resistant carpeting, furniture, and clothing.³⁹ Most nonstick cookware is coated with polytetrafluoroethylene (PTFE), commonly known as Teflon.⁴⁰ PTFE will off-gas under normal cooking conditions, exposing consumers to the inhalation of Teflon.⁴¹ If you have sprayed your furniture, clothing, or carpeting with Scotchgard in

³² *The Pollution in People: Cancer-Causing Chemicals in Americans' Bodies*, ENV'T WORKING GRP. (June 14, 2016), <https://www.ewg.org/research/pollution-people> [<https://perma.cc/J29Q-3HN9>].

³³ *See id.* ("The mere presence of a carcinogen in the body is not necessarily a serious health threat."). A note on terminology: I focus on "exposure" as meaning that the substances have entered our bodies and can be detected in our blood and tissue samples, not merely that they have brushed upon skin and can be washed away. *See* CRANOR, *supra* note 19, at 18–21 (using the term "body burden" to capture the notion that a chemical can be detected in a person's tissues or fluids).

³⁴ *See* CRANOR, *supra* note 19, at 25 ("Too often almost nothing at all is known about contaminants and even less is known about small concentrations of industrial compounds.").

³⁵ *See The Pollution in People*, *supra* note 32 ("Carcinogens detected in biomonitoring studies come from diverse sources.").

³⁶ CRANOR, *supra* note 19, at 37. The first PFAS to be synthesized was PTFE, also known as the original Teflon, by a DuPont chemist in 1938. By 1950, 3M was also in the business of manufacturing a perfluorooctanoic acid (PFOA), C8, which is a critical step in manufacturing PTFE. DuPont and 3M continue to be the biggest polluters of PFAS, though they are not the only polluters of PFAS.

³⁷ *See* Gillian Z. Miller, Melissa Cooper Sargent & Jeff Gearhart, *PFAS and Other Chemical Hazards in Nonstick Cooking and Baking Pans*, ECOLOGY CTR. (Dec. 8, 2020), <https://www.eco-center.org/our-work/healthy-stuff-lab/reports/whats-cooking> [<https://perma.cc/QJF7-KSJY>].

³⁸ *See* Zahra Hirji & Olivia Rockeman, *Inside the Race to Get Forever Chemicals Out of Raincoats*, TIME (Feb. 2, 2023), <https://time.com/6252365/pfas-raincoats/> [<https://perma.cc/QG4G-7KVV>].

³⁹ *See id.*; *see also* CRANOR, *supra* note 19, at 37 (discussing the use of PFAS in consumer goods).

⁴⁰ *See* Miller et al., *supra* note 37.

⁴¹ *See* Muhammad Sajid & Muhammad Ilyas, *PTFE-Coated Non-Stick Cookware and Toxicity Concerns: A Perspective*, 24 ENV'T SCI. & POLLUTION RSCH. 23436, 23438 (2017) (discussing the off-gassing of residual PFOA under normal cooking conditions); *Canaries in the Kitchen: Teflon Toxicosis*, ENV'T WORKING GRP. (May 15, 2003), <https://www.ewg.org/research/canaries-kitchen> [<https://perma.cc/5FZN-MYA8>] ("These new tests show that cookware exceeds these temperatures [340 degrees Celsius] and turns toxic through the common act of preheating a pan, on a burner set on high.").

an effort to prevent spills and dirt from causing a stain, you have been exposed to PFAS.⁴²

Second, PFAS are directly discharged into the local environment, including into the waterways that many people rely on for drinking water.⁴³ For example, DuPont deliberately discharged C8, a perfluorooctanoic acid (PFOA), into the Ohio River adjacent to its Parkersburg, West Virginia plant.⁴⁴ As a result, residents who depend on that source for drinking water have significantly elevated C8 levels in their blood.⁴⁵ Currently, Chemours, a DuPont-subsidiary formed to insulate DuPont from PFAS-contamination liability, is discharging the next generation of C8, known as GenX, into the Cape Fear River in North Carolina.⁴⁶ This river provides the drinking water for four hundred thousand people, and only time will tell how much their bodies have been contaminated with GenX.⁴⁷

PFAS are also used in commercial firefighting foam, in part because such firefighting foam is “highly-effective . . . for fighting high-hazard flammable

⁴² Although 3M announced the removal of PFAS from its Scotchgard-branded aerosol fabric protector cans as of June 2020, 3M remains committed to a “reformulation” of those products, and it has not announced a similar removal of PFAS from the company’s commercial fabric protectors. See Sujatha Bergen, *Lowe’s Bans PFAS in Fabric Protector Sprays*, NAT. RES. DEF. COUNS: EXPERT BLOG (Mar. 29, 2021), <https://www.nrdc.org/bio/sujatha-bergen/lowes-bans-pfas-fabric-protector-sprays> [<https://perma.cc/JC9T-H78Y>].

⁴³ C8 was also discharged as an air pollutant at DuPont’s Parkersburg, West Virginia, plant. The concentrations emitted were so high that flocks of birds flying over the plant at the wrong time would simply drop dead out of the sky upon exposure. See Robert Bilott, *The 20-Year Legal Battle with DuPont That Started with One West Virginia Farmer*, MARKETPLACE (Oct. 16, 2019), <https://www.marketplace.org/2019/10/16/the-20-year-legal-battle-with-dupont-that-started-with-one-west-virginia-farmer/> [<https://perma.cc/5JXV-FU3Y>]. Many pollutants emitted from fixed locations are emitted both into the air that people breathe and the water that people drink.

⁴⁴ See News Release, Env’t Prot. Agency, EPA Reaches Consent Agreement with DuPont on Plan to Supply Drinking Water (Mar. 12, 2002), https://www.epa.gov/archive/epapages/newsroom_archive/newsreleases/bcfe951008539d2a852570d60070fce9.html [<https://perma.cc/5S94-JNFP>] (“The company has historically disposed of C8 wastes through direct discharges to the Ohio River, into three nearby landfills and by air emissions.”).

⁴⁵ See Myra L. Karstadt, *Serum PFOA Levels in Residents of Communities Near a Teflon-Production Facility*, 115 ENV’T HEALTH PERSPS., Oct. 2007, at A487–88.

⁴⁶ See *Advocacy: What Are PFAS?*, CAPE FEAR RIVER WATCH, <https://capefearriverwatch.org/genx/> [<https://perma.cc/6QEF-SJ94>].

⁴⁷ See *id.* (“The water utility confirmed they had no ability to filter these chemicals from our drinking water.”). DuPont is not the only bad actor with regard to PFAS contamination. The company Gore has been accused of discharging PFAS from their facilities into the drinking waters of nearby residents in Maryland while being well aware of PFAS’ toxicity. See Zoe Read, *Gore Accused of Contaminating Communities with PFAS: A Lawsuit Says the Company Has Known of the Dangers Since the 1990s*, WHYY, <https://whyy.org/articles/gore-lawsuit-pfas-contaminating-water/> [<https://perma.cc/5PZF-FVQ8>] (Feb. 10, 2023). Although Gore announced its discontinuation of the use of PFAS in 2014, it continues to use PTFE under the assertion that PTFE is not a “PFC[] (per and poly-fluorinated chemicals)” and not “of environmental concern.” *Reducing Our Chemical Impacts & Ensuring Responsible Chemical Use*, GORE-TEX, <https://www.gore-tex.com/sustainability/protect-the-planet/reduce-chemical-impacts> [<https://perma.cc/8EZ6-5PC4>].

liquid fires, like gasoline, oil, and jet fuel.”⁴⁸ This use of PFAS has resulted in the contamination of drinking water sources all over the United States because the firefighting foam runs off into local surface waters and can seep into groundwater aquifers.⁴⁹ Some of the highest concentrations of PFAS in drinking water are found around military bases and airports because of its use in firefighting foam.⁵⁰ Although the Environmental Protection Agency (EPA) announced the first national drinking water standard for PFAS on March 14, 2023 (a process that took the EPA decades),⁵¹ new firefighting foams with different chemicals are already in use.⁵²

Third, and not least, DuPont maintained working conditions that amounted to C8 experimentation on their employees. In the Parkersburg plant, C8 was everywhere, “bubbling out of . . . glass flasks,” “wafting into a smelly vapor” when heated, dusting the lab drawers, and “float[ing] in the hazy lab air.”⁵³ DuPont knew in the early 1960s that C8 was toxic, and by the late 1970s, DuPont knew that C8 was accumulating in the blood of its employees.⁵⁴

The story of PFAS is so egregious that it is difficult to think of it as representative, but it is. The contamination of our bodies with PFAS is just one of

⁴⁸ *PFAS Foam*, MICH. PFAS ACTION RESPONSE TEAM, <https://www.michigan.gov/pfasresponse/investigations/pfas-foam> [https://perma.cc/58P9-5KG7].

⁴⁹ See *Addressing Challenges of PFAS: Protecting Groundwater and Treating Contaminated Sources*, ENV’T PROT. AGENCY, <https://www.epa.gov/sciencematters/addressing-challenges-pfas-protecting-groundwater-and-treating-contaminated-sources> [https://perma.cc/5RT6-HBKD] (Sept. 6, 2023) (“When firefighting compounds are sprayed, high concentrations are present at the surface and concentrations decrease as they percolate into the ground. Brooks and his team are studying key chemical characteristics of these compounds that tend to tie them up in the unsaturated zone, causing them to persist in soil and slowly bleed into groundwater which can be a long-lasting problem.”).

⁵⁰ See *PFAS Contamination in the U.S.*, ENV’T WORKING GRP., https://www.ewg.org/interactive-maps/pfas_contamination/map/ [https://perma.cc/PC4P-5PJV] (May 21, 2024).

⁵¹ See News Release, Env’t Prot. Agency, Biden-Harris Administration Proposes First-Ever National Standard to Protect Communities from PFAS in Drinking Water, <https://www.epa.gov/news-releases/biden-harris-administration-proposes-first-ever-national-standard-protect-communities> [https://perma.cc/RR4U-F39K] (Mar. 14, 2023). The EPA became aware of DuPont’s discharges of C8 in Parkersburg, West Virginia, around 1999, when Robert Bilott filed the first lawsuit against DuPont on behalf of Wilbur Tennant, a West Virginian farmer whom DuPont had callously poisoned. See Nathaniel Rich, *The Lawyer Who Became DuPont’s Worst Nightmare*, N.Y. TIMES MAG. (Jan. 6, 2016), <https://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html> [https://perma.cc/34K8-GFPR].

⁵² See *Firefighting Foam*, N.H. DEP’T OF ENV’T SERVS.: N.H. PFAS RESPONSE, <https://www.pfas.des.nh.gov/firefighting-foam> [https://perma.cc/6LKN-YZAN].

⁵³ CARL F. CRANOR, *TRAGIC FAILURES: HOW AND WHY WE ARE HARMED BY TOXIC CHEMICALS* 1 (2017) (quoting Sharon Lerner, *The Teflon Toxin: DuPont and the Chemistry of Deception*, THE INTERCEPT (Aug. 11, 2015), <https://theintercept.com/2015/08/11/dupont-chemistry-deception/> [https://perma.cc/SG9C-ZMRR]).

⁵⁴ See *id.* at 2. Again, DuPont is not a unique actor in this regard. A recent lawsuit alleges that the textile company, Gore, also exposed its plant workers to high PFAS levels, knowing about the toxicity of PFAS and that such exposures caused the employees illness. See Read, *supra* note 47.

many such stories. Consider polybrominated diphenyl ethers (PBDE), also known as brominated flame retardants. In the mid-1970s, PBDEs were not present in the bodies of U.S. citizens.⁵⁵ As of 2017, however, “US citizens . . . have the highest concentrations in the world of PBDEs in their bodies.”⁵⁶ Much of our exposure to these flame retardant chemicals comes from consumer goods such as furniture, mattresses, carpet padding, pillows, computers, televisions, and automobile upholstery.⁵⁷ These chemicals pervade our indoor air and dust.⁵⁸ There is considerable evidence that our food is also contaminated with PBDEs.⁵⁹ Furthermore, these chemicals do not even prevent fires; they merely slow fires that are already burning.⁶⁰

Formaldehyde is another chemical to which we are exposed daily, also through consumer products. It is present in “home and trailer house construction, haircare products, insulation, wallpaper, paints, fabrics, draperies, wood-en-floor finishes, and laminated flooring.”⁶¹ In 2013, the story of Sandy Guest, a hairdresser who developed leukemia and died due to high levels of formaldehyde in the haircare products manufactured by Brazilian Blowout, made headlines.⁶² The company was selling haircare products with labels that read “No Formaldehyde” or “Formaldehyde Free” despite containing methylene glycol, the liquid form of formaldehyde.⁶³ In 2015, the company Lumbar Liq-

⁵⁵ CRANOR, *supra* note 53, at 37.

⁵⁶ *Id.* at 38. The emergence of brominated flame retardants is a story of corporate deception by the tobacco industry to avoid legal liability for the fires that an unextinguished cigarette can cause. See THE MERCHANTS OF DOUBT (Participant Media 2014).

⁵⁷ See CRANOR, *supra* note 19, at 34; see also Liza Gross, *Flame Retardants in Consumer Products Are Linked to Health and Cognitive Problems*, WASH. POST (Apr. 15, 2013), https://www.washingtonpost.com/national/health-science/flame-retardants-in-consumer-products-are-linked-to-health-and-cognitive-problems/2013/04/15/f5c7b2aa-8b34-11e2-9838-d62f083ba93f_story.html [<https://perma.cc/3D3W-NTZC>] (discussing flame retardants in consumer goods).

⁵⁸ See Shelagh K. Genuis, Detlef Birkholz & Stephen J. Genuis, *Human Excretion of Polybrominated Diphenyl Ether Flame Retardants: Blood, Urine, and Sweat Study*, BIOMED RES. INT’L, Mar. 8, 2017, at 1, 2.

⁵⁹ See *id.* (“[D]iet has also been identified as a primary source of human exposure.”); see also CRANOR, *supra* note 19, at 34 (mentioning PBDEs in food).

⁶⁰ See CRANOR, *supra* note 19, at 34.

⁶¹ See CRANOR, *supra* note 53, at 5.

⁶² See Jamie Smith Hopkins, Jim Morris & Maryam Jameel, *Read Their Stories: How Job-Related Illnesses Upended These Families’ Lives*, CTR. FOR PUB. INTEGRITY (June 29, 2015), <https://publicintegrity.org/inequality-poverty-opportunity/workers-rights/read-their-stories-how-job-related-illnesses-upended-these-families-lives/> [<https://perma.cc/6F29-VBP5>].

⁶³ See *Hair Smoothing Products That Could Release Formaldehyde—Background*, U.S. DEP’T OF LAB.: OCCUPATIONAL SAFETY & HEALTH ADMIN., <https://www.osha.gov/hair-salons/background> [<https://perma.cc/FQ3R-VRRT>]. Methylene glycol is still listed as an ingredient in Brazilian Blowout as of July 20, 2018, see Safety Data Sheet, Form BB-021, Brazilian Blowout, https://web.brazilianblowout.com/hub/bb/safety-data-sheets/Doc/1_Professional%20Products/3_Brazilian%20Blowout%20EXPRESS%20Solution/Link.pdf [<https://perma.cc/ZZZQ-BPTQ>], despite Food and Drug Administration (FDA) scientists deeming such products unsafe in 2016. See Roni Caryn Rabin, *The F.D.A.*

uidators was found to be selling laminated flooring that emitted levels of formaldehyde surpassing California's standards.⁶⁴ Growing efforts to build more energy-efficient houses have encouraged "tight" construction, which in turn, has increased formaldehyde levels in our homes.⁶⁵

Bisphenol A (BPA) is another infamous chemical to which we are chronically exposed in consumer goods. Unlike some of the other chemicals discussed in this Article, BPA is old, having been first synthesized in 1891 as one of the early estrogen-mimicking substances.⁶⁶ The FDA approved the use of BPA in food containers in 1963.⁶⁷ BPA is now a high-production-volume chemical, with more than one million pounds of the substance being produced every year.⁶⁸ BPA is found in baby bottles, water bottles, and soft drink bottles.⁶⁹ It is used to coat metal food containers.⁷⁰ BPA is also used as a tooth sealant to prevent decay in children's teeth and in composite resins for filling cavities.⁷¹ Our primary means of exposure is through ingestion of food and drink contaminated with BPA.⁷² In the face of widespread pressure to remove BPA from its products, industry has replaced much of the BPA in consumer goods with bisphenol S (BPS), a substance "more estrogenic than BPA."⁷³ Yet, many consumers remain in the dark about this substitution and purchase "BPA-free" plastics thinking they are making informed choices about what chemicals are entering their bodies.

Recently, we have come to learn that the world, including our bodies, is contaminated with microplastics. Microplastics are everywhere, having been

Wanted to Ban Some Hair Straighteners. It Never Happened, N.Y. TIMES (Oct. 21, 2020), <https://www.nytimes.com/2020/10/21/health/brazilian-blowout-formaldehyde-fda.html> [<https://perma.cc/4KM5-TFBY>].

⁶⁴ CRANOR, *supra* note 53, at 5.

⁶⁵ See Dustin Poppendieck et al., *Formaldehyde Concentrations in a Net-Zero Energy House: Real-Time Monitoring and Simulation* (U.S. Dep't of Com., Nat'l Inst. of Standards & Tech., Conference Paper, 2016), https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=920271 [<https://perma.cc/JM8R-H4UG>].

⁶⁶ CRANOR, *supra* note 19, at 40. The bisphenols are not the only substances that mimic human hormones. Humans are chronically exposed to di (2-ethylhexyl) phthalate (DEHP), a chemical that is used to make plastics more flexible. See *Public Health Statement: Di(2-ethylhexyl)phthalate (DEHP)*, DEP'T OF HEALTH & HUM. SERVS., AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY (Sept. 2002), <https://www.atsdr.cdc.gov/toxprofiles/tp9-c1-b.pdf> [<https://perma.cc/4F2X-X9DJ>]. Recent research suggests that DEHP negatively impacts male fertility. See Radwa Barakat et al., *Prenatal Exposure to Di(2-ethylhexyl) Phthalate and High-Fat Diet Synergistically Disrupts Gonadal Function in Male Mice*, 110 BIOLOGY REPROD. 1025, 1025–37 (2024).

⁶⁷ CRANOR, *supra* note 19, at 40.

⁶⁸ *Id.* at 41.

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² *Id.*

⁷³ CRANOR, *supra* note 53, at 40.

detected in our food supply⁷⁴ and in an ever increasing number of human organs.⁷⁵ Many of our modern fabrics are made from plastics, and when these clothes are washed, they shed microplastics that end up in our waters.⁷⁶ When these textiles are put through a clothes dryer, they release microplastics into the air that we then inhale.⁷⁷ Tires wear down on the road, shedding microplastics into the air we breathe and the water we drink.⁷⁸ It is estimated that we ingest the equivalent of one credit card's worth of plastic every week.⁷⁹

The industrial mindset, and its accompanying addiction to technology for the sake of technology, continuously drives new sources of chemical and material contamination of our bodies. For example, in the last decade, a new chemical called Apeel (or Organipeel or Edipeel) has entered the American produce market. Apeel is a coating applied to the outside of produce, including organic produce, to prolong shelf-life.⁸⁰ Although the company claims the coating can be washed off the produce,⁸¹ because Apeel is tasteless, odorless, and colorless, it is impossible for the typical consumer to be sure that all Apeel has been removed. Additionally, the company intends for the coating to be ingested.⁸² It is therefore likely that Apeel is consumed if the skin of the produce item is consumed (for example, apples, grapes, cucumbers, and strawberries). Apeel is composed of monoacylglycerides derived from grape seed.⁸³ It has not been subject to any regulatory scrutiny because the company has claimed that, be-

⁷⁴ Qingrun Liu et al., *Microplastics Contamination in Eggs: Detection, Occurrence and Status*, 397 FOOD CHEMISTRY, Dec. 15, 2022, at 1, 1.

⁷⁵ See, e.g., Antonio Ragusa et al., *Plasticenta: First Evidence of Microplastics in Human Placenta*, 146 ENV'T INT'L, Jan. 2021, at 1, 1; Luis Fernando Amato-Lourenço et al., *Presence of Airborne Microplastics in Human Lung Tissue*, 416 J. HAZARDOUS MATERIALS, Aug. 15, 2021, at 1, 1; Chelin Jamie Hu et al., *Microplastic Presence in Dog and Human Testis and Its Potential Association with Sperm Count and Weights of Testis and Epididymis*, 200 TOXICOLOGICAL SCI. 235, 235 (2024).

⁷⁶ See Katie Okamoto, *Your Laundry Sheds Harmful Microfibers. Here's What You Can Do About It*, N.Y. TIMES: WIRECUTTER, <https://www.nytimes.com/wirecutter/blog/reduce-laundry-microfiber-pollution/> [<https://perma.cc/EL2Z-VK5W>] (Aug. 5, 2021).

⁷⁷ Danyang Tao et al., *Microfibers Released into the Air from a Household Tumble Dryer*, 9 ENV'T SCI. & TECH. LETTERS 120, 120 (2022).

⁷⁸ See Melissa Suran, *Microplastics Are Found Outside in Nature and Inside the Body—but Evidence of Health Risks Is Inconclusive*, 328 JAMA 911, 911 (2022).

⁷⁹ See Elisabeth S. Gruber et al., *To Waste or Not to Waste: Questioning Potential Health Risks of Micro and Nanoplastics with a Focus on Their Ingestion and Potential Carcinogenicity*, 15 EXPOSURE & HEALTH 33, 34 (2023).

⁸⁰ See *Freshness That Won't Go to Waste, Stay Fresh, APEEL*, <https://www.apeel.com/> [<https://perma.cc/K6YS-K5QF>] ("Our plant-based products help keep your produce in its original, vibrant, living state for a little bit longer.").

⁸¹ *Id.*

⁸² See generally Letter from Jenny Du, Vice President of Operations, Apeel Scis., to the Food & Drug Admin., Off. of Food Additive Safety (Oct. 9, 2019) (on file with the FDA), <https://www.fda.gov/media/135944/download> [<https://perma.cc/3SN3-7YBJ>] (GRAS Notice No. 886).

⁸³ *Id.*

cause it is a derivative of grape seed oil via a process that is generally recognized as safe, Apeel itself must be safe.⁸⁴ Only consumer fervor over Apeel has produced information regarding its use.⁸⁵

Recently, news broke regarding Chevron's synthesis of a new boat fuel chemical made from discarded plastic.⁸⁶ The chemical is in production at Chevron's refinery in Pascagoula, Mississippi, where it is a threat to be discharged into the surrounding air and waters and contaminate the bodies of nearby residents.⁸⁷ The EPA's approval of this incredibly carcinogenic substance leaves workers at the refinery vulnerable to significant exposures, as the EPA-mandated protectionary measures require only that workers wear gloves.⁸⁸ In defense of the position that the substance is low-risk to workers and residents nearby the Pascagoula plant, Chevron claims that the carcinogenic burden would actually fall heaviest on those who use the boat fuel, in other words, end consumers.⁸⁹ Regardless of the toxicity of the chemical, this is yet another example of countless people being contaminated with new chemicals through factory discharges, worker exposure, and consumer products, all in the name of corporate interests.

Stories of this kind of contamination are as many as there are reporters to investigate them and communities to discover and protest them. A Pittsburgh coal-processing plant was locally infamous for repeatedly discharging sulfur-dioxide and arsenic, despite millions of dollars in government fines, and thereby contaminating the surrounding community.⁹⁰ In 2014, 4-methylcyclohexane methanol, whose toxicity is unknown, was discharged into the Elk River in West Virginia, contaminating the drinking water of hundreds of thousands of nearby residents.⁹¹ In old mining sites that have not been remediated, mining

⁸⁴ See *id.* (“[T]he intended use of a mixture of monoacylglycerides [also known as monoglycerides] derived from grape seed has been determined to be Generally Recognized As Safe (GRAS) based on scientific procedures. Therefore, the intended use of a mixture of monoacylglycerides derived from grape seed is exempt from the requirement of premarket approval under the Federal Food, Drug, and Cosmetic Act (FD&C Act).”).

⁸⁵ See *Grocery & Produce Brand Policies on Apeel*, MY HEALTH FORWARD, <https://myhealthforward.com/blogs/my-health-forward-blog/apeel> [<https://perma.cc/RLG5-8327>] (May 28, 2024).

⁸⁶ See Sharon Lerner, *EPA Approved Fuel Ingredient with Sky-High Lifetime Cancer Risk, Document Reveals*, THE GUARDIAN (Aug. 4, 2023), <https://www.theguardian.com/environment/2023/aug/04/epa-boat-fuel-cancer-risk-chevron-mississippi> [<https://perma.cc/6F4M-MEMJ>].

⁸⁷ See *id.*

⁸⁸ See *id.*

⁸⁹ See *id.*

⁹⁰ See Press Release, N.Y.U. Langone Health, *Closure of Pittsburgh Coal-Processing Plant Tied to Local Health Gains* (Aug. 1, 2023), <https://nyulangone.org/news/closure-pittsburgh-coal-processing-plant-tied-local-health-gains> [<https://perma.cc/U8R7-H2PJ>].

⁹¹ See Kaitlynn Lebeau, *Final Report Released on January 2014 MCHM Chemical Spill*, WSAZ NEWS CHANNEL 3 (May 11, 2017), <https://www.wsaz.com/content/news/Final-report-released-on-January-2014-MCHM-chemical-spill--422004124.html> [<https://perma.cc/3RHW-2TN7>] (“[T]he spill

wastes have leached into the surrounding communities by air and water.⁹² Residents of farming communities are contaminated with agricultural chemicals, including glyphosate.⁹³

Train derailments chronically contaminate various vulnerable communities with chemicals. For example, the residents of East Palestine, Ohio, were exposed to vinyl chloride, butyl acrylate, and isobutylene as a result of a train derailment.⁹⁴ Regardless of whether any of these residents have been physically harmed, they have been contaminated by these chemicals, and more often than not, the private interests responsible for these discharges are aware of the contamination their pollution causes.

I can only discuss “the tip of a contamination iceberg”⁹⁵ in this Article, but I hope I have provided enough of a glimpse of the sheer magnitude of the pollution problem we are living through right now. I turn now to the question of how the law permits this contamination as of right to polluters. I start with toxic tort and then move to statutory environmental law.

B. The Limits of Traditional Toxic Tort

The single most important characteristic of this story of chemical contamination is the fact that although these chemicals are detectable in our bodies, most of us do not (and will not) present with (1) physical injuries that (2) can be shown to have been caused by our exposure to the chemicals.⁹⁶ A large swath of toxic tort liability is limited to situations where another’s actions caused the victim physical harm. For example, causation and actual damages are elements of both negligence claims and strict liability claims.⁹⁷ For pollu-

restricted water use for nearly 300,000 people. More than 300 people sought medical treatment for potential exposure.”).

⁹² See *Roeder v. Atl. Richfield Co.*, No. 3:11-cv-00105, 2011 WL 4048515, at *1 (D. Nev. Sept. 8, 2011) (granting in part and denying in part a motion to dismiss a class action lawsuit against a mining company defendant who allegedly allowed toxicants to escape an abandoned copper mine).

⁹³ See generally Christina Gillezeau et al., *The Evidence of Human Exposure to Glyphosate: A Review*, ENV’T HEALTH, Jan. 7, 2019, at 1 (reviewing the literature on the pathways of human exposure to glyphosate, including farming).

⁹⁴ See Denise Chow & Kenzi Abou-Sabe, *Ohio Derailment: What Chemicals Spilled and How Could They Affect Residents?*, NBC NEWS (Feb. 22, 2023), <https://www.nbcnews.com/science/science-news/ohio-derailment-chemicals-spilled-impact-residents-rcna71561> [<https://perma.cc/PM2G-CT4R>].

⁹⁵ CRANOR, *supra* note 53, at 69.

⁹⁶ See Kathleen A. O’Nan, *The Challenge of Latent Physical Effects of Toxic Substances: The Next Step in the Evolution of Toxic Torts*, 7 J. MIN. L. & POL’Y 227, 228 (1991) (“[B]ecause of the latent effects of toxic chemicals on the human body, the victim may not exhibit signs of toxic exposure for years or even decades.”); Daniel Farber, *Toxic Causation*, 71 MINN. L. REV. 1219, 1228 (1987) (“[O]ne problem relating to proof of causation is that of establishing, given that the toxic substance in question can cause harm of the type suffered by the plaintiff, that the plaintiff’s harm did in fact result from such exposure.”).

⁹⁷ RESTATEMENT (SECOND) OF TORTS §§ 281, 519 (AM. L. INST. 1979).

tion, this means that there is no possibility of imposing tort liability on bad actors for their negligent or even reckless polluting behavior unless, and until, those actions cause physical harm to someone. Many pollution cases, therefore, face no negligence or strict liability because victims cannot show that their contamination with the chemical caused them physical harm.⁹⁸

Harm and causation pose two different, but related, barriers to establishing negligence or strict liability for the chemical contamination of our bodies. For example, victims of localized pollution often do not manifest physical injury immediately upon exposure, even though they have sustained exposure levels known to cause human diseases.⁹⁹ Understandably, such pollution victims fear developing such diseases in the future and must monitor their health closely to catch and treat such diseases (to the extent they are treatable) as early as possible. Many states do not permit recovery in tort for such fears and costs of legitimate medical monitoring.¹⁰⁰ Additionally, many states require the manifestation of some concrete physical harm to the victim before imposing the cost of medical monitoring on the polluter.¹⁰¹

Even when a pollution victim sustains concrete physical harm, causation remains a significant barrier to imposing tort liability on the polluter. In negligence and strict liability claims against polluters, the burden is on the victim to prove both general and specific causation.¹⁰² General causation requires the victim to present scientific evidence that the pollutant that the victim claims caused her disease or physical ailment is known to cause that disease or physical ailment in human beings.¹⁰³ Specific causation further requires that the pollution victim present evidence that *her* exposure to the pollutant caused *her* disease or physical ailment.¹⁰⁴ Judges are required to play a gatekeeping role at this point in toxic tort litigation in deciding whether the victim's experts have

⁹⁸ See *Bennett v. Mallinckrodt, Inc.*, 698 S.W.2d 854, 864–65 (Mo. Ct. App. 1985) (“Injury is an essential element of a tort based on negligence. It also is an essential element of a tort based on strict liability. Thus, unless plaintiffs properly plead their injuries in their negligence and strict liability claims, they have failed to state a claim upon which relief can be granted.” (citations omitted)).

⁹⁹ See O’Nan, *supra* note 96, at 228.

¹⁰⁰ Bexis, *Medical Monitoring—50-State Survey*, DRUG & DEVICE L. (June 12, 2023), <https://www.druganddeviceblog.com/2023/06/medical-monitoring-50-state-survey.html> [<https://perma.cc/N3X3-GLPY>].

¹⁰¹ See John Gardella, *PFAS and Beyond: Restatement of Torts Will Shape Toxic Torts Litigation*, NAT’L L. REV. (May 25, 2023), <https://natlawreview.com/article/pfas-and-beyond-restatement-torts-will-shape-toxic-torts-litigation> [<https://perma.cc/M3GX-7JC8>] (“[V]ery few states allow for medical monitoring costs to be pled as a cause of action unto itself. Instead, states either require an underlying harm to be proven before the courts will consider awarding medical monitoring costs or states have outright rejected the medical monitoring theory of damages altogether.”).

¹⁰² See *Bennett*, 698 S.W.2d at 864–65.

¹⁰³ See Farber, *supra* note 96, at 1226–28.

¹⁰⁴ See *id.*

presented evidence that is scientific enough for the case to go to the jury.¹⁰⁵ Epidemiological studies have become a de facto requirement for proving general causation in toxic tort litigation.¹⁰⁶

Pollution victims are at a significant disadvantage when it comes to generating evidence on the causation issue compared to polluters. Oftentimes, polluters are large companies with significant means to conduct in-house safety testing on laboratory animals. Rarely, if ever, does a victim have the capacity to run safety testing on the chemicals to which they have been exposed. Because these chemicals are manufactured in factories, polluters are privy to the exposure data of their employees, which they then use to monitor human health effects.¹⁰⁷ Pollution victims, including those employees, may see this data during discovery, but they do not have access to it as a matter of course.

Finally, because there is so much pollution exposure in our modern era, it is statistically difficult to conduct the epidemiological studies that are de facto required to show causation between a particular pollutant and a particular human disease.¹⁰⁸ For example, a very recent study showed that the closure of the Pittsburgh coal-processing plant,¹⁰⁹ which polluted the surrounding community,¹¹⁰ immediately improved public health outcomes, even though no cause-and-effect could be demonstrated between any individual's health and their exposure to the pollution.¹¹¹

The harm and causation elements of negligence and strict liability claims effectively permit the pollution of our bodies as a legal right to the polluter. If the pollution victim has not suffered a concrete physical injury or disease, or a

¹⁰⁵ See CRANOR, *supra* note 53, at 116–19 (discussing how *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), requires judges to function as gatekeepers of scientific evidence).

¹⁰⁶ See *id.*

¹⁰⁷ DuPont did this with the C8 exposure it gave its employees. See Rich, *supra* note 51 (“DuPont tested the children of pregnant employees in their Teflon division.”).

¹⁰⁸ Professor Carl F. Cranor identifies at least three significant limitations inherent to epidemiological studies for determining general causation between contamination with a chemical and human disease. CRANOR, *supra* note 19, at 54–62. First, disease caused by exposure to chemicals often has a long progression, requiring studies to follow contaminated individuals for an extensive amount of time before the adverse effect(s) can be seen. *Id.* at 56–57, 61. Second, epidemiological studies struggle to identify and adjust for confounding variables of disease, such as contamination with other chemicals and genetic factors. *Id.* at 61–62. In this regard, “[h]uman populations might become so contaminated by industrial chemicals that over time this will undermine the efficacy of epidemiological studies to identify dysfunctions and diseases.” *Id.* at 62. Third, epidemiology is essentially the running of “natural experiments” on real people. *Id.* at 54. For an epidemiological study to demonstrate causation between chemical exposure and human disease, a bunch of real people have to be made unwillingly sick. See *id.* at 54–62.

¹⁰⁹ See *supra* notes 32–95 and accompanying text.

¹¹⁰ See Press Release, N.Y.U. Langone Health, *supra* note 90.

¹¹¹ Wuyue Yu & George D. Thurston, *An Interrupted Time Series Analysis of the Cardiovascular Health Benefits of a Coal Coking Operation Closure*, ENV'T RSCH. HEALTH, July 31, 2023, at 1, 10.

judge decides the victim lacks sufficient scientific evidence to prove causation, polluters have a legal right to put whatever they want into our bodies. In essence, the polluter has done no wrong in the eyes of traditional toxic tort law because their actions have caused no physical harm. This narrow conception of wrongdoing—that, and only that, which causes physical harm—drives our pollution crisis. However, knowingly contaminating another's person without their consent is wrong on the same principles that ground offensive battery, even though such contamination cannot be epidemiologically proven to cause physical harm.

Expanding the tort toolkit, pollution victims have also tried to hold polluters accountable for their contamination in traditional toxic tort through property law claims, such as nuisance, both public and private, and trespass.¹¹² Neither nuisance nor trespass seem to require a pollution victim to show that their exposure to the pollutant caused her physical harm. And yet, neither nuisance nor trespass have seen much success in pollution cases precisely because polluting someone's land with chemicals is not considered harmful. Both public and private nuisance require a showing that the pollution creates substantial and unreasonable interference with the victim's right.¹¹³ In public nuisance, the interference is with a right common to the general public, and in private nuisance, the interference is with the victim's use and enjoyment of her land. The "unreasonable interference" requirement has been reduced to a utility versus harm balancing test.¹¹⁴ Polluters are structurally advantaged in such balancing tests where the pollution victim cannot show physical harm to the land or physical impairment in the use of the land because no one ever questions the polluter's claims that their behaviors generate social utility.

Apeel is a great example of this chronic assumption that any new chemical generates social utility. Upon being told that Apeel allows produce to last twice as long before spoiling, most people are going to take for granted that this is not only socially valuable, but darn near a social necessity. There is, after all, a significant number of Americans who lack access to healthy food. Surely, something that doubles the shelf life of fresh produce would go a long way to solve this problem, right?

The challenges facing our modern food systems, however, are not production and storage problems. Industrial agriculture produces nearly five pounds of food per day per person globally, distributed across meats, starches, vegeta-

¹¹² See, e.g., *Boomer v. Atl. Cement Co.*, 257 N.E.2d 870 (N.Y. 1970) (nuisance action); *Bradley v. Am. Smelting & Refin. Co.*, 709 P.2d 782, 786 (Wash. 1985) (trespass action).

¹¹³ RESTATEMENT (SECOND) OF TORTS §§ 821B, 826 (AM. L. INST. 1979).

¹¹⁴ *Id.* § 826(a) ("An intentional invasion of another's interest in the use and enjoyment of land is unreasonable if . . . the gravity of the harm outweighs the utility of the actor's conduct . . .").

bles, and fruits.¹¹⁵ Large amounts of food are thrown away every day in the United States. That some people lack food is indicative of a distribution problem, which is a problem of justice. Putting Apeel into our bodies does not solve this problem.¹¹⁶

Even if it were granted that something like Apeel has only marginal social utility, the balancing test still favors pollution where it is not shown or cannot be shown that a chemical causes physical harm to persons or property. We have a difficult time conceptualizing harms that we cannot put a price tag on,¹¹⁷ and many cannot conceive of “harm” without some sort of physical injury or physical damage to property. But all actions ostensibly have some benefit to someone; otherwise, they would not be undertaken. If the only thing to weigh against such an action is that it causes physical harm and such harm is not identifiable or provable, then such action is permissible. Nuisance doctrine, working as intended, results in polluters having the right to put their chemicals into our air and onto our lands, which in turn get into our bodies.

It is curious that pollution claims of trespass run into the same issue as nuisance claims. Trespass is the sister tort to battery in that it does not have harm or causation as elements of the offense.¹¹⁸ Similar to battery, what limits liability in trespass is the actor’s mental state, not whether the actor’s behavior caused harm.¹¹⁹ Liability in trespass is only imposed if the actor enters the land of another intentionally.¹²⁰ Entering the land of another negligently or recklessly will not amount to liability for trespass.

Trespass is also the sister tort to battery in that the only defenses to a trespass are consent or necessity.¹²¹ There is no balancing of social utility and costs to determine liability in trespass. Landowners possess the near absolute right to exclude others (and their stuff) from their land.¹²² Although we seem to

¹¹⁵ See Andrew Kimball, *Seven Deadly Myths of Industrial Agriculture*, in *THE FATAL HARVEST READER: THE TRAGEDY OF INDUSTRIAL AGRICULTURE* 3, 7 (Andrew Kimball ed., 2002).

¹¹⁶ The problem Apeel solves is not a problem of social disutility. The problem it solves is that parties with an interest in produce could make more money if they could sell their crops at the same price and throw out fewer crops due to spoilage. That is to say that Apeel functions to increase profits on produce, which is not the same as increasing social utility by feeding the poor.

¹¹⁷ See generally FRANK ACKERMAN & LISA HEINZERLING, *PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING* (2004) (criticizing the use of cost-benefit analysis in environmental regulation).

¹¹⁸ RESTATEMENT (SECOND) OF TORTS § 158 (AM. L. INST. 1965).

¹¹⁹ See *id.* (“One is subject to liability to another for trespass, irrespective of whether he thereby causes harm to any legally protected interest of the other, if he intentionally . . . enters land in the possession of the other . . .”).

¹²⁰ See *infra* Part I.B.1 (discussing intent).

¹²¹ RESTATEMENT (SECOND) OF TORTS §§ 167, 196, 197.

¹²² See *Jacque v. Steenberg Homes, Inc.*, 563 N.W.2d 154 (Wis. 1994) (upholding a \$100,000 punitive damage award to the property owners against a deliberate and intentional trespasser, even though no harm was done to the property owners’ land).

protect property lines with near absoluteness through trespass, trespass in the practical context of pollution is not interpreted this way. Courts are reluctant to permit trespass claims to proceed in the absence of a pollution victim showing some physical harm to the land or some harm to the owner's use and enjoyment of the land.¹²³ It is possible that this incorporation of harm into trespass claims in pollution cases comes from the conceptual challenge that split up trespass and nuisance. Pollution is much closer to the earliest nuisance cases—smoke or dust being emitted from one parcel and settling on a neighboring parcel for example—than the earliest trespass cases where a human being enters the land of another. And as discussed above, nuisance is about balancing social utility against costs. To the extent that pollution is better classified as a trespass to land, however, there is a case to be made that parallels my argument for treating pollution as offensive battery in this Article, which I cannot discuss in detail here.

So far, I have discussed the common-law torts that are generally invoked in an attempt to impose liability on polluters. I have argued that traditional toxic tort permits pollution as of right to polluters because of its dependency on the pollution victim sustaining physical harm and proving that her exposure to the pollutant was the cause of that physical harm. Those familiar with the birth of modern environmental law, however, may not consider this surprising or concerning because our statutory environmental law developed in large part to address pollution in the first place. It is to this that I turn next.

C. What About Environmental Law?

The 1970s was a whirlwind of federal environmental law making, bolstered by a significant amount of public and bipartisan support. Most notably, Congress enacted the Toxic Substance Control Act (TSCA)¹²⁴ in 1976 to control the dispersal of new chemicals into the environment and into our bodies. In its original form that governed for forty years (old TSCA), however, the old TSCA was a terribly impotent law. No safety testing was required before new chemicals were permitted to enter the market.¹²⁵ In fact, the old TSCA forbade requiring pre-market testing of chemicals, allowing twenty-two thousand untested new chemicals to enter the market.¹²⁶ The old TSCA also grandfathered as "safe" sixty-two thousand existing chemicals, including C8.¹²⁷ The post-market nature of the old

¹²³ See *Borland v. Sanders Lead Co.*, 369 So. 2d 523, 530 (Ala. 1979) (discussing the difference between a nuisance claim and trespass claim as they relate to harm done to property).

¹²⁴ Pub. L. No. 94-469, 90 Stat. 2003 (1976) (codified at 15 U.S.C. §§ 2601–2629).

¹²⁵ CRANOR, *supra* note 53, at 4; CRANOR, *supra* note 19, at 132–33; Mary L. Lyndon, *The Toxicity of Low-Dose Chemical Exposures: A Status Report and a Proposal*, 52 JURIMETRICS 457, 460 (2012) (reviewing CRANOR, *supra* note 19).

¹²⁶ CRANOR, *supra* note 53, at 4, 30.

¹²⁷ *Id.* at 4.

TSCA gave corporate interests the legal right to pollute unless and until the chemicals were shown to cause an unreasonable risk of harm.¹²⁸

Additionally, the old TSCA incentivized willful ignorance regarding the toxicity of a chemical. Because a company only incurred legal obligations if it had evidence that a chemical was harmful, the rational corporate actor would avoid conducting any safety tests at all.¹²⁹ The old TSCA also hamstrung the EPA by making the EPA dependent on voluntary disclosure from industry for the safety data of chemicals that they needed to investigate and regulate.¹³⁰ For example, DuPont knew about the toxicity of C8 for decades and chose not to disclose this information to the EPA under their old TSCA obligations.¹³¹ The EPA could not order further testing or propose regulations for chemicals it does not know about.

This hamstringing of the EPA coexisted with other standard forms of regulatory capture that occur when relying on administrative agencies to curtail chemical pollution. For example, during the battle over C8 in the 2000s, DuPont's legal counsel was comprised of several former EPA officials.¹³² DuPont's legal team received inside information from the EPA, knowing the content of agency documents before they were made public.¹³³ DuPont's legal team drafted quotes to be attributed to the EPA officials in DuPont's press releases.¹³⁴ DuPont eventually voluntarily agreed to phase out C8 in 2008, well after C8's replacement chemical, GenX, had been decided.¹³⁵ DuPont was only ever fined a pittance of its annual revenue, *the cost of doing business*, for its failure to disclose information about the risks of C8 to the EPA.¹³⁶ C8 was first synthesized in 1938 by DuPont. It took eighty-five years, in 2023, for the EPA to propose a limit for PFAS in drinking water.

EPA action is also subject to political sabotage and stagnation. The Integrated Risk Information System of the EPA has reviewed formaldehyde intermittently for decades. After formaldehyde made the news due to the harms

¹²⁸ *Id.* at 97.

¹²⁹ *See id.* at 33–34.

¹³⁰ *See id.* at 34.

¹³¹ *See id.*

¹³² *See* Sharon Lerner, *The Teflon Toxin: How DuPont Slipped Past the EPA*, THE INTERCEPT (Aug. 20, 2015), <https://theintercept.com/2015/08/20/teflon-toxin-dupont-slipped-past-epa/> [<https://perma.cc/ST2B-2QCM>].

¹³³ *See id.*

¹³⁴ *See id.*

¹³⁵ *See id.*

¹³⁶ *See id.* (“Less remarked upon was the fact that the fine was a small fraction of the maximum \$300 million the agency technically could have collected.”). DuPont has also learned to operate its new nonstick chemical enterprise, GenX, under a separate corporate entity, Chemours, to shield the company's assets from any liability that may arise from GenX in the future. *Id.* The use of corporate structure to avoid liability for intended and expected wrongs is beyond the scope of this Article.

suffered by hairdressers in the mid-2010s, internal emails from 2016 indicated that FDA scientists deemed formaldehyde in hair care products unsafe.¹³⁷ Yet, there are still no nationwide legal standards or restrictions on formaldehyde in haircare products.¹³⁸ In 2018, the EPA finally set formaldehyde standards for plywood and particle board.¹³⁹ It will take generations to rebuild the country's infrastructure with these standards in place. Meanwhile, the population will continue to be exposed to formaldehyde, and the chemical industry will remain hard at work synthesizing formaldehyde's successor.

In 2016, President Obama signed into law the Frank R. Lautenberg Chemical Safety for the 21st Century Act (new TSCA), significantly amending the old TSCA and representing the first major federal environmental legislation since the Clean Air Amendments in 1990. The new TSCA requires chemical manufacturers to demonstrate to the EPA that their new chemicals will not harm human health before they go to market.¹⁴⁰ It also gives the EPA authority to demand information from chemical companies, where before the EPA was at their mercy for voluntary disclosure of information about the chemicals. Finally, the EPA will conduct a safety review of the eighty-five thousand chemicals in the old TSCA inventory, a task that will take generations.¹⁴¹

The new TSCA is too young for us to have data on whether it improves polluting behavior. The recent story of Chevron's new boat fuel receiving immediate EPA approval with no testing, despite its exceptional toxicity, however, should temper our hopes.¹⁴² The EPA's justification for its approval of this chemical goes directly against the statutory requirement of pre-market testing for new chemicals.¹⁴³

¹³⁷ See Rabin, *supra* note 63.

¹³⁸ CRANOR, *supra* note 53, at 6.

¹³⁹ See *Frequent Questions for Consumers About the Formaldehyde Standards for Composite Wood Products Act*, ENV'T PROT. AGENCY, <https://www.epa.gov/formaldehyde/frequent-questions-consumers-about-formaldehyde-standards-composite-wood-products-act> [<https://perma.cc/322E-2PM8>] (Feb. 22, 2024).

¹⁴⁰ See *Statistics for the New Chemicals Program Under TSCA*, ENV'T PROT. AGENCY, <https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/statistics-new-chemicals-program> [<https://perma.cc/25PC-QTDU>] (Oct. 3, 2024) ("Following the 2016 amendments to TSCA, EPA is required to make an affirmative risk determination on 100% of new chemical notices submitted under TSCA section 5.").

¹⁴¹ See *Risk Evaluations for Existing Chemicals Under TSCA*, ENV'T PROT. AGENCY, <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-evaluations-existing-chemicals-under-tsca> [<https://perma.cc/T4FC-VDPV>] (May 6, 2024) (noting that the safety reviews for the first ten priority substances took between three and four years to complete).

¹⁴² See Lerner, *supra* note 132.

¹⁴³ Sharon Lerner, *EPA Approved a Fuel Ingredient Even Though it Could Cause Cancer in Virtually Every Person Exposed Over a Lifetime*, PRO PUBLICA (Aug. 4, 2023), <https://www.propublica.org/article/epa-approved-chevron-fuel-ingredient-cancer-risk-plastics-biofuel> [<https://perma.cc/Q3B6-VYH9>] ("In addition, the EPA also said that it determined the risks from the new chemicals were

Regardless of the efficacy of the new TSCA pursuant to its own terms, it is unlikely to address the low levels of chemical contamination to which we are chronically exposed. Although the new TSCA is supposed to fix some of the procedural barriers that prevented the EPA from carrying out its job under the old TSCA, it still allows polluting behaviors as of right to chemical companies if the EPA is convinced there is no current scientific evidence of an unreasonable risk to human health. Polluters may continue to treat our bodies as landfills for their chemicals under the new TSCA, as long as there is no science indicating that those chemicals cause us disease. Even if there is risk of human disease, the new TSCA will simply call for limits on our exposure. The chemical industry retains its right to contaminate our bodies because the new TSCA only places limits on that right when the chemical exposure can be shown to cause physical harm. As I will discuss in Section A of Part II, this stands in stark opposition to the respect for each person's autonomy over what goes into their body that the law of battery protects.

The new TSCA is not the only environmental statute that could be invoked to address chemical pollution. For example, the Clean Water Act (CWA) prohibits the discharge of any pollutant into the waters of the United States without a permit.¹⁴⁴ Under the CWA, the term "pollutant" includes chemical wastes and industrial wastes,¹⁴⁵ and the term "toxic pollutant" means:

[T]hose pollutants, or combinations of pollutants, including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the Administrator, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring.¹⁴⁶

DuPont's unpermitted discharges of C8 from its Parkersburg factory into the Ohio River would appear to constitute the discharge of a pollutant or toxic pol-

similar to those from fuels that have been made for years, so the agency relied on existing laws rather than calling for additional protections.").

¹⁴⁴ See 33 U.S.C. §§ 1311–1330; *see also* 40 C.F.R. § 122.1(b)(1) (2024) (discussing permits); CLAUDIA COPELAND, CONG. RSCH. SERV., 7-5700, CLEAN WATER ACT: A SUMMARY OF THE LAW (2016) ("To achieve its objectives, the act is based on the concept that all discharges into the nation's waters are unlawful, unless specifically authorized by a permit, which is the act's principal enforcement tool.").

¹⁴⁵ See 33 U.S.C. § 1362(6).

¹⁴⁶ *Id.* § 1362(13).

lutant from a point source without a permit, an obvious violation of the CWA.¹⁴⁷

Why does the CWA not help our pollution problem by stopping factories and industrial sites from discharging their chemicals into local waterways? The answer lies in how the CWA handles gaps in knowledge about the human health (and environmental) effects of the discharge of a chemical into a waterway. When issuing a permit to discharge a pollutant into a waterway, the EPA is required to put in place limitations on the discharge quantity to maintain the designated use of that waterway.¹⁴⁸ This is a scientific question: at what level of this chemical in this waterway is, for example, public health impacted? No one, however, can conduct scientific studies on chemicals that are unknown to the public because they are the proprietary information of the companies that synthesize them.¹⁴⁹ The EPA is only required to develop water quality standards for pollutants based on the “latest scientific knowledge.”¹⁵⁰ This produces a catch-22 for the EPA when issuing permits under the CWA. For an effluent limitation to bear a “reasonable relationship” to the economic costs incurred, the EPA needs to know what the chemical does.¹⁵¹ If there is no science for the EPA to rely on because industry is entitled to keep its chemicals secret and is not required to test its chemicals, the EPA is unlikely to place a limit on the discharge of the chemical.¹⁵² In the last fifty years, while industry has synthesized hundreds of thousands of new chemicals, the EPA has only managed to designate six

¹⁴⁷ See 40 C.F.R. § 122.2 (defining “pollutant” and “discharge”); see also *Parris v. 3M Co.*, 595 F. Supp. 3d 1288, 1318–22 (N.D. Ga. 2022) (permitting a citizen suit under the CWA for illegal discharge of PFAS to survive dismissal).

¹⁴⁸ See 33 U.S.C. § 1312(a).

¹⁴⁹ Even when chemical companies submit information to the EPA on a chemical, the company is entitled to its secrecy as proprietary information. See 40 C.F.R. § 122.7; see also Sharon Lerner, *A Chemical Shell Game: How DuPont Concealed the Dangers of the New Teflon Toxin*, THE INTERCEPT (Mar. 3, 2016), <https://theintercept.com/2016/03/03/how-dupont-concealed-the-dangers-of-the-new-teflon-toxin/> [<https://perma.cc/S9RB-BSLD>] (discussing how claims of “confidential business information” hamstrings the public’s ability to know what chemicals are being made, by whom, and where they are expected to be found).

¹⁵⁰ See 33 U.S.C. § 1314(a)(1) (“The Administrator . . . shall develop and publish . . . criteria for water quality accurately reflecting the latest scientific knowledge . . .”).

¹⁵¹ See *id.* § 1312(b)(2)(A) (allowing a permit holder to seek a modification of a discharge limit on the basis that the limit bears “no reasonable relationship between the economic and social costs and the benefits to be obtained”).

¹⁵² The United States does not adhere to any principles of precaution with respect to new chemicals—innocent until proven guilty. Of course, many people have to be made sick and many ecosystems contaminated before a chemical is “proven guilty.” See Neil Bedi, Sharon Lerner & Kathleen McGrory, *Why the U.S. Is Losing the Fight to Ban Toxic Chemicals*, PRO PUBLICA (Dec. 14, 2022), <https://www.propublica.org/article/toxic-chemicals-epa-regulation-failures> [<https://perma.cc/99AZ-LQ2D>] (calling the “risk-based approach” to chemical regulation in the United States one of “[i]nnocent [u]ntil [p]roven [g]uilty”).

(that's right, six!) chemicals as toxic pollutants under the CWA.¹⁵³ The EPA's current list of pollutants that have national water quality criteria stands at a measly 125 chemicals.¹⁵⁴

In the meantime, chemical companies create new chemicals at an astoundingly fast rate, often in anticipation of the current ones becoming subject to discharge limitations.¹⁵⁵ Companies can discharge chemicals without getting caught for years, if not decades. For example, when GenX was found in the Cape Fear River in 2016, it was thought to have come from Chemours's commercial production of GenX in a nearby factory, starting in 2010, when DuPont voluntarily agreed to phase out C8.¹⁵⁶ As it turned out, Chemours had been producing GenX as a byproduct since at least 1980.¹⁵⁷ The discharges of GenX into the Cape Fear River were wastes from a different manufacturing site that were routed to Fayetteville for discharge into that river.¹⁵⁸ It took years for anyone to notice that GenX was in the Cape Fear River. All the while, the population of four hundred thousand people that depend on the Cape Fear River for their drinking water were unknowingly consuming GenX.

Our statutory law incentivizes this kind of polluting behavior. Not only is it hard to catch, but even once it is caught, the fines for violations are nowhere near sufficient to deter companies from choosing to behave the same way repeatedly. For example, the EPA boasted its \$10.5 million fine against DuPont in the 2000s as "the largest civil administrative penalty EPA has ever obtained under any federal environmental statute."¹⁵⁹ Of course, less discussed was the fact that the EPA could have fined DuPont \$300 million—when both a \$10.5 million fine or a \$300 million fine would have been but a fraction of DuPont's annual revenue of more than \$6 billion at the time.¹⁶⁰ Financial penalties that amount to less than a day of revenue for a company are nothing more than "the cost of doing business." They will never deter the behaviors they purport to punish.

¹⁵³ Those six chemicals are (1) aldrin/dieldrin, (2) DDT, (3) endrin, (4) toxaphene, (5) benzidine, and (6) polychlorinated biphenyls. 40 C.F.R. § 129.100–.105. Aldrin, dieldrin, DDT, endrin, and toxaphene were the catalyst chemicals for the modern environmental movement, having been principal targets in Carson's *Silent Spring*, more than sixty years ago. See CARSON, *supra* note 28, at 20–27, 41, 45.

¹⁵⁴ See *National Recommended Water Quality Criteria—Human Health Criteria Table*, ENV'T PROT. AGENCY, <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table> [<https://perma.cc/48V3-64FQ>] (Oct. 2, 2023).

¹⁵⁵ See Lerner, *supra* note 132 (discussing DuPont and 3M's commitment to manufacturing shorter-chained fluorochemicals as replacements to C8).

¹⁵⁶ Julie Leibach, *A River of Woes*, COASTWATCH (Mar. 12, 2018), <https://ncseagrant.ncsu.edu/coastwatch/previous-issues/2018-2/winter-2018/a-river-of-woes/> [<https://perma.cc/MFA6-UATM>].

¹⁵⁷ See *id.*

¹⁵⁸ See *id.*

¹⁵⁹ Lerner, *supra* note 86.

¹⁶⁰ See *id.*

Finally, trying to remedy our pollution problem by focusing on factory discharges into waterways ignores the several other ways in which the contamination of our bodies occurs, such as through air, food, consumer goods, or exposures in the workplace. Advocates in the 1970s were not wrong to push for the old TSCA. Without a principle of precaution and penalties sufficient to deter illegal behavior, however, regulation of the chemical industry is always going to be several steps behind the industry's polluting behaviors.¹⁶¹

II. TOXIC BATTERY AS A DIGNITARY TORT

In the previous Part, I discussed the motivation for exploring the possibility that pollution may constitute a battery. In this Part, I provide the affirmative case for concluding that much of the pollution that contaminates our bodies today constitutes an offensive battery. In Section A, I begin by discussing why we recognize the tort of battery and how pollution invades the interest that battery protects.¹⁶² Then in Section B, I examine the *prima facie* case of toxic offensive battery and conclude that all the elements of offensive battery are met in many pollution cases.¹⁶³

A. What Battery Protects

The tort of battery is one of the oldest English common-law torts.¹⁶⁴ It originated in the thirteenth century alongside assault and false imprisonment as the triad of torts that protect the individual person from intentional interference by others. Embedded in the tort of battery are two distinct torts. The first protects the individual person from physical harm, known as harmful battery. The other protects the individual person from dignitary harm, known as offensive battery. The interests protected by harmful and offensive battery are not identical. The interest we have in the security of our persons is necessary to the interest we have in being treated as an autonomous, free being. Harmful battery

¹⁶¹ Furthermore, the hope of federally regulating chemicals and novel substances has been severely threatened with the recent U.S. Supreme Court decision overturning *Chevron U.S.A. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984). See *Loper Bright Enters. v. Raimondo*, 144 S. Ct. 1244 (2024). Coupled with the recent invention of the major questions doctrine in *West Virginia v. EPA*, 142 S. Ct. 2597 (2022), the Court is clearly fixated on dismantling the federal administrative state. Despite my criticism of our current statutory environmental law, let this be clear to the reader: there is no world in which a weaker, less effective EPA makes our pollution problems better.

¹⁶² See *infra* notes 164–189 and accompanying text.

¹⁶³ See *infra* notes 190–298 and accompanying text.

¹⁶⁴ See *Davis v. Hubbard*, 506 F. Supp. 915, 930 (N.D. Ohio 1980) (“[T]here is perhaps no right which is older than a person’s right to be free from unwarranted personal contact.”).

protects the former interest, and offensive battery protects the latter. Both are necessary for a liberal realization of the individual.¹⁶⁵

To see why harmful battery is normatively justified, let us consider what follows from the rejection of harmful battery: If the law did not prohibit intentional harms to our persons by others, what would society look like? I wager it would look close to Hobbes's state of nature, where human life would be a struggle of all against all. We would have no physical security, and every decision would be made to protect our persons from the infliction of injury or disease. In modern life, we take for granted the fact that our persons are not under constant threat of intentional physical harm from others. This release from a constant threat of physical harm allows human beings to form a cooperative group, and it is from that cooperation that we have landed here in the twenty-first century. This is why intentionally harming the person of another is wrongful conduct. In essence, harmful battery is a minimal condition for the emergence of cooperative society of rational animals.¹⁶⁶

Continuing our thought experiment to the normative justification for offensive battery: What would society look like if it only recognized harmful battery and not offensive battery? We would live under threat of contacts to our persons that we do not want, even though they do not cause physical harm. We might be tempted to think that this would not be so bad. Let us consider, however, some intentional contacts that would be permissible in absence of offensive battery:

- (1) spitting on someone,¹⁶⁷
- (2) flicking dirty water on someone,¹⁶⁸
- (3) touching someone's genitals,¹⁶⁹

¹⁶⁵ See Deana Pollard Sacks, *Intentional Sex Torts*, 77 *FORDHAM L. REV.* 1051, 1073 (2008) ("Battery protects the individual's unfettered choice to determine who touches his body and recognizes the importance of the core American values of freedom and self-actualization.").

¹⁶⁶ In *Beach v. Hancock*, the New Hampshire Superior Court articulated the importance of harmful battery this way:

One of the most important objects to be attained by the enactment of laws and the institutions of civilized society is, each of us shall feel secure against unlawful assaults. Without such security society loses most of its value. Peace and order and domestic happiness, inexpressibly more precious than mere forms of government, cannot be enjoyed without the sense of perfect security. We have a right to live in society without being put in fear of personal harm.

27 N.H. 223, 229 (Super. Ct. 1853).

¹⁶⁷ See, e.g., *Wichansky v. Zowine*, 150 F. Supp. 3d 1055, 1076 (D. Ariz. 2015); *Angus v. Ventura*, No. 2740-M, 1999 WL 33287, at *3 (Ohio Ct. App. Jan. 27, 1999).

¹⁶⁸ See *RESTATEMENT (SECOND) OF TORTS* § 18 cmt. g, illus. 4 (AM. L. INST. 1965).

¹⁶⁹ See, e.g., *Burns v. Mayer*, 175 F. Supp. 2d 1259, 1269–70 (D. Nev. 2001); see also *RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS.* § 103 cmt. a (AM. L. INST., Tentative Draft No. 1, 2015) ("In contemporary society, any nonconsensual contact with a sexual purpose satisfies the

- (4) shoving someone,¹⁷⁰
- (5) flicking someone's ear or nose,¹⁷¹
- (6) contaminating someone's food,¹⁷²
- (7) smacking something out of someone's hands,¹⁷³
- (8) throwing urine on someone,¹⁷⁴ and
- (9) giving someone a dirty towel with which to wipe their face.¹⁷⁵

Furthermore, helpful contacts, even if they are against the individual's will, would become a matter of right for the person intending the contact. For example, physicians would be permitted to administer treatment against the will of a patient if such treatment benefited the patient.¹⁷⁶ We may not think such cases are common, but consider these: Jehovah's Witnesses do not want blood transfusions;¹⁷⁷ many elderly and terminally ill patients execute "Do Not Resuscitate" directives, even when modern medicine could prolong their lives at a level that we think life is still worth living;¹⁷⁸ we are required to opt in to become an organ donor, even though there is a chronic shortage of organs and many people die waiting for one, and we will not transplant an organ from a corpse to a savable human being if the person to whom that corpse belonged

requirement of offending a reasonable sense of personal dignity, whether it involves sexual intercourse, fondling a person's genitals, buttocks, or breasts, or kissing a person in a sexual manner.").

¹⁷⁰ See, e.g., *Covey v. Lexington Pub. Schs.*, No. CIV-09-1151-M, 2012 WL 182143, at *2 (W.D. Okla. Jan. 23, 2012) (finding there was a genuine issue of material fact as to whether two shoves offended the victim's reasonable sense of personal dignity).

¹⁷¹ See, e.g., *Barocas v. State*, 949 N.E.2d 1256 (Ind. Ct. App. 2011) (overturning a teacher's conviction for battery for flicking the tongue of a student with Down Syndrome on the grounds that the teacher's actions were privileged).

¹⁷² See, e.g., *Buckner v. Bryant*, No. 3: 10-36-DCR, 2013 WL 1220703, at *4 (E.D. Ky. Mar. 25, 2013) (finding that placing a piece of lettuce against one's genitals and then putting that lettuce on the victim's sandwich to be sufficient evidence of battery under Kentucky law).

¹⁷³ See W. PAGE KEETON, DAN B. DOBBS, ROBERT E. KEETON & DAVID G. OWEN, PROSSER AND KEETON ON THE LAW OF TORTS § 9, at 39–40 (5th ed. 1984) (explaining that battery encompasses not just direct physical contact but also actions that involve deliberate interference with an object closely associated with a person).

¹⁷⁴ See, e.g., *Duprey v. J.C. Penney Co.*, No. 6052–L, 1995 WL 17044491, at *3 (Va. Cir. Ct. Feb. 27, 1995) (forcing plaintiffs to clean up urine with paper towels and their bare hands was sufficient for offensive-battery claim).

¹⁷⁵ See RESTATEMENT (SECOND) OF TORTS § 18 cmt. c (AM. L. INST. 1965).

¹⁷⁶ See *Schioendorff v. Soc'y of N.Y. Hosp.*, 105 N.E. 92, 95 (N.Y. 1914) (finding that performing an operation that plaintiff did not consent to constituted battery).

¹⁷⁷ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 103 cmt. b (AM. L. INST., Tentative Draft No. 1, 2015) ("Numerous cases uphold the right of patients to reject conventional medical treatment because of their religious or moral or personal beliefs, even if those beliefs are not widely shared in the general population. If that right is not respected, the medical practitioner is subject to liability for offensive or harmful battery.").

¹⁷⁸ See, e.g., *Redmond v. Galvan*, 224 N.E.3d 246 (Ill. App. Ct. 2022) (finding battery claim that doctors' attempt to resuscitate decedent in contravention of a do-not-resuscitate order to be time barred under Illinois' two-year statute of limitations).

did not consent to it during their life; finally, many people opt not to have surgery to correct a nonterminal ailment, even though the surgery is generally proven effective to treat such ailment. In medicine, it is undisputed that the patient is the final arbiter on how the physician will touch her body.¹⁷⁹

We can imagine other helpful contacts that would be permissible against the individual's will in the absence of offensive battery. Suppose my makeup is gaudy and my colleagues find my appearance derisible. A friend could hold me down and remove my makeup to improve my professional appearance. Suppose I have a cold and refuse to drink anything other than soda. My mother could force me to drink orange juice, even though I hate the taste of orange juice, to boost my immune system.

Prohibition of offensive contacts reflects the law's recognition of each individual's inherent dignity and worth in their physical person.¹⁸⁰ It demands that others respect an individual's sovereignty over their own body. Being sovereign over our persons, we expect others to respect our persons in the way that they would want their persons to be respected: by retaining control over who or what comes into contact with their bodies.¹⁸¹ This is similar to the property owner's right to exclude others from her land, for any reason or no reason at all, under the law of trespass to land. If anyone at any time can enter the land of another and stay for as long as they would like, it is hard to see how the property owner is being respected as the owner of the land. The same applies in offensive battery.

When someone commits an offensive battery, that person treats the victim as if they are lesser and not deserving of equal respect. Because what counts as an offensive contact is tied to social norms and mores, offensive contacts are

¹⁷⁹ In *Phillips v. Hull*, the Mississippi Supreme Court stated:

Every human being of adult years and sound mind has a right to determine what shall be done with his own body, and a surgeon who performs an operation without his patient's consent commits an assault for which he is liable in damages. Medical and surgical procedures that involve touching a patient's person, even the simplest manipulation of a limb, must be properly authorized or the person performing the procedure will be subject to an action for battery. The obvious corollary is that, absent special circumstances, a competent individual has a right to refuse to authorize a procedure, whether the refusal is grounded on doubt that the contemplated procedure will be successful, concern about probable risks or consequences, lack of confidence in the physician recommending the procedure, religious belief, or mere whim.

516 So. 2d 488, 492 (Miss. 1987) (quoting P. LASKY, 11B HOSPITAL LAW MANUAL; CONSENT TO MEDICAL AND SURGICAL PROCEDURES 1 (1986) (internal citations omitted)), *overruled by* *Whittington v. Mason*, 905 So. 2d 1261 (Miss. 2005).

¹⁸⁰ See Kenneth S. Abraham & G. Edward White, *The Puzzle of the Dignitary Torts*, 104 CORNELL L. REV. 317, 321 (2019) ("We suggest that the modern concept of dignity involves respecting the worth of each individual.").

¹⁸¹ See *id.* at 325–26 (discussing the Kantian notion of dignity and its grounding in autonomy).

those that we, as a society, generally expect not to be imposed upon us absent our consent.¹⁸² So, when an individual commits an offensive battery against another, that individual retains the entitlement not to be touched in that way themselves while simultaneously disrespecting the victim's same entitlement.¹⁸³ This is to disregard another's autonomy over their body. It also is to subject another to rude, insulting, and humiliating treatment.¹⁸⁴ This is not a physical harm to the body of another. It does not cause physical injury or disease or otherwise impact the health and survival of the human organism. But health and survival of the human organism is merely a necessary, and not sufficient, condition for living a full human life. As long as we are not assimilated by the Borg,¹⁸⁵ and being an individual continues to matter, there will be intentional contacts that do not cause physical harm that the law will and should prohibit as violations of an individual's dignity and intrinsic worth.¹⁸⁶

It is my position in this Article that most (if not all) pollution falls into this category of dignitary harm. For companies to put chemicals and substances into our bodies without our knowledge or consent is to disrespect our intrinsic worth as persons. It is a novel way to disregard the longstanding expectation that our bodies are our homes and our castles and the principal place of our being as individuals. Everything we do and everything we become depends on our bodies not being relegated to a mere means for others' gains, desires, or satisfaction.¹⁸⁷

As a final point, the law also protects individuals from being put into immediate apprehension that their bodies will be contacted in a harmful or offen-

¹⁸² See *infra* Part II.B.3.

¹⁸³ See Elizabeth Sepper, Essay, *A Missing Piece of the Puzzle of the Dignitary Torts*, 104 CORNELL L. REV. ONLINE 70, 83–85 (2019) (discussing generally how claims of dignity in public accommodations law focus on equal treatment and eliminating the diminished regard for others).

¹⁸⁴ See generally Abraham & White, *supra* note 180 (discussing the evolution of tort liability to protect individual dignity).

¹⁸⁵ The Borg is a fictional character in the Star Trek universe. The constituents of the Borg are psychically connected in a web known as The Collective. This “hive mind” drives the constituents of the Borg to act always and only in furtherance of the Collective, disregarding any and all individual interests. In the series *Star Trek: Voyager*, one of the main character arcs revolves around the rescue of an American woman (whose Collective name was Seven of Nine) from the Borg and her journey to rediscover and realize herself as an individual (Annika, her given human name), distinct from any group. Captain Janeway's support of Seven's journey is laudable. *Star Trek: Voyager* (Paramount Network Television 1995).

¹⁸⁶ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. h (AM. L. INST., Tentative Draft No. 1, 2015) (“[T]he right of autonomy with respect to physical contacts with one's body historically is strongly protected.”).

¹⁸⁷ This does not mean that offensive contacts can never be made. Offensive contacts are no longer actionable when the victim gets a say in the contact and consents to it. At that point, the contact no longer disrespects the victim but rather reflects the victim's participation in a choice over what touches their body. Such contacts cease to be offensive contacts and cease to cause dignitary harm.

sive manner through the tort of assault. A claim for assault can lie even if the harmful or offensive contact is not possible, such as when someone points an unloaded gun at another.¹⁸⁸ This reflects how important the law considers intentional interference with the body of another.¹⁸⁹ Battery and assault are sister torts in this regard: each individual has a right not to be touched in a manner that is harmful or offensive without their consent (battery), and each individual has a right not to be made to think that they are going to be touched in a manner that is harmful or offensive (assault). No other legal interest gets protection from a merely anticipated violation except our interest in bodily security and autonomy.

Having laid the groundwork for thinking that much chemical pollution disregards our dignitary interests in our person, I turn to the common law doctrine to present the *prima facie* case for toxic offensive battery.

B. Toxic Battery: The Prima Facie Case

Battery requires that an actor intentionally contact the person of another in a way that is harmful or offensive.¹⁹⁰ In the case of chemical pollution as an offensive battery, there are three important inquiries: (1) What counts as affirmative conduct, rather than omission, for a polluter?; (2) What counts as a polluter intending to make contact with the person of another?; and (3) Is chemical pollution being put into our bodies offensive? I will examine each of these in turn.

1. Affirmative Conduct (Voluntary Act)

The first element of proving a toxic battery claim is proving that the polluter acted voluntarily.¹⁹¹ Battery liability is generally imposed only where an individual's affirmative conduct results in the harmful or offensive contact to the person of another. Sometimes, an individual's failure to act—that is, an individual's omission—is what causes the harmful or offensive contact with the person of another.

To begin with a generic case of battery committed by a human being, affirmative conduct is synonymous with willing a bodily movement that causes

¹⁸⁸ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 105 cmt. d; *see also* *Beach v. Hancock*, 27 N.H. 223, 229 (Super. Ct. 1853) (finding that pointing an unloaded gun at plaintiff and “snapping” it two times constituted assault).

¹⁸⁹ See JOHN GOLDBERG & BENJAMIN ZIPURSKY, *THE OXFORD INTRODUCTION TO U.S. LAW: TORTS* 219 (1st ed. 2010) (“Assault and battery both give expression to a notion of personal inviolability. Both acknowledge and protect one’s ‘personal space.’”).

¹⁹⁰ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101.

¹⁹¹ *See id.* § 101 cmt. c.

harmful or offensive contact with the body of another.¹⁹² This means that the actor's bodily movement is voluntary, rather than involuntary. Involuntary bodily movements include muscle spasms, falling unconscious, reflexes or automatic reactions to stimuli, and having one's body moved by another.¹⁹³ In general, our conscious movements throughout the day are voluntary bodily movements and count as affirmative conduct for battery liability.

In a generic case of battery committed by a human being, an omission is synonymous with the lack of a voluntary bodily movement (that causes harmful or offensive contact with the body of another). Just as we can will our bodies to move, we can will our bodies not to move. For example, the bystander who chooses not to intervene in an assault and battery wills an omission that causes the batterer to make harmful or offensive contact with the person of his victim.¹⁹⁴ However, such omission, even if the bystander knew that the assault and battery would be completed because of it, is not the basis for imposing battery liability on the bystander.¹⁹⁵

The act/omission distinction reflects the limits that the law places on one's duty to intervene. Mere failure to intervene to stop an ongoing offensive contact that was started by another is not grounds for liability in battery. For example, when a resident of a condominium is being exposed to the unpleasant odor of sewer gas (offensive contact) in her unit, the condominium association's refusal to continue to inspect for and repair the leak is not an affirmative act supporting battery liability.¹⁹⁶ In such a situation, the affirmative act for battery liability is the defective construction performed by the condominium builder or that the condominium association, during its previous inspections and repair attempts, enlarged the current leak or created a new leak.¹⁹⁷

We often think of battery as occurring in discrete, singular moments of voluntary acts, but a battery may be accomplished through a coordinated series of acts.¹⁹⁸ After all, the construction of a condominium with a sewer leak,

¹⁹² See RESTATEMENT (SECOND) OF TORTS § 2 (AM. L. INST. 1965).

¹⁹³ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. c.

¹⁹⁴ See *D.D.Z. v. Molerway Freight Lines, Inc.*, 880 P.2d 1, 4 (Utah Ct. App. 1994).

¹⁹⁵ *Id.*; see also *Hoyte v. Stauffer Chem. Co.*, No. 98-3024-CI-7, 2002 WL 31892830, at *52 (Fla. Cir. Ct. Nov. 6, 2002) ("Battery requires an intentional affirmative act by the defendant and cannot be predicated upon an omission or failure to act.").

¹⁹⁶ See *Witt v. Condos. at Boulders Ass'n*, No. 04-cv-02000, 2007 WL 840509, at *5 (D. Colo. Mar. 19, 2007).

¹⁹⁷ *Id.*

¹⁹⁸ The coordination of a series of acts also plays a role in demonstrating the actor's intent. "As Justice Holmes commented, 'the co-ordination of a series of acts shows a further intent than is necessarily manifested by any single act, and sometimes proves with almost equal certainty the knowledge of one or more concomitant circumstances.'" Irene Scharf, *Breathe Deeply: The Tort of Smokers' Battery*, 32 HOUS. L. REV. 615, 668 (1995) (quoting OLIVER WENDELL HOLMES, *THE COMMON LAW* 152 (1881)).

which the court implies is the affirmative act causing the homeowner's ongoing offensive contacts, is not the product of a singular bodily movement. Consider another example: Assume a polluter discharges pollutants into a local waterway. The polluter knows that there is a small risk that the pollutants from that singular discharge will contact residents of the town downstream through their drinking water. Still, the polluter makes a business decision to purposefully discharge those same pollutants into the local waterway every day.¹⁹⁹ The polluter knows to a substantial certainty that over time, the pollutants will begin to be ingested by the residents through their drinking water on a regular basis. Even though no singular discharge can be identified as the cause of the contact between the residents and the pollutant, this series of discharges counts as affirmative conduct sufficient to support imposing battery liability.²⁰⁰

Pollution cases often reflect situations where the polluter engaged in a series of acts that cause pollutants to come into contact with our bodies. Importantly, they should never be characterized as failure to intervene (omission) cases. Consider this scenario: I own a technologically enhanced baseball that allows me to deflect the ball's flight by pushing a button on a remote while the ball is in the air. I throw this baseball at my friend, with the purpose of hitting her. While the ball is in flight, I omit to hit the deflect button, and the ball strikes my friend. Although my omission causes the ball to strike my friend, it does not absolve me from battery liability because I initiated the events that culminated in the contact. Polluters similarly initiate the series of events that culminate in the contact between our bodies and the pollutants they discharge. They put chemicals into consumer goods knowing that those chemicals will enter the bodies of the end users. They discharge pollutants into the water and the air around their factories knowing that local residents will drink and inhale those pollutants.²⁰¹ They intentionally maintain their railroad lines and train fleet knowing that trains will derail and discharge pollutants into local communities. None of these series of coordinated and intentional acts should be mistaken for an omission to which battery liability could not attach.²⁰²

¹⁹⁹ Because discharging pollutants and contaminating people and the environment is usually cheaper and good for profits.

²⁰⁰ RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. c(2) (AM. L. INST., Tentative Draft No. 1, 2015).

²⁰¹ See *THE MERCHANTS OF DOUBT*, *supra* note 56 (describing how DuPont informed the residents of Parkersburg, West Virginia, of the presence of C8 in their drinking water to begin running the statute of limitations and limit the company's liability for their polluting behaviors).

²⁰² There is a federal judge in Louisiana who made this precise conceptual error in 2021, thereby protecting polluters from battery liability. See *Ellis v. Evonik Corp.*, No. 21-1089, 2021 WL 4862146, at *8 (E.D. La. Oct. 19, 2021) (improperly treating a polluter's affirmative actions which emitted chemicals as omissions for the purpose of plaintiffs' battery claim); *Cambre v. Union Carbide Corp.*, No. 21-1067, 2021 WL 10829659, at *8 (E.D. La. Oct. 18, 2021). This conceptual error seems to have negatively impacted several other cases arising out of the same polluting conduct of the facility at

With this understanding of pollution as affirmative conduct on the part of the polluter, I turn to the more challenging issue of intent.

2. With the Intent to Make Contact with the Body of Another

Battery also requires that the actor intend their affirmative conduct to make contact with the body of another. This statement contains three discrete issues: (1) What counts as intent?; (2) What counts as contact?; and (3) What counts as the body of another? I will address these issues starting with (3) before moving to a joint discussion of issues (1) and (2).

The law of battery has a robust jurisprudence regarding what things, in virtue of their relationship to the physical body of a person, are considered part of the body of another when they are touched. Such things include clothing, objects we are holding, and glasses we are wearing.²⁰³ In the pollution cases that are my focus in this Article, this is a nonissue, as I am talking about chemicals and substances getting into our eyes and airways, being ingested or inhaled, and being detectable in our blood and organs. All of this counts as *touching* our bodies for the purposes of battery liability.

A slightly more difficult question is whether this *touching* counts as legally making *contact* with the body of another for battery liability. On an intuitive level, discharging a pollutant that touches someone certainly seems to be affirmative conduct that makes contact with their person. The Reporters for the *Restatement (Third) of Torts* agree with this intuition.²⁰⁴ Although, because pollution is a form of indirect contact,²⁰⁵ the Reporters seem to have an implic-

issue. See *Bell v. Dow Chem. Co.*, No. 21-326-SDD-SDJ, 2022 WL 1221639, at *9 (M.D. La. Mar. 11, 2022), *report and recommendation adopted*, *Bell v. Dow Chem. Co.*, No. 21-326-SDD-SDD, 2022 WL 1217226 (M.D. La. Apr. 25, 2022); *Bureau v. BASF Corp.*, No. 21-324-JWD-RLB, 2022 WL 807372, at *10 (M.D. La. Jan. 3, 2022). It is my opinion that these cases would easily survive dismissal on the battery claims in almost all other jurisdictions. See *infra* Part II.B.2. This polluter protectionism is not surprising coming from Louisiana, as Louisiana is the most polluted state in the nation. Russell Falcon & Nextstar Media Wire, *The 10 Most Polluted States in the US*, THE HILL (Sept. 10, 2022), <https://thehill.com/policy/equilibrium-sustainability/3624274-the-10-most-polluted-states-in-the-us/> [<https://perma.cc/P8GX-2G88>].

²⁰³ See, e.g., *Reynolds v. MacFarlane*, 322 P.3d 755, 759 (Utah Ct. App. 2014) (adopting the *Restatement (Second) of Torts* § 18, comment c approach that contact with the *body* of another includes contact with anything attached to the body and practically identified with it, including clothing, a cane, and anything held in someone's hand).

²⁰⁴ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. e (AM. L. INST., Tentative Draft No. 1, 2015) ("The contact requirement is satisfied in cases where the actor causes the distribution of substances, such as hazardous or toxic chemicals or pollutants, that contact the plaintiff in an offensive or harmful way.").

²⁰⁵ RESTATEMENT (SECOND) OF TORTS § 13(b) (AM. L. INST. 1965); see Lynda Collins & Heather McLeod-Kilmurray, *Toxic Battery: A Tort for Our Time?*, 16 TORT L. REV. 131, 133 (2008) ("[M]ost toxic batteries will involve exposures that may be characterized as 'indirect' since they result from the defendant's emissions coupled with the operation of natural forces (eg wind, the movement

it concern regarding the scope of liability for indirect contacts in pollution cases. This concern is reflected in their comments, which indicate that polluters are only subject to battery liability if they know that their pollution will contact a specific individual or someone within a small class of victims in a localized area.²⁰⁶ This formulation reflects a limit on the scope of battery liability for indirect contacts through the intent requirement. Some pollution cases clearly meet the Reporters' restrictive standard. There are other pollution cases, however, where it is unclear, or where polluters clearly fail to meet this standard. I will discuss this taxonomy of pollution cases after laying the groundwork for the evolution of this standard.

To lay the groundwork for the origin of this formulation of intent, I need to begin with battery liability for indirect contacts more generally. The law has long recognized that contact with the body of another may be accomplished through indirect means.²⁰⁷ Indirect contact occurs when the actor makes contact with the victim's body in some other way than with the actor's own body. Throwing a stone or other object at another counts as making indirect contact for the purpose of battery.²⁰⁸ Similarly, pulling the trigger of a firearm, which drops the hammer creating a controlled explosion of gunpowder that propels the bullet down the firearm's chamber, into the air, across some distance, to ultimately make contact with the victim, also counts.²⁰⁹ Moving an object in such a way so as to cause the body of another to make contact with something is also sufficient to establish indirect contact for battery. For example, pulling the chair out from someone just about to sit down so that she falls to the ground satisfies the contact element.²¹⁰

of groundwater, etc) or with the plaintiff's own conduct (eg the ingestion of a food or use of a product)."); see also Alexandra Mogyoros, *Deconstructing Directness in Canada: A Critical Evaluation of the Role of Directness in the Tort of Battery*, 21 TORT L. REV. 24 (2013) (arguing that Canadian law should eliminate the direct contact element in battery to better accommodate cases of toxic battery).

²⁰⁶ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. e ("The mere fact that defendant caused a contact with the plaintiff that actually offended or harmed the plaintiff is insufficient for liability. Thus, distribution of a pollutant is not a battery, even if it contacts and harms plaintiff, unless the actor has either the purpose to thereby contact plaintiff or the knowledge that the pollutant will contact the individual plaintiff."); *id.* § 102 cmt. a ("A company that widely distributes a product might have knowledge that the product will cause nonconsensual contacts and harm to a small number of persons, but this is not, by itself, sufficient to render the company liable for battery."); RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL & EMOTIONAL HARM § 1 cmt. e (AM. L. INST. 2010) ("The applications of the substantial-certainty test should be limited to situations in which the defendant has knowledge to a substantial certainty that the conduct will bring about harm to a particular victim, or to someone within a small class of potential victims within a localized area.").

²⁰⁷ See RESTATEMENT (SECOND) OF TORTS §§ 13(b), 18(1)(b).

²⁰⁸ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. e.

²⁰⁹ See *id.*

²¹⁰ See *Garratt v. Dailey*, 79 P.2d 1091 (Wash. 1955).

Putting something into the food of another or providing another food that one knows they do not want is another kind of indirect contact that suffices for battery. For example, poisoning someone's food counts as a harmful and offensive contact even though the poisoner may only ever directly make contact with the poison (or the object containing the poison).²¹¹ Knowingly offering someone spoiled milk that tastes sour and rotten also suffices as an offensive, and possibly harmful, indirect contact.²¹² Supplying food to another and deceiving them into eating that food, which one knows is against their religious beliefs, also counts as making indirect offensive contact with the body of another for battery liability.²¹³

One similarity among these examples is that they demonstrate a personal and individualized relationship between the person making the harmful or offensive contact and the person being contacted. The actor engages in affirmative conduct that is directed toward a particular victim or class of victims. Relying on such examples, we can suggest a single intent rule²¹⁴ for battery in indirect contact cases: the actor must know to a substantial certainty that his affirmative conduct will make contact with the body of a *particular* other.²¹⁵

²¹¹ See *Commonwealth v. Stratton*, 114 Mass. 303, 303 (1873) ("One is guilty of an assault and battery who delivers to another a thing to be eaten, knowing that it contains a foreign substance and concealing the fact, if the other, in ignorance of the fact, eats it and is injured in health.").

²¹² See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. e, illus. 3.

²¹³ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 3 cmt. a (AM. L. INST., Tentative Draft No. 4, 2019) ("Another recent case supports offensive battery liability in a fact pattern similar to Illustration 5. In *Kumar v. Gate Gourmet, Inc.*, 325 P.3d 193, 205 (Wash. 2014), the Supreme Court of Washington reviewed employees' allegations that they were required to eat employer-supplied food and were deceived into eating meat rather than vegetarian meals, in violation of their religious beliefs, even though the employer knew that this would cause an offensive contact.").

²¹⁴ On the distinction between single and dual intent, see RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. g (AM. L. INST., Tentative Draft No. 1, 2015). The majority of jurisdictions adopt the single intent rule. See *id.* The case for toxic battery made in this Article presumes a single intent jurisdiction, though there are bound to be at least some pollution cases where the dual intent standard would be satisfied.

²¹⁵ The U.S. District Court for the Southern District of Ohio properly rejected such a rule suggested by the egregious polluter, DuPont, who was seeking to avoid responsibility for its contamination of communities with C8. See *In re E.I. DuPont de Nemours & Co. C-8 Pers. Inj. Litig.*, No. 2:13-md-2433, 2015 WL 4092866, at *14 (S.D. Ohio July 6, 2015) ("DuPont further argues that, even if this Court were to apply 'a lesser 'substantial certainty' standard for battery cases involving indirect contact, the plaintiff must still be able to demonstrate that the defendant acted with substantial certainty that his conduct would lead to contact with that specific plaintiff.' DuPont's arguments are not well taken." (citations omitted) (quoting DuPont's Motion for Partial Summary Judgment on Inapplicable Causes of Action and Claims for Relief at 15, *In re E.I. DuPont de Nemours & Co.*, 2015 WL 4092866 (No. 2:13-md-2433)). But see *Priselac v. Chemours Co.*, No. 7:20-CV-190, 2022 WL 909406, at *9 (E.D.N.C. Mar. 28, 2022) ("Although Priselac plausibly alleges that defendants knew the PFCs would enter the general public's drinking water, that knowledge does not plausibly allege that defendants were directing their conduct at Priselac and the class members. Instead, the allegations show defendants' conduct was directed at operating their business and that they had knowledge of the substantial safety risks incidental to the manner in which they did so, similar to the defendant in *Aber-*

This interpretation, however, conflicts with the transferred intent rule in intentional torts jurisprudence. For example, if I throw a baseball at my friend, but I miss and hit a bystander behind my friend, I am considered to possess the requisite intent for battery liability. I had no purpose or knowledge to a substantial certainty that I would hit the bystander with the baseball. The bystander being hit was a product of my poor aim. Yet, the law imposes liability on me as if I made contact with my intended target, my friend.²¹⁶ It does so because the act of throwing the baseball with the intent to hit another, whoever it is, disrespects the interest in bodily integrity and autonomy that all are presumed to have.

The difficulty in expanding the suggested single intent rule to include the transferred intent rule in indirect contact cases is that there is no natural limit to the scope of liability in the transferred intent doctrine. If I intend to throw a ball at a crowd of people, knowing to a substantial certainty that the ball is going to contact someone in that crowd but not knowing whom specifically, it does not matter whom I hit. I am liable for battery. It does not matter that I did not pick out a particular person as a target in advance. The law does not balk at imposing battery liability in such cases because my affirmative conduct clearly violates the bodily integrity and autonomy of somebody in that group.²¹⁷ Perhaps such cases are the ones intended to be captured by the alternative “someone within a small class of victims in a localized area” standard suggested by the *Restatement Reporters*.²¹⁸ In such cases, perhaps my intent is still personal because I can identify the group of people at whom my affirmative conduct is directed in advance of my action.

Many pollution cases are personal in this way and should easily satisfy the intent requirement for battery. First, discharging pollutants into sources of drinking water satisfies the intent requirement for making contact with those who rely on the drinking water. For example, in *Werlein v. United States*,²¹⁹ the United States District Court for the District of Minnesota examined allegations from pollution victims that the polluter disposed of trichloroethylene, a highly toxic substance, into sandy ground directly above a regional aquifer that was

nathy. Thus, without directing conduct at Priselac, the facts Priselac alleges are closer to ordinary negligence than to willful and wanton negligence so serious that it is in spirit equivalent to actual intent.” (citations omitted)).

²¹⁶ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 110 cmt. b, illus. 6 (AM. L. INST., Discussion Draft 2014).

²¹⁷ See WILLIAM L. PROSSER, HANDBOOK OF THE LAW OF TORTS § 8, at 31–32 (4th ed. 1971) (noting that firing a bullet into a crowd, even though the shooter hopes and prays the bullet will miss, counts as battery if the bullet makes contact with anyone in the crowd); see also *Arias v. DynCorp*, Nos. 1:01cv01908, 1:07cv01042, 2016 WL 6496214, at *6 (D.D.C. Nov. 2, 2016) (“The intent element of Battery does not require purposeful intent to hit a specific person, but merely knowledge that harmful or offensive contact to somebody will occur with substantially certain probability.”).

²¹⁸ See *supra* note 206 and accompanying text.

²¹⁹ 746 F. Supp. 887 (D. Minn. 1990), *vacated in part*, 793 F. Supp. 898 (D. Minn. 1992) (mem.).

the source of the victims' drinking water. The court held that such allegations sufficiently established the intent requirement for battery to preclude summary judgment in favor of the polluter.²²⁰ In *Roeder v. Atlantic Richfield Co.*,²²¹ the United States District Court for the District of Nevada faced a similar question. In *Roeder*, the polluters were the owners of an abandoned open pit mine that, during the sixty-four years of its operational lifespan, had created a substantial amount of toxic waste on the site. There, the plaintiffs alleged that the polluters failed to control and remediate these toxic substances that subsequently entered the nearby groundwater and wells, which supplied the drinking water for three thousand people living within four miles of the site.²²² The court determined these allegations sufficiently alleged intent for the battery claim to survive the polluter's motion to dismiss.²²³

In *West Morgan-East Lawrence Water & Sewer Authority v. 3M Co.*,²²⁴ the pollution victims alleged that the polluter, 3M, was aware that it was discharging PFOA and PFAS into the Tennessee River and that 3M knew harmful levels of PFOA and PFAS appeared in that water being treated and sold by the water district for human consumption.²²⁵ The court determined that this was sufficient evidence of intent for battery to deny 3M's motion to dismiss.²²⁶ In *In re E.I. DuPont de Nemours & Co. C-8 Personal Injury Litigation*,²²⁷ the pollution victims alleged that DuPont discharged C8 from its Parkersburg, West Virginia, plant into the source of the victims' drinking water. The court determined that this was a sufficient allegation of intent for the battery claim to survive summary judgment.²²⁸

Second, discharging pollutants into the air, which proceed to contact individuals where the pollutants settle from the air flow, also satisfies the Reporters' intent requirement. In *Bradley v. American Smelting & Refining Co.*,²²⁹ the polluter was a copper smelting factory that emitted various metals, undetecta-

²²⁰ See *id.* at 907.

²²¹ No. 3:11-cv-00105, 2011 WL 4048515 (D. Nev. Sept. 8, 2011).

²²² Second Amended Class Action Complaint at 11, *Roeder*, 2011 WL 4048515 (No. 3:11-cv-00105).

²²³ *Roeder*, 2011 WL 4048515, at *7.

²²⁴ 208 F. Supp. 3d 1227 (N.D. Ala. 2016).

²²⁵ See *id.* at 1237.

²²⁶ *Id.* This issue was raised again by 3M in their motion for summary judgment where 3M seems to argue that Alabama requires a showing of dual intent for battery liability. 3M Company's and Dyneon, L.L.C.'s Motion for Summary Judgment at 22–23, *W. Morgan-E. Lawrence Water & Sewer Auth.*, 208 F. Supp. 3d 1227 (No. 5:15-cv-01750). The case, however, settled before the court ruled on the motion.

²²⁷ No. 2:13-md-2433, 2015 WL 4092866 (S.D. Ohio July 6, 2015).

²²⁸ *Id.* at *16 (“[T]here is a genuine issue as to whether DuPont knew with substantial certainty that its act of releasing C-8 from its Water Works plant would bring about a harmful or offensive contact, and whether a harmful or offensive contact resulted.”).

²²⁹ 709 P.2d 782 (Wash. 1985).

ble to human senses, into the air.²³⁰ These pollutants settled on the victim's land, approximately four miles from the smelter. In determining that the polluter had the requisite intent for trespass, which is the same intent standard for battery, the court reasoned:

The defendant has known for decades that sulfur dioxide and particulates of arsenic, cadmium and other metals were being emitted from the tall smokestack. It had to know that the solids propelled into the air by the warm gases would settle back to earth somewhere. It had to know that a purpose of the tall stack was to disperse the gas, smoke and minute solids over as large an area as possible and as far away as possible, but that while any resulting contamination would be diminished as to any one area or landowner, that nonetheless contamination, though slight, would follow.²³¹

In *Arias v. DynCorp*,²³² the polluter was in the business of spraying the herbicide, glyphosate, by crop duster plane in Ecuador. Evidence from the bellwether cases showed that the polluter's pilots sprayed close to the plaintiffs' homes and could see people, crops, and the ground below where they were spraying.²³³ The polluter argued that such contacts with the plaintiffs' persons and homes were unintentionally caused by the herbicide drifting in wind patterns.²³⁴ There was evidence, however, that the pilots "consciously and routinely ignored the operational parameters set specifically so that spray would not drift outside spray zones."²³⁵ Taken together, the court concluded that there was sufficient evidence to support a finding of intent on the part of the polluter for the battery claims to survive summary judgment.²³⁶ In *Roeder*, the pollution victims also alleged that the polluter's improper storage of the toxic mining wastes caused the pollutants to blow off-site onto the plaintiffs' properties and contact their bodies through the air.²³⁷ These allegations also satisfied the intent requirement for battery sufficient for denying the polluter's motion for summary judgment.²³⁸

These two kinds of pollution cases concern the discharge of chemicals from a specific and permanent location, such as a factory or industry site, into

²³⁰ *Id.* at 784. Notably, these emissions were in compliance with the federal Clean Air Act, Washington Clean Air Act, and National Ambient Air Quality Standards. *Id.*

²³¹ *Id.* at 786.

²³² Nos. 1:01cv01908, 1:07cv01042, 2016 WL 6496214, at *1 (D.D.C. Nov. 2, 2016).

²³³ *Id.* at *7.

²³⁴ *Id.*

²³⁵ *Id.*

²³⁶ *Id.*

²³⁷ No. 3:11-cv-00105, 2011 WL 4048515, at *1 (D. Nev. Sept. 8, 2011).

²³⁸ *Id.* at *7.

the immediately surrounding area. Another kind of chemical pollution case occurs when the discharge of pollutants is from a specific, but not permanent, location into the immediately surrounding area. Such cases are exemplified by train derailments and their attendant pollutant discharges into the area immediately surrounding the derailment location. Chemical pollution from train derailments seems to meet the intent standard for battery liability for two reasons. First, they are an expected part of the shipping business model, and the companies are substantially certain they are going to occur as a result of doing business. Second, the contacts that are made by such derailments are limited to a “small class of victims in a localized area,” just like the water and air contamination cases discussed above.²³⁹

One difference between the train derailment cases and the water and air contamination cases is that the identity of the specific affected community is not known before the actual train derailment. In water and air contamination cases, the physical location of the factory or manufacturing site determines the affected community in advance of the polluting activities. But this difference should not lead anyone to believe that intent is never satisfied in train derailment pollution cases. The shipping companies operate their business in the same way I throw a baseball into a crowd of strangers. They know which communities are vulnerable to being contacted by an inevitable toxic spill in virtue of the communities’ proximity to the rail lines, just as I know everyone in the group is vulnerable to being struck by the baseball.

Battery has rarely been alleged in toxic-spill train derailment cases. In one such case where the court granted summary judgment to the polluter, the pollution victims were unable to show any evidence that the pollutants discharged from the train derailment had actually contacted their persons.²⁴⁰ In another case, the court was persuaded to construe the train derailment as an “accident” and therefore necessarily unintentional, rather than as the result of affirmative and intentional conduct, in dismissing the pollution victim’s battery claim with prejudice.²⁴¹ The trouble is that no chemical spill from a train derailment is “accidental” in the sense that it was by chance. The companies expect these spills in the course of doing business. They are anticipated invasions of the victims’ bodily integrity and autonomy. Furthermore, “clean up” measures can

²³⁹ See RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL & EMOTIONAL HARM § 1 cmt. e (AM. L. INST. 2010) (“The applications of the substantial-certainty test should be limited to situations in which the defendant has knowledge to a substantial certainty that the conduct will bring about harm to a particular victim, or to someone with a small class of potential victims within a localized area.”).

²⁴⁰ *Toledo v. CSX Transp., Inc.*, No. 3:16-CV-475, 2018 WL 4923361, at *5 (E.D. Tenn. Oct. 10, 2018).

²⁴¹ *In re Paulsboro Derailment Cases v. Consol. Rail Corp.*, No. 13-784, 2013 WL 5530050, at *3 (D.N.J. Oct. 4, 2013).

include burning the toxic chemicals and putting them into the air,²⁴² which must be known to fall back to Earth someplace.²⁴³ These ought to be considered sufficient allegations for satisfying the intent for battery liability to survive dismissal and summary judgment in favor of the polluter.²⁴⁴

The primary concern with this interpretation of train-derailment-pollution cases is that they seem to mirror an issue that arises in products liability cases. In producing consumer goods, there is a failure rate for all products. Sometimes the product failure results in harmful or offensive contacts with the end user, or even perhaps a bystander. Manufacturers know this failure rate, and so they know that their products are going to cause some number of nonconsensual and physically harmful contacts, without knowing the identity of the victims beforehand.²⁴⁵ It seems that shipping companies know their toxic spills will cause harmful or offensive contacts in the same way products manufacturers know their product failures will cause harmful or offensive contacts. The Reporters state that a company's certainty of knowledge that their product will cause harmful or offensive contacts in this way supports strict liability, but not intentional tort liability.²⁴⁶

However, consumers are harmed by a failed product only after they decide to purchase or interact with that consumer good. Many contacts from consumer goods are the result of a relatively free choice on the part of an individual to interact with that product from that manufacturer. We do not have the same free choice with respect to locating our physical bodies in space. We must be somewhere at all times. Some people cannot afford to be in places that are lower risk for events such as train derailments and pollutant discharges. Because train companies know that their business will contaminate some people, the fact that the specific community is not identifiable in advance should

²⁴² See Chow & Abou-Sabe, *supra* note 94.

²⁴³ See *Bradley v. Am. Smelting & Refin. Co.*, 709 P.2d 782, 786 (Wash. 1985) (“[The polluter] had to know that the solids propelled into the air by the warm gases would settle back to earth somewhere.”).

²⁴⁴ Good pleading practices are important in advancing battery in these cases. See *In re Paulsboro Derailment Cases*, 2013 WL 5530050, at *3 (noting that plaintiffs characterized the derailment as an “accident” in their complaint, and therefore “failed to plead the requisite intent for assault or battery.”).

²⁴⁵ See Marisa Manley, *Product Liability: You're More Exposed Than You Think*, HARV. BUS. REV. (Sept. 1998), <https://hbr.org/1987/09/product-liability-youre-more-exposed-than-you-think> [<https://perma.cc/JR2Z-AARD>].

²⁴⁶ See RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL & EMOTIONAL HARM § 1 cmt. e (AM. L. INST. 2010). This line of argument points to a further question of how the law should treat “statistical knowledge,” or knowledge that some percentage of one’s repeat actions will cause harm (physical or dignitary) in the world. I cannot fully explore the issue here, and so I articulate a somewhat weaker view than I might defend in the future. For an excellent discussion of the problem of statistical knowledge, see Kenneth W. Simons, *Statistical Knowledge Deconstructed*, 92 B.U.L. REV. 1 (2012).

not pose a barrier to satisfying the intent requirement for battery. To conclude otherwise is to disrespect those persons' inherent dignity and worth and to treat them as lesser because they are not wealthy enough to relocate to a low/no risk area.²⁴⁷

Another kind of pollution case concerns the known discharge of pollutants in the work environment. Again, such contacts would seem to be limited to a "small class of victims in a localized area" and, therefore, satisfy the intent requirement for battery suggested by the Reporters.²⁴⁸ The challenge to treating the pollutant contact experienced by employees in the workplace as battery stems less from concerns over expansive liability and more from the exclusivity provisions of workers' compensation laws, which bar an employee from suing their employer for a workplace injury unless the employee can demonstrate one of three exceptions.²⁴⁹ The issue is that the intentional tort exception to workers' compensation demands a higher degree of intent than the common-law intent for battery.²⁵⁰ Most jurisdictions require that an employee demonstrate that the employer had a "deliberate intention" to cause the employee harm for her injury to fall outside the scope of the workers' compensation system's exclusive remedy provisions.²⁵¹

This elevated intent requirement in the workplace does not mean that employers are free to knowingly expose employees to pollutants in the workplace. For example, if an employer forces its employees to clean up a toxic spill of polychlorinated biphenyls without protective gear, "a jury could conclude that the intention to injure . . . was deliberate where the employer had an opportuni-

²⁴⁷ This poses a significant environmental justice issue, and my suggestion that such incidents constitute offensive battery can and should be interpreted to provide another avenue of redress for communities disparately impacted by train derailments and their chemical spills. See generally Kathy Seward Northern, *Battery and Beyond: A Tort Law Response to Environmental Racism*, 21 WM. & MARY ENV'T L. & POL'Y REV. 485 (1997) (addressing the fact that racial and ethnic minorities bear a disproportionate burden of pollution).

²⁴⁸ See *supra* note 206 and accompanying text.

²⁴⁹ Workers' compensation sets up an insurance system for compensating employees who suffer work-related harms. The advantage of the system is that it allows injured employees to receive guaranteed compensation for injury without demonstrating that the employer was negligent or at fault. The disadvantage of the system is that injured employees will often recover less from workers' compensation than they would through traditional tort law. See Christopher McAuliffe, *Resurrecting an Old Cause of Action for a New Wrong: Battery as a Toxic Tort*, 20 B.C. ENV'T AFFS. L. REV. 265, 281-83 (1993); Darin Calbreath Davidson, *Expansion of the "Deliberate Intention" Exception to Washington's Workers' Compensation Exclusivity: Following Birklied v. Boeing Co., When Does an Employer Intend Employee Injury?*, 32 GONZ. L. REV. 225, 231 (1996).

²⁵⁰ See Davidson, *supra* note 249, at 232 ("[B]ecause most jurisdictions follow a 'true intent' standard, it is difficult for an injured employee to establish that his or her employer intended the conduct that caused the injury as well as the injury itself.").

²⁵¹ See *id.* (noting that only a "minority of jurisdictions [have] departed from the 'true intentional tort' standard").

ty to weigh the consequences and to make a conscious choice among possible courses of action.”²⁵² When an employer diverts a smokestack so that its fumes blow into, rather than out of, the plant, intentionally removes warning labels from toxic substances, and knowingly provides inadequate safety equipment, this is sufficient to allege deliberate intent to injure to survive the employer’s motion to dismiss.²⁵³ When an employer continues to expose an employee to substances, not necessarily toxic, after the employer has ample evidence that the employee suffers reactions to those substances, the deliberate intent to injure standard is often satisfied.²⁵⁴ Based on these examples, it is likely that many chemical pollution cases occurring in the workplace would satisfy the workers’ compensation elevated intent requirement for toxic battery.²⁵⁵

In all the cases discussed above, the contact with the pollutant occurs only to a “small class of victims in a localized area.” Perhaps the most interesting case of toxic offensive battery is the case where the pollutant contacts people very broadly, either nationally or globally. Here, I am referring to PFAS, flame retardants, microplastics, and other pollutants detectable widely in humans, largely from diffuse and chronic exposure through consumer goods. Could such cases ever satisfy the intent requirement for battery? I believe that the answer to this question is a resounding, “Yes.”

As an initial matter, we should not think that such cases could never satisfy the intent requirement for battery. To take that position would be to say that as long as a polluter knowingly commits enough violations of bodily integrity and autonomy in discharging its chemicals, the polluter will not be held liable for battery for any of those violations. Such an outcome is simply perverse. It results in a world where polluters get to set the standard for what counts as legally permissible contact through their unilateral actions of polluting entire nations or the globe.²⁵⁶

²⁵² *Gulden v. Crown Zellerbach Corp.*, 890 F.2d 195, 196–97 (9th. Cir. 1989).

²⁵³ *See Cunningham v. Anchor Hocking Corp.*, 558 So. 2d 93, 97 (Fla. Dist. Ct. App. 1990).

²⁵⁴ *See, e.g., Zurbruggen v. Twin Hill Acquisition Co.*, 455 F. Supp. 3d 702 (N.D. Ill. 2020) (forcing employees to wear clothing that causes employees to suffer adverse health reactions); *McClain v. City of New Orleans*, 137 So. 3d 671 (La. Ct. App. 2014) (forcing an employee to continue to be exposed to Lysol when employee had reported it impairs her breathing); *Franklin Corp. v. Tedford*, 18 So. 3d 215 (Miss. 2009) (en banc) (forcing employees to come into contact with a toxic glue in the furniture manufacturing process that the employees had reported caused respiratory and skin reactions in order to cut costs).

²⁵⁵ The real hurdle for a claim of offensive toxic battery in the workplace would be whether courts would interpret the elevated intent to injure standard as including dignitary harms. This inquiry is beyond the scope of this Article.

²⁵⁶ One reason to view pollution as an intentional tort is that polluting behaviors are nonreciprocal behaviors. *See generally* George P. Fletcher, *Fairness and Utility in Tort Law*, 85 HARV. L. REV. 537, 550 (1972) (arguing that reciprocity in the degree of risks imposed by the parties on one another would provide more protection of individual interests than reasonableness in tort law).

Instead, we should think that these cases could satisfy the intent requirement for battery simply because the manufacturers know that their customers and end users are going to contact these pollutants in the course of the normal and routine use of their products. It is a necessary contact for the manufacturer to realize the sale of the product and its profit. It is as if the customer and other end users are required to take an injection of flame retardants, for example, in order to purchase or use a new couch or mattress. But people do not know that their decision to purchase or use a product is also a decision to put a vast array of chemicals and substances into their bodies. This is enough to establish intent for battery.²⁵⁷ Although some may be concerned about expanding the scope of battery liability, in practice, these cases may face other hurdles, such as standing, which is beyond the scope of this Article.²⁵⁸

In this Subsection, I examined different types of pollution cases and argued that the polluters will often satisfy the single intent requirement for battery in such cases. Unfortunately, for pollution victims, the burden to plead facts that support an allegation of the intent to make contact by the polluter may sometimes be difficult. Many of the details of what a corporate polluter knows and chooses to do in the face of that knowledge are not public information and may be unavailable to a pollution victim.²⁵⁹ This is particularly true in cases where the pollution is unseen, unsmelled, unfelt, and unknown to the pollution victim and when the pollution does not emanate from a discrete source, like a factory or train derailment. The investigation into corporate knowledge and decision-making may hit upon roadblocks. This pragmatic problem, however, should not dissuade pollution victims (and their counsel) from considering pursuing a claim in battery. Nor should it dissuade us from thinking of such contamination of our bodies as wrongful conduct violating our personal dignity.

I turn now to the final element of toxic battery as a dignitary tort, offense.

²⁵⁷ See Carl B. Meyer, *The Environmental Fate of Toxic Wastes, the Certainty of Harm, Toxic Torts, and Toxic Regulation*, 19 ENV'T L. 321, 384 (1989) ("An informed public would not tolerate an invasion of the interest in freedom from harmful and offensive bodily contact that results from exposure to toxic waste.").

²⁵⁸ The nationwide class action against DuPont and 3M for putting PFAS into the blood of every American recently had its class certification vacated by the Sixth Circuit on standing grounds. See *In re E.I. Du Pont de Nemours & Co. C-8 Pers. Inj. Litig.*, 87 F.4th 315, 318 (6th Cir. 2023).

²⁵⁹ But see Meyer, *supra* note 257, at 368 ("A manufacturer of toxic chemicals must be highly skilled in the field of chemistry. Any chemist who designs, manufactures, or sells toxic chemicals knows that the chemicals' potency will persist until the toxic compounds are chemically converted, consumed, or neutralized. In addition, these chemists know that merely dumping toxics does not necessarily reduce their toxicity."); *id.* at 384 ("Fortunately, after twenty years of environmental impact statements under [the National Environmental Policy Act of 1969] and environmental reviews under similar state laws, a large amount of detailed data has been produced to demonstrate how individual actions and projects affect the environment.").

3. Offense

The final element of a battery claim is a showing that the intentional contact is either harmful, in that it physically injures the victim, or offensive.²⁶⁰ In the case of pollution as an offensive battery, this means showing that contact with a pollutant that does not cause physical injury is nonetheless offensive.

Generally, contact with the body of another is offensive if it offends a reasonable sense of personal dignity.²⁶¹ This is an objective standard, and so an offensive contact must offend the ordinary person who is not unduly sensitive as to their sense of personal dignity.²⁶² Because “in a crowded world, a certain amount of personal contact is inevitable and must be accepted[. c]onsent is assumed to all those ordinary contacts which are customary and reasonably necessary to the common intercourse of life.”²⁶³ Offense can be thought of as an implied lack of consent relative to contemporary social norms.²⁶⁴ Those norms are subject to change over time.²⁶⁵ For example, in 1979, a manager smoking a cigar in his office where the cigar smoke contacts an employee who dislikes the smell of it “would ordinarily be considered such an innocuous and generally permitted contact” as to preclude battery liability.²⁶⁶ The *Restatement* Reporters believe that this case may well result in offensive battery liability today.²⁶⁷

The question of whether a contact is offensive is usually a question for the jury.²⁶⁸ As stated in Section 3 of the *Restatement (Third) of Torts: Intentional Torts to Persons*, “the circumstances surrounding the contact and the precise nature of the contact are critically important.”²⁶⁹ Important factors include the relationship of the parties, the context of the interaction, the physical and temporal nature of the contact, and the motives, beliefs, and intentions of the ac-

²⁶⁰ RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101(c) (AM. L. INST., Tentative Draft No. 1, 2015).

²⁶¹ See RESTATEMENT (SECOND) OF TORTS § 19 (AM. L. INST. 1965); RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 3 (AM. L. INST., Tentative Draft No. 4, 2019).

²⁶² See RESTATEMENT (SECOND) OF TORTS § 19 cmt. a.

²⁶³ *McCracken v. Sloan*, 252 S.E.2d 250, 252 (N.C. Ct. App. 1979).

²⁶⁴ See RESTATEMENT (SECOND) OF TORTS § 19 cmt. a (“[Offensive contact] must, therefore, be a contact which is unwarranted by the social usages prevalent at the time and place at which it is inflicted.”).

²⁶⁵ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 3 cmt. a (“Whether a contact offends the other’s reasonable sense of dignity is ordinarily a question for the jury, applying its judgment about contemporary social norms.”).

²⁶⁶ *McCracken*, 252 S.E.2d at 252.

²⁶⁷ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 3 cmt. a; see also *Leichtman v. WLW Jacor Commc’ns, Inc.*, 634 N.E.2d 697 (Ohio Ct. App. 1994) (holding that deliberately blowing cigar smoke in someone’s face could constitute an offensive battery). *Leichtman* is a good example of a case where the offensiveness of the contact is informed by the willful and wantonness of the intent to make the contact.

²⁶⁸ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 3 cmt. a.

²⁶⁹ *Id.*

tor.²⁷⁰ For example, grabbing another's hand to prevent it from touching a hot object would not be considered offensive even though grabbing another's hand to prevent it from picking up something harmless would. Moderately pushing someone aside so one can move through a crowded space would not be offensive. Moderately pushing someone aside while directing racial slurs at that person may be considered offensive by a jury and upheld as such by a court.

There are certain types of contacts that are almost always considered offensive. For example, any nonconsensual sexual contact is considered offensive, including fondling and intentionally brushing up against another's genitals.²⁷¹ In *Phillips v. Hull*, the Supreme Court of Mississippi explained that medical treatment that goes against the will of the patient is considered offensive:

Every human being of adult years and sound mind has a right to determine what shall be done with his own body [A] competent individual has a right to refuse to authorize a procedure, whether the refusal is grounded on doubt that the contemplated procedure will be successful, concern about probable risks or consequences, lack of confidence in the physician recommending the procedure, religious belief, or mere whim.²⁷²

Administering a drug to a patient without telling them, effectively conducting involuntary medical experimentation, counts as offensive contact.²⁷³ The justification for offensive battery liability here is about the touching being nonconsensual, not the presence (or lack thereof) of physical harm.

Offensive contact can occur when an actor knowingly exposes another to noxious or unwanted substances. Giving your friend a glass of milk to drink that you know is sour causes an offensive contact.²⁷⁴ If an employer requires its employees to eat employer-supplied meals composed of meat that the employer knows violates the employee's religious beliefs, this counts as causing an offensive contact.²⁷⁵ Contact with sewer gas is likely an offensive con-

²⁷⁰ See *id.*

²⁷¹ See *id.* ("In contemporary society, any nonconsensual contact with a sexual purpose satisfies the requirement of offending a person's reasonable sense of personal dignity.").

²⁷² See 516 So. 2d 488, 492 (Miss. 1987), *overruled by* *Whittington v. Mason*, 905 So. 2d 1261 (Miss. 2005).

²⁷³ See *Mink v. Univ. of Chi.*, 460 F. Supp. 713, 718 (N.D. Ill. 1978) ("We find the administration of a drug without the patient's knowledge comports with the meaning of offensive contact.").

²⁷⁴ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 101 cmt. e, illus. 3 (AM. L. INST., Tentative Draft No. 1, 2015).

²⁷⁵ See *Kumar v. Gate Gourmet, Inc.*, 325 P.3d 193, 205 (Wash. 2014).

tact.²⁷⁶ Contact with asbestos warrants going to the jury for a determination of offensive contact.²⁷⁷

An important question in pollution cases is whether the liability for offensive contact is more about the nonconsensual aspect of the contact or is more about the risk of physical harm due to the victim's contact with the chemical or substance. The case law is not particularly clear on this point. The most thorough examination of the issue can be found in *Arias*, where the pollution victims were knowingly sprayed with the herbicide, glyphosate.²⁷⁸ The court stated that:

[H]aving one's body sprayed with chemicals could constitute offensive bodily contact to a reasonable juror. It is instructive that the Restatement uses an example of being splashed with "a few drops of dirty water"—a much less objectively offensive bodily contact than being covered in glyphosate herbicide by overhead planes—as a textbook example of battery.²⁷⁹

This interpretation of offensive contact relies entirely on the nonconsensual nature of the contact and ignores everything to do with glyphosate's toxicity to humans or the pollution victims' level of exposure.

In West Virginia, however, there is an expectation of some physical harm from the contact for it to be considered an offensive contact. For example, in *Rhodes v. E.I. du Pont de Nemours and Co.*, the United States District Court for the Southern District of West Virginia granted summary judgment in favor of the polluter, DuPont, on the battery claim because the pollution victims failed to present evidence that they had suffered physical harm.²⁸⁰ The pollution victims presented evidence of increased risk of physical harm (i.e., disease) as a result of their exposure to PFOA, but the court concluded even that was insufficient under West Virginia law to demonstrate offensive contact.²⁸¹ This outcome is so reductive of offensive battery into harmful battery that the *Arias* court stated that West Virginia does not even recognize the tort of offensive battery.²⁸² Additional cases have likewise rejected this line of West Virginia case law.²⁸³

²⁷⁶ See *Witt v. Condos. at Boulders Ass'n*, No. 04-cv-02000, 2007 WL 840509, at *5 (D. Colo. Mar. 19, 2007) (treating exposure to sewer gas as an offensive contact but dismissing the battery claim for failure to sufficiently plead a voluntary act).

²⁷⁷ See *In re Haw. Fed. Asbestos Cases*, 734 F. Supp. 1563, 1567 n.7 (D. Haw. 1990).

²⁷⁸ *Arias v. DynCorp*, Nos. 1:01cv01908, 1:07cv01042, 2016 WL 6496214, at *8 (D.D.C. Nov. 2, 2016).

²⁷⁹ *Id.* (quoting RESTATEMENT (SECOND) OF TORTS § 18 cmt. g (AM. L. INST. 1965)).

²⁸⁰ 657 F. Supp. 2d 751, 773 (S.D.W.V. 2009).

²⁸¹ See *id.* at 771.

²⁸² *Arias*, 2016 WL 6496214, at *9 ("Unlike the District of Columbia, West Virginia does not recognize battery based on offensive contact alone."). This absurd result in West Virginia is a product

Other cases, however, seem to indicate that it may be the increased risk of physical harm that supports treating the exposure to a chemical or substance as an offensive contact. In *Smith v. Honeywell Intern. Inc.*, the United States District Court for the District of New Jersey interpreted the pollution victims' allegations that they were intentionally contacted by hazardous and toxic substances as allegations of offensive battery.²⁸⁴ The court held that the battery claim did not warrant dismissal.²⁸⁵ In *Grande v. Starbucks Corporation*, the United States District Court for the Eastern District of Pennsylvania allowed the pollution victim's battery claim to proceed upon allegations that he was intentionally contacted with "hazardous waste [including] human waste, infectious waste, bacteria, fungi, carcinogens, toxins, and disease pathogens."²⁸⁶ Again, the court construed this as a claim of offensive battery.²⁸⁷

Several commentators seem to treat the offensiveness of the contact in pollution cases as dependent on the victim's exposure to a hazardous substance or the victim's now-increased risk of physical injury.²⁸⁸ In support of treating contact with hazardous substances as offensive, "researchers . . . have found that lay people frequently object to being exposed to hazardous substances whether or not science has concluded that the exposure in question poses an significant risk."²⁸⁹ The starting point for what counts as legally offensive contact with a substance should, therefore, begin with hazardous substances.

of a line of cases that improperly blends the torts of offensive battery and infliction of emotional distress. Louisiana seems to adopt this indefensibly reductive approach to offensive battery in pollution cases occurring in the workplace. See *Frank v. Shell Oil Co.*, 828 F. Supp. 2d 835, 850–51 (E.D. La. 2011) (dismissing battery claim of deceased worker knowingly and continuously exposed to benzene, a well-known human carcinogen, because there was no allegation that employer was substantially certain employee would develop leukemia and there was no allegation that employee suffered physical injury while employed).

²⁸³ See *In re E.I. du Pont de Nemours and Co. C-8 Pers. Inj. Litig.*, No. 2:13-md-2433, 2015 WL 4092866, at *15–16 (S.D. Ohio July 6, 2015). But see *Atalig v. Mobil Oil Mariana Islands, Inc.*, 2012-SCC-0006-CIV, 2013 WL 5531295, at *11 (N. Mar. I. Oct. 2, 2013) (rejecting the *Rhodes v. E.I. du Pont de Nemours and Co.*, 657 F. Supp. 2d 751, 773 (S.D.W.V. 2009), reasoning but summarily concluding that pollution, "typical, although perhaps regrettable, . . . would fall outside the scope of 'offensive contact'").

²⁸⁴ No. 2:10-cv-03345, 2011 WL 810065, at *4 (D.N.J. Feb. 28, 2011).

²⁸⁵ *Id.*

²⁸⁶ No. CV 18-04036, 2020 WL 687669, at *2 (E.D. Pa. Feb. 11, 2020) (quoting Amended Complaint at 3, *Grande*, 2020 WL 687669 (No. CV 18-04036)).

²⁸⁷ See *id.* at *2–*3.

²⁸⁸ See Meyer, *supra* note 257, at 369 ("Because each molecule of toxic waste can inflict harm, any exposure is intrinsically offensive."); McAuliffe, *supra* note 249, at 290 ("Although it is true that, in the modern world, some contact is unavoidable, and that therefore courts assume plaintiffs have consented to ordinary contacts, toxic touching is not an ordinary contact. The potential severity of the disease that could result from a toxic contact makes the contact more than one of the inconveniences that citizens of a modern industrial society must bear.").

²⁸⁹ Collins & McLeod-Kilmurray, *supra* note 205, at 143.

Courts should always permit a jury to determine whether a pollution victim's contact with a hazardous substance counts as an offensive contact. Courts should never dismiss, or grant summary judgment to the polluter, on an offensive battery claim on the grounds that the contact between the pollution victims and the hazardous substance is not offensive.

Because there is no absolute concept of the toxicity of a substance and every substance could be argued to be harmful to human health (at the right dose),²⁹⁰ courts need a different starting point as to what substances count as hazardous. Here, the common law can look to statutory environmental law. The federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known as Superfund) takes the broadest view on what counts as a hazardous substance by aggregating the definitions of hazardous and toxic substances from the Clean Water Act, the Clean Air Act, the Resource Conservation and Recovery Act, and the new TSCA.²⁹¹ Under this authority, the EPA has classified nearly eight hundred substances as hazardous.²⁹²

The next question to consider is when a pollution victim is made to come into contact with a chemical or substance that is not classified as hazardous by the EPA. For example, PFAS are not listed as hazardous substances, even though they are known to cause human disease. Microplastics are also not listed as a hazardous substance, and they are of unknown toxicity to humans.

One suggestion, put forward by Professors Lynda Collins and Heather McLeod-Kilmurray, is that if the pollution victim's exposure to a substance increases her risk of physical injury—regardless of whether the substance is hazardous—that is sufficient to meet the “harmful or offensive” contact element for battery.²⁹³ This suggestion is ambiguous about why such exposure is sufficient for battery, allowing for physical harm through increased risk to be doing the heavy lifting rather than the nonconsensual nature of the contact. In the case where a polluter causes others to intentionally come into contact with substances whose toxicity and risks to human health are unknown, Collins and McLeod-Kilmurray view that as akin to conducting medical experimentation on people without their consent.²⁹⁴ The offensiveness of being forced to come into contact with a chemical of unknown toxicity is therefore clearly grounded

²⁹⁰ “The toxicity of a substance depends on its dose. Many so-called poisons are essential trace elements, while many chemicals presumed to be harmless can act as poisons. For example, arsenic deficiency causes loss of hair, while drinking excessive amounts of water can cause an electrolytic imbalance that can result in death.” Meyer, *supra* note 257, at 327.

²⁹¹ *CERCLA Hazardous Substances Defined*, ENV'T PROT. AGENCY, <https://www.epa.gov/epcra/cercla-hazardous-substances-defined> [<https://perma.cc/GMG7-QV3J>] (Feb. 2, 2024).

²⁹² See 40 C.F.R. § 302.4 (2024) (listing hazardous substances).

²⁹³ Collins & McLeod-Kilmurray, *supra* note 205, at 142.

²⁹⁴ *Id.* at 136; see also CRANOR, *supra* note 19, at 183 (discussing the concept of an intentional act as it relates to a battery claim for administration of diethylstilbestrol).

in the lack of consent to the contact, not in the elevated risk of physical harm because of the contact. Finally, Collins and McLeod-Kilmurray would deny that battery, either harmful or offensive, could ever lie when the exposure is to a chemical or substance that is known to be safe.²⁹⁵

In my opinion, the use of this taxonomy to handle nonhazardous substances is wholly unnecessary, and its concession regarding exposures to chemicals and substances known to be safe completely ignores the fact that the nature of offensive battery lies principally in the nonconsensual nature of the contact, not in the contact's capacity to do physical harm to the victim. Because we have empirical data to suggest that contact with hazardous substances would be found offensive by a person of reasonable sensibilities, it makes sense to treat hazardous substances as their own category of offensive contact.²⁹⁶ Additionally, there are many pollution cases where the pollution victims are exposed to hazardous substances, so these are the easy cases of offensive contact.

Whether nonconsensual contact with any other substance counts as offensive contact should just be question for the jury. All this means is that courts should not dismiss, or grant summary judgment in favor of polluters, a claim for offensive battery on the ground that the contact is non-offensive. Humanity has never actually been given a chance to express its opinion on the matter of whether or not PFAS in drinking water or microplastics shedding off our clothing into the air we breathe is offensive contact.²⁹⁷ Just because a contact is typical of modern life does not mean that it has been impliedly consented to by those who are being contacted. The tap on the shoulder to get someone's attention is non-offensive because consent to the tap is imputed. Consent is imputed because we all can envision being the tapper at one time and the tappee at another time. We understand that tapping shoulders is sometimes needed to facilitate social discourse.

None of this holds true with respect to the pollution to which we are exposed. We are not sometimes the one polluting and other times the one being polluted. Corporate interests unilaterally decide to put these substances into the world and into our bodies. There is no reason to think that any (let alone all) of these substances had to be put into our bodies to facilitate social discourse. And there is no reason, whatsoever, to think that because we have inherited

²⁹⁵ See Collins & McLeod-Kilmurray, *supra* note 205, at 132.

²⁹⁶ There is some support for this position in the case law. See *Barnes v. Am. Tobacco Co.*, 984 F. Supp. 842, 869 (E.D. Pa. 1997), *aff'd*, 161 F.3d 127 (3d Cir. 1998) ("Under Pennsylvania law, claims for intentional exposure to hazardous substances are predicated on a theory of battery.").

²⁹⁷ See CARSON, *supra* note 28, at 13 ("It is the public that is being asked to assume the risks [of synthetic chemicals] The public must decide whether it wishes to continue on the present road, and it can do so only when in full possession of the facts The obligation to endure gives us the right to know.").

more than seventy years of cavalier polluting behavior by corporate interests that we somehow impliedly consent to these chemicals in our bodies the way we impliedly consent to being tapped on the shoulder.

As with many offensive batteries, liability for pollution will turn on case-specific factors that make the contact more or less offensive.²⁹⁸ It is unlikely that every discharge will rise to the level of an offensive contact, but the egregiousness with which polluters decide to contaminate people makes many nonconsensual contacts with substances plausibly offensive. Judges should not take that determination from the jury and protect polluters by ruling that such contacts are necessarily non-offensive.

III. TOXIC BATTERY: DEFENSES

In the previous Part, I presented the *prima facie* case for thinking that much of the modern pollution to which we are exposed constitutes an offensive battery. In this Part, I briefly explore two defenses that polluters might raise: consent and necessity. Unlike the elements of battery, which have been lightly litigated in toxic tort cases, affirmative defenses to toxic battery claims have not been litigated to a similar extent. I will argue that neither defense justifies the pollution to which we are chronically exposed. In Section A, I discuss the defense of consent.²⁹⁹ In Section B, I discuss necessity.³⁰⁰

A. Consent

Consent can be raised as a defense to any intentional tort, including battery.³⁰¹ Consent is “magical” in that it “turns a trespass into a dinner party; a battery into a handshake; a theft into a gift; an invasion of privacy into an intimate moment; a commercial appropriation of name and likeness into a biography.”³⁰² Because the pollution discussed in this Article is so common to modern life, there is a real question regarding whether we have consented to

²⁹⁸ For example, I have had the concern raised that adding salt to a dish at a restaurant could constitute an offensive battery under my proposal if salt is not listed on the menu. In normal circumstances, adding salt to a dish served at a restaurant is not offensive battery because every reasonable person knows that salt is used as seasoning in cooking. Furthermore, a restaurant patron has a choice in eating at the restaurant, in choosing what to order, and in inquiring about the ingredients in the dish prior to eating it. None of these factors hold in the pollution cases that are my target in this Article. *See supra* Part I.A. If a restaurant patron specifically requested no salt and the kitchen knowingly put salt into the dish anyway, that could rise to the level of an offensive battery.

²⁹⁹ *See infra* notes 301–320 and accompanying text.

³⁰⁰ *See infra* notes 321–329 and accompanying text.

³⁰¹ *See* RESTATEMENT (SECOND) OF TORTS § 892A (AM. L. INST. 1979) (describing the effect of consent).

³⁰² Heidi M. Hurd, *The Moral Magic of Consent*, 2 LEGAL THEORY 121, 123 (1996).

having all these chemicals put into our bodies. I have suggested earlier³⁰³ that we have not consented to having these pollutants put into our bodies due to our lack of knowledge and our lack of choice³⁰⁴ in the matter. As I will discuss in detail here, these reasons apply equally to cases of localized pollution from fixed polluting sites, such as factories and manufacturing facilities, and the exposure to substances we receive as users of consumer products.

There can be little debate over whether we have given explicit consent to be contacted by the chemicals discharged by polluters: we have not. No one in the general public has ever stood up and said, "Industrial polluters, please put PFAS and flame retardants into my blood."³⁰⁵ However, consent can exist even in the absence of explicit words stating as such. Consent can be effectuated by affirmative action, silence, inaction, or any competent evidence that tends to show it exists in fact.³⁰⁶ So, the question in many pollution cases is whether our actions, such as purchasing and using consumer goods or moving to a home closer to a factory or commercial shipping lines, manifests consent to have our bodies contaminated with chemicals.

To start, consent is limited in scope to particular conduct (or substantially the same conduct) willed by the would-be victim.³⁰⁷ So, consent to a fist fight is not consent to a knife fight or a fight with brass knuckles.³⁰⁸ Being contacted with a bare fist is not the same, or substantially the same, conduct as being contacted with a knife or brass knuckles. Furthermore, if an actor is aware that their would-be victim is giving consent under a substantial mistake "as to the nature of the invasion of the other's interests reasonably to be expected from the conduct or as to the extent of the harm reasonably to be expected to result,"

³⁰³ See *supra* Part II.B.3.

³⁰⁴ See RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 13 cmt. b (AM. L. INST., Tentative Draft No. 4, 2019) ("For example, if an actor engages in conduct that is otherwise tortious (such as a harmful or offensive battery) with a sleeping or unconscious person, or by physically overpowering the person, this is ordinarily an especially egregious violation of the person's right to decide the terms of interaction with the actor, because the person has no opportunity to decide whether to permit the actor's conduct.").

³⁰⁵ See *id.* ("The requisite state of mind for actual consent is a person's willingness (i) that the actor engage in the otherwise tortious conduct and (ii) that the otherwise tortious invasion of the person's interests occur.").

³⁰⁶ See RESTATEMENT (SECOND) OF TORTS § 892 ("[Consent] may be manifested by action or inaction and need not be communicated to the actor.").

³⁰⁷ See *Barnes v. Am. Tobacco Co.*, 984 F. Supp. 842, 870 (E.D. Pa. 1997), *aff'd*, 161 F.3d 127 (3d Cir. 1998) ("[T]he defense of consent is conduct specific [A] plaintiff's consent to one aspect of a defendant's conduct will not insulate a defendant from liability for other acts. A plaintiff may be held to have consented to only certain conduct, but to have withheld consent with respect to other conduct.").

³⁰⁸ RESTATEMENT (SECOND) OF TORTS § 892A cmt. c.

the consent is ineffective.³⁰⁹ So, serving a guest poisoned milk counts as battery, even though the guest willingly consumes the milk.³¹⁰

In one chemical exposure case in the Supreme Court of Louisiana, *Fricke v. Owens-Corning Fiberglas Corp.*,³¹¹ the battery claim was decided on consent grounds. In that case, an employee undertook the rescue of a fellow employee, who had become incapacitated due to noxious fumes at the bottom of a mustard tank.³¹² The rescuer suffered brain damage and alleged battery against his employer and supervisor, claiming that they knew to a substantial certainty that he would come into contact with noxious vapors while undertaking the rescue.³¹³ The court concluded that the employee was well-aware that there were some irritating vapors in the tank and that the supervisor and employer had no knowledge of the seriousness of the vapor concentration in the tank at the time of the rescue.³¹⁴ Therefore, the employee had consented to come into contact with the vapors when he attempted the rescue, even though he had made a substantial mistake as to the seriousness of the contact to which he was exposing himself.³¹⁵ Importantly, the plaintiff's mistake was not caused by his employer.³¹⁶

When product manufacturers deliberately withhold information about their products from consumers, this can negate consent even if the consumers are willing users. For example, in *Barnes v. American Tobacco Co.* in the United States District Court for the Eastern District of Pennsylvania,³¹⁷ the plaintiff was a smoker, someone whom we colloquially think of as consenting to the consumption of tobacco products. The court allowed the plaintiff's battery claim to survive summary judgment because she alleged that "she lacked the crucial information about the nature of the product" for her choice to smoke to count as consent.³¹⁸ She claimed that the defendants withheld information from her, including evidence that many of the risks of cigarette smoking are not inherent and evidence that the addictiveness and ill health effects of cigarettes are the result of deliberate industry decisions to increase the risk of harm through additives and manipulation of nicotine and to withhold safer and less

³⁰⁹ *Id.* § 892B cmt. d.

³¹⁰ RESTATEMENT (THIRD) OF TORTS: INTENTIONAL TORTS TO PERS. § 15 cmt. e, illus. 6 (AM. L. INST., Tentative Draft No. 4, 2019).

³¹¹ 571 So. 2d 130 (La. 1990).

³¹² *Id.* at 131.

³¹³ *Id.* at 132.

³¹⁴ *Id.* at 133.

³¹⁵ *Id.*

³¹⁶ *Id.* at 133 n.*.

³¹⁷ 984 F. Supp. 842 (E.D. Pa. 1997), *aff'd*, 161 F.3d 127 (3d Cir. 1998).

³¹⁸ *Id.* at 870.

addictive alternatives.³¹⁹ This suggests that for the use of a consumer product to amount to consent to being contacted by that product, customers and end users need to be made aware of the nature and necessity of the substances that enter their bodies. When a manufacturer deliberately hides this information from consumers, use of the product does not necessarily imply consent to the chemical contamination.

From this, it follows that the chemicals and substances that enter our bodies as a result of consumer goods—including flame retardants and microplastics—are not consented-to contacts. Consumers are not aware that when they purchase a new mattress, it comes with a dose of flame retardants in their bodies and their children's bodies. Nor are they aware that when they buy a new sweater, it comes with the inhalation of microplastics. Nobody notices the little sticker that says "Apeel" on their apples, but even if they do, that sticker does not convey to the purchaser that the apple is coated in an untested substance for the sake of increasing corporate profits. Companies sell their products as positives for the consumer. They do not want to share with consumers that the cost of creating such products, such as nonstick cookware, was putting PFAS into everyone's blood—so they intentionally hide these kinds of facts. One cannot make a choice about which contacts one wants to permit if the nature of the contact is unknown, obscured, or misrepresented.

Similar facts hold in cases of chemical exposures from factories and manufacturing facilities. So much of modern pollution is not capable of being seen or smelled. The only way for individuals to have an inkling of what they may be exposed to by local polluters when choosing a place to live is to conduct a time-consuming investigation. Even that, however, does not provide anywhere near full knowledge as to the exposures one ought to expect being neighbors with such entities. For example, I once considered renting an apartment near the edge of Miami-Dade County. I spent hours searching for and reading past- and present-resident reviews. In that sea of data, two stood out to me that mentioned loud noises, dust on cars, and the ground occasionally shaking at the property. Upon further investigation through Google Maps, I learned that a cement factory was located less than half a mile away from the apartment complex (as the crow flies). Even that knowledge, which took significantly more time to discover than most people have in selecting an apartment, did not tell me what pollutants I would likely be exposed to by living there. Only my understanding of our pollution problems gave me warning not live at that location if I did not want to be exposed to a variety of substances. Very few have the privilege to conduct such an investigation and turn down living ar-

³¹⁹ *Id.*

rangements on account of pollutant exposures.³²⁰ As such, choosing to live in such locations does not count as consent to be contaminated by polluters nearby.

One thing that this discussion does not tackle directly is the seemingly inevitableness of pollution for modern life. I interpret this as a claim of the necessity of pollution, not consent to pollution, to which I turn next.

B. Necessity

There are a variety of kinds of necessity to which a polluter could appeal in trying to justify its polluting behaviors. First, a polluter may claim that discharge of its pollutants is necessary to the quality of life that is modern-day living. Notably, this is not a claim of legal necessity, but rather a claim of empirical necessity. The claim of empirical necessity, however, is not widely true. “[T]he manufacturers and users of toxics usually have alternative methods to achieve their goals, which will reduce or eliminate toxic waste, even though these methods may be somewhat more expensive.”³²¹ Most decisions to intentionally discharge chemicals are economic decisions. It is cheaper to do so than to find another way to achieve the same goal and contaminate us and the environment much less.³²² For example, more people should be puzzled over the fact that almost all our modern textiles are made of plastic. The principal driver of the textile industry to plastic was cost.

Additionally, some chemicals, like Apeel and flame retardants, are solutions in search of a problem.³²³ Apeel is not necessary to increase access to healthy food (nor is it even likely to have that effect). Implementing real social justice policies, starting with economic inequality, is how we increase access to healthy food. Flame retardants are not needed to protect babies in cribs.³²⁴ They do not prevent fires, and so it is no surprise that you have never heard of an infant being saved from a fire because its clothing and bedding were inundated with flame retardants. There is not a shred of evidence that flame retardants being infused into all of our consumer goods do any good, let alone constitute a necessity of modern life.³²⁵

³²⁰ See also Collins & McLeod-Kilmurray, *supra* note 205, at 146 (“[S]ome plaintiffs cannot . . . afford to relocate, even when the risk bec[o]me[s] well documented. It is unreasonable to infer consent where there are no alternatives to submitting oneself to exposure.”).

³²¹ Meyer, *supra* note 257, at 353.

³²² See *id.*

³²³ See *supra* Part I.A.

³²⁴ See THE MERCHANTS OF DOUBT, *supra* note 56.

³²⁵ See *Flame Retardants*, GREEN SCI. POL’Y INST., <https://greensciencepolicy.org/harmful-chemicals/flame-retardants/> [<https://perma.cc/A8PJ-6SVH>] (“Flame retardants often delay ignition only a few seconds and can make fires more dangerous due to increased smoke and toxic gases.”).

Some might claim that reduction in the costs of consumer goods is what has increased the quality of life for the lower and middle classes. If pollution is how we got here, such pollution could not have been wrong. Such a position seems to me to give up on the notion of real social justice. It suggests that because we cannot improve the quality of life for the least well-off without contaminating the world with chemicals, because there is not enough profit in it for the wealthy, then we ought to let the wealthy contaminate the world. I have to believe that there are other ways of making consumer goods affordable and of expanding access to the American Dream that do not require putting more than four hundred known carcinogens into the body of every American.

Regardless of claims of the empirical and economic necessity of the polluting behaviors I am targeting in this Article, such claims of necessity are not claims of legal necessity. They do not ground a valid defense to a claim of offensive battery. Legal necessity, however, might. Legal necessity is typically understood as a defense to trespass, not battery.³²⁶ The assertion that a battery is necessary is usually a claim of self-defense. Polluters contaminating others has no resemblance to self-defense, but there is one situation where the doctrine of public necessity seems mildly relevant.

Public necessity permits entering the land of another if doing so is necessary for the purpose of averting an imminent disaster, which are usually natural disasters such as fire, flood, or pestilence.³²⁷ This was a defense that allowed individuals to sacrifice the property of others for the benefit of the public generally. Historically, this defense was invoked when public officials would burn a private home to stop the spread of a city fire.³²⁸ There is one kind of PFAS discharge that resembles the interests at play in public necessity cases, and that is the use of PFAS in firefighting foam. There are some fires, such as jet fuel fires, that are incredibly hard to extinguish without chemical assistance. I am unaware of any information regarding just how necessary the discharge of PFAS really is in such circumstances, but it is possible that such discharges would meet the standard of public necessity. Even if public necessity applied in such cases, “[t]he privilege must be exercised in a reasonable manner. The actor must use reasonable care to avoid doing unnecessary harm to persons or things, although the exigencies of the occasion must be taken into account in judging his conduct.”³²⁹ So, there would still be a question of whether such

³²⁶ See RESTATEMENT (SECOND) OF TORTS § 196 (AM. L. INST. 1965) (describing public necessity only in the context of trespass); *id.* § 197 (same for private necessity).

³²⁷ See *id.* § 196.

³²⁸ See, e.g., *Surocco v. Geary*, 3 Cal. 69, 74 (1853) (holding that burning down another’s house for the purpose of saving adjacent buildings is a public necessity).

³²⁹ RESTATEMENT (SECOND) OF TORTS § 196 cmt. e.

high discharges of PFAS are unnecessary, which condemns their use, however helpful they might be in fighting jet fuel fires.

IV. REMEDIES

Finally, there is the matter of what remedies are available to a pollution victim for the chemical contamination of their body under a claim of offensive battery. Tort law recognizes three categories of monetary relief: compensatory, nominal, and punitive damages.³³⁰ Tort law also recognizes the availability of injunctive relief in some circumstances. Although compensatory damages are unlikely to be available in many toxic offensive battery cases, nominal damages, punitive damages, and injunctive relief should be regularly available to pollution victims.

It is well-established that a victim of an offensive battery is entitled to at least nominal damages.³³¹ Nominal damages are awarded when a tort victim is suing to establish their right or to obtain a ruling from a court that the defendant's conduct was an invasion of her legally protected interest.³³² Nominal damages in pollution cases would neither compensate the pollution victim nor punish the polluter.³³³ They would be awarded regardless of whether the polluter acted with a bad state of mind.³³⁴ So, nominal damages in pollution cases would function as way for courts to declare the wrongfulness of the polluter's behavior, place limits on the polluter's legal right to contaminate its victims, and vindicate the pollution victim's right to be free of the insertion of chemicals into her body without her consent. Nominal damages would be the principal remedy when the pollution victim cannot establish that she is entitled to compensatory damages.³³⁵

³³⁰ RESTATEMENT (SECOND) OF TORTS § 903 (AM. L. INST. 1979) (compensatory damages); *id.* § 907 (nominal damages); *id.* § 908 (punitive damages).

³³¹ *See, e.g., Reynolds v. MacFarlane*, 322 P.3d 755, 760 (Utah Ct. App. 2014) ("Moreover, '[c]ommon law battery does not require that the nonconsensual contact be injurious. Rather, proof of an unauthorized invasion of the plaintiff's person, even if harmless, entitles him to at least nominal damages.'" (alterations in original) (quoting *Lounsbury v. Capel*, 836 P. 2d 188, 192–93 (Utah Ct. App. 1992)).

³³² *See* RESTATEMENT (SECOND) OF TORTS § 907 cmt. b ("Nominal damages can be awarded when the defendant has invaded an interest of the plaintiff protected against nonharmful conduct of the sort committed by the defendant and no harm has been proved.").

³³³ *See id.* § 907 cmt. a (stating that nominal damages "are given neither to compensate the plaintiff nor to punish the defendant").

³³⁴ *See id.* (noting nominal damages may be "granted irrespective of harm to the complainant or of a bad state of mind on the part of the defendant").

³³⁵ *See id.* § 907 (defining nominal damages as "a trivial sum of money awarded to a litigant who has established a cause of action but has not established that he is entitled to compensatory damages").

Compensatory damages are awarded to compensate a tort victim for the “harm” that she has suffered.³³⁶ “Harm” in this sense includes not only physical harm, such as disease, physical injury, and physical pain, but also emotional, reputational, and economic harm.³³⁷ In cases of pollution as offensive battery, victims will not experience physical pain, injury, or disease. Accordingly, they will often not be able to recover compensatory damages. However, compensatory damages do recognize fear and anxiety as a form of emotional harm that is compensable.³³⁸ In some pollution cases, such as cases where victims are exposed to high levels of a chemical, victims may have a claim that they have suffered significant emotional harm in having to now worry about developing disease later in life. These pollution victims would be those who seek medical monitoring damages under traditional toxic tort but are denied such compensation because they cannot show physical injury.³³⁹ Offensive battery could be a way for such victims to obtain compensation for their medical monitoring expenses when state law denies them a remedy under negligence and strict liability claims.³⁴⁰

Although nominal damages vindicate our right to be free of unconsented-to pollution and compensatory damages may help some groups of pollution victims receive medical monitoring expenses, punitive damages and injunctive relief are the avenues for changing polluters’ behavior. Punitive damages are awarded in addition to nominal or compensatory damages “to punish [a tortfeasor] for his outrageous conduct and to deter him and others like him from similar conduct in the future.”³⁴¹ Outrageous conduct is that which is done with evil motive or the reckless indifference to the rights of others.³⁴² “[I]t is not essential to the recovery of punitive damages that the plaintiff should have suffered any harm, either pecuniary or physical.”³⁴³ The award of punitive damages and their amount is soundly within the discretion of the trier of fact, whether judge or jury, who can properly consider all circumstances surrounding the wrongdoing in making its punitive damages determination.³⁴⁴

³³⁶ See *id.* § 903.

³³⁷ See *id.* § 905.

³³⁸ See *id.* § 905 cmt. e (“[O]ne may be entitled to recover for a feeling of anxiety, not only for himself but for others”).

³³⁹ See *supra* Part I.B.

³⁴⁰ See McAuliffe, *supra* note 249, at 293 (“Battery can serve as the underlying theory of liability for both cancerphobia and medical monitoring damages.”).

³⁴¹ RESTATEMENT (SECOND) OF TORTS § 908(1).

³⁴² See *id.* § 908 cmt. b.

³⁴³ *Id.* § 908 cmt. c.

³⁴⁴ See *id.* § 908 cmts. d–e (stating that the trier of fact can determine whether and how much to award in punitive damages).

When DuPont takes the cavalier, almost smug, position of, “So what? [C8] is in your blood,”³⁴⁵ a significant punitive damage award for each person that DuPont has contaminated might start to make a difference to DuPont’s understanding of what rights it can willfully and wantonly violate without facing accountability. Punitive damages are regularly recognized in the case of harmless trespass as an important mechanism for vindicating property rights and deterring trespass.³⁴⁶ Similarly, they could be used to vindicate our right to be free from nonconsensual chemical contacts *and* deter such pollution. Nominal damages do not function as a deterrent when the only thing that matters to an actor’s decision is the financial cost of that decision. Polluters are corporate entities to whom rights matter not, unless and until violating those rights costs them enough to affect the corporate bottom line. Currently, the law incentivizes polluters to continue contaminating our bodies through discharges, spills, and consumer goods because they are not made to bear the costs of their polluting behaviors. Widespread claims of offensive battery with substantial punitive damages awards that reflect polluters’ utter disregard for our right to be free from nonconsensual contacts could start to affect their bottom line and incentivize different corporate decisions.

Finally, injunctive relief could be available in some pollution cases. Numerous factors impact whether a court should award injunctive relief including:

- (1) the nature of the interest to be protected,
- (2) the relative adequacy to the plaintiff of injunction and of other remedies,
- (3) any unreasonable delay by the plaintiff in bringing suit,
- (4) any related misconduct on the part of the plaintiff,
- (5) the relative hardship likely to result to the defendant if an injunction is granted and to the plaintiff if it is denied,
- (6) the interests of third persons and of the public, and
- (7) the practicability of framing and enforcing the order or judgment.³⁴⁷

Furthermore, a court may grant an injunction against a threatened tort.³⁴⁸ A threatened tort is commonly demonstrated “by proving a past tort under conditions that render its repetition or continuance probable.”³⁴⁹

³⁴⁵ See *THE DEVIL WE KNOW*, *supra* note 4.

³⁴⁶ See, e.g., *Feld v. Feld*, 783 F. Supp. 2d 76, 78 (D.D.C. 2011) (awarding punitive damages for trespass); see also *Jacque v. Steenberg Homes, Inc.*, 563 N.W.2d 154 (Wis. 1997) (same).

³⁴⁷ RESTATEMENT (SECOND) OF TORTS § 936(1).

³⁴⁸ See *Shell Offshore Inc. v. Greenpeace, Inc.*, 864 F. Supp. 2d 839, 846 (D. Alaska 2012), *aff’d*, 709 F.3d 1281 (9th Cir. 2013) (discussing the availability of an injunction against a threatened tort).

In pollution cases where the discharge originates from a fixed location, an injunction against the continuation of such discharges should be obtainable. Such polluters egregiously and repeatedly violate the surrounding communities' right to be free from nonconsensual contacts with chemicals. Many of these chemicals are biopersistent and accumulate in the body over time and over repeated exposures. Monetary damages cannot remove many unwanted chemicals from the body. Most of our chemical exposure is permanent, so enjoining polluters from discharging the chemicals into the air and waterways around their facilities should be a practical order that a court could enforce.

Pollution victims could seek an injunction forcing a products manufacturer to remove chemicals from its products, thereby eliminating a prominent source of our nonconsensual contacts with those chemicals. It is less likely, however, that a court would consider awarding an injunction like that. In particular, manufacturers would likely claim that such an order would put them out of business because they "cannot make" the product without chemicals, and pollution victims can just buy a different product. Courts tend to shy away from vindicating individual rights and reigning in corporate interests when corporate interests claim that respecting those rights is "economically impossible." Courts also dislike telling manufacturers how to make their products. Perhaps a middle ground here is that pollution victims could compel complete disclosure as to the chemical exposures that consumers and end users will face as a result of purchasing the product.

CONCLUSION

In this Article, I have argued that much of the chemical contamination of our bodies constitutes an offensive battery, a violation of our right to be free from nonconsensual contacts. I have described how our bodies are contaminated via factory discharges, train derailments and chemical spills, our use of consumer goods, and in the workplace. Traditional toxic tort and statutory environmental law do nothing to prevent this and in fact encourage polluting behaviors by limiting the polluters' right to pollute only when the pollution can be scientifically shown to cause us physical harm. I discussed how pollution in the absence of physical harm still violates our interest in bodily integrity and autonomy and treats us as less than, as mere means for corporate interests to realize their profits. I analyzed the *prima facie* case for treating pollution as an offensive battery, focusing on the elements of voluntary act, intent, and offense. I evaluated consent and necessity as possible defenses and concluded that they do not hold in most cases of pollution. Finally, I discussed the reme-

³⁴⁹ RESTATEMENT (SECOND) TORTS § 933 cmt. b.

dies available for pollution victims, including compensatory damages for those who need medical monitoring, punitive damages to punish the polluters who wantonly disregard our rights for their own profits, and injunctive relief to stop ongoing polluting behaviors and inform the public about the chemicals to which they are exposed through consumer goods.

