

**OVERDRESSED AND UNDERREGULATED: HOW THE
FASHION INDUSTRY’S EXTREME PLASTIC POLLUTION
CAN BE LINKED TO A LACK OF SUPPLY CHAIN
REGULATION**

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ABSTRACT

The lack of regulation of supply chains and the rise of fast fashion have created a feedback cycle of consumer culture predicated on cheap products made largely from synthetic materials. Due to a lack of oversight and regulation, the microplastics from the fashion industry have flowed into the environment unchecked, resulting in an environmental crisis that is difficult to combat. This Note examines the simultaneous rise of the fast fashion industry and complex supply chains, and the devastating impact of plastic microfibers on the environment. It will also review the limitations of the current legal framework in addressing retailer responsibility for their supply chains and the plastic they produce, and how to rectify this through extended producer responsibility and closed-loop supply chains.

INTRODUCTION

The fashion industry has a microplastic problem. While the name sounds small, the impact on the environment is massive. The fashion industry has been essential to American commerce for nearly two centuries and has long been associated with glamor and high-end living.¹ The reality, however, is

1. See Vanessa Friedman, *What Is 'American Fashion' Now?*, N.Y. TIMES, <https://www.nytimes.com/2021/09/09/fashion/what-is-american-fashion.html> (Sept. 14, 2021) (reporting on the Met Gala, a New York City Fundraiser for the Metropolitan Museum of Art's Costume Institute; known as an opportunity for fashion designers to display their most extravagant works). This is an example of the opulence that separates high-end fashion from that of the average consumer; in 2021 tickets cost \$35,000 each; Vanessa Friedman, *Everything You Need to Know About the Met Gala 2021*, N.Y. TIMES (Sept. 10, 2021), <https://www.nytimes.com/2021/09/10/style/met-gala-vogue-american->

much less attractive. In 2016, textile production generated 65 million tons of plastic, accounting for 20% of all plastic produced in the world that year and 35% of all microfibers found in the environment.² “Microplastics” are plastic debris that are specifically less than five millimeters in length.³ “Microfibers” are an even more specific subset of microplastics that come from textiles.⁴ Microfibers are a persistent threat to the environment because of their unique ability to infiltrate air, water, and land.⁵ They are not biodegradable, which means that people are now breathing, eating, and drinking plastic.⁶

The rapid expansion of the fashion industry and the rising threat of plastics can be traced to a lack of uniform environmental regulation of supply chains during the globalization push of the 1990s.⁷ United States-based manufacturers quickly became incentivized to take their business overseas to produce cheaper, faster, and without regulatory oversight, leading to the rise of what we now refer to as “fast fashion.”⁸ In 2014, the average person in the United States bought 60% more clothing than they did in the year 2000, but they kept each item only half as long, leaving the excess to slowly decompose

fashion.html; and the event itself costs \$3.5 million; Hillary Hoffer & Dominic-Madori Davis, *The Party of the Year for the Fashion World was Scheduled to Take Place Today*, BUS. INSIDER (May 4, 2020, 5:40 PM), <https://www.businessinsider.com/met-gala-2018-theme-cost-ticket-dress-jewelry-2018-5>.

2. Catie Tobin, *How Plastic Pollution is Being Woven into Fast Fashion Culture*, NEW SEC. BEAT (July 30, 2020), <https://www.newsecuritybeat.org/2020/07/plastic-pollution-woven-fast-fashion-culture-2/>; Francesca De Falco et al., *The Contribution of Washing Processes of Synthetic Clothes to Microplastic Pollution*, SCI. REP., Apr. 2019, at 1, 2; *Microplastics*, NAT’L GEOGRAPHIC SOC’Y, <https://education.nationalgeographic.org/resource/microplastics> (May 20, 2022); Beverley Henry et al., *Microfibres from Apparel and Home Textiles*, 652 SCI. TOTAL ENV’T 483, 483 (2019). The type of microplastics that come from textiles are referred to as “microfibers” due to their small size and shape, *id.*

3. *What are Microplastics?*, NOAA (Jan. 26, 2023), <https://oceanservice.noaa.gov/facts/microplastics.html>.

4. Jianli Liu et al., *Microfibers: A Preliminary Discussion on Their Definition and Sources*, 26 ENV’T SCI. POLLUTION RSCH. 29497, 29498 (2019).

5. Henry et al., *supra* note 2, at 485.

6. See G. Pellini et al., *Characterization of Microplastic Litter in the Gastrointestinal Tract of Solea solea from the Adriatic Sea*, 234 ENV’T POLLUTION 943, 943 (2018) (finding that microplastics present a mounting threat to marine life and the human food chain as the plastics are broken into smaller particles and are being ingested into the digestive tracts of organisms lower on the food chain); Henry et al., *supra* note 2, at 484.

7. See Victoria Ledezma, *Globalization and Fashion: Too Fast, Too Furious*, 4 LAURIER UNDERGRADUATE J. ARTS 71, 73 (2017) (discussing the ethical and environmental problems stemming from the globalization of the fashion industry).

8. Annie R. Linden, *An Analysis of the Fast Fashion Industry*, 3-4 (Fall 2016) (Senior Project, Bard College) (on file with Bard Digital Commons, Bard College). Fast fashion is the mass production of low-quality product at a low price point. This product is consumed and disposed of rapidly in favor of the next clothing item that is “stylish” or “trendy”; because it is inexpensive, the consumer can consume more product than ever before, *id.* See also Ronald Jones, et al., *What Does Evidence Tell Us About Fragmentation and Outsourcing?*, 14 INT’L REV. ECON. & FIN. 305, 307 (2005) (discussing the emergence of outsourcing via international trade in production sectors generally).

in landfills.⁹ However, consumers alone are not to blame; retailers respond to consumer demand and flood the market with product, which leads to clothing waste and plastic pollution.¹⁰

This Note will explore how the rise of the fast-fashion industry is inextricably linked to the rise of complex supply chains overseas, and how a lack of regulations contributed to the plastic pollution crisis. This phenomenon can be addressed through federal legislation combining extended producer responsibility (EPR) and closed-loop supply chains (CLSCs).¹¹ Part I of this Note will explore the rise and impact of fast fashion and how the industry came to rely so heavily on supply chains. Part I will also explore the fashion industry's plastic pollution problem and its drastic impact on the environment. Part II will delve into the existing legal framework the United States provides to regulate supply chains and the internal controls that companies place on themselves. Part III explores the issues with the current legal framework and the drawbacks of existing legislation. Part IV proposes federal legislation that combines EPR and CLSCs to create a comprehensive approach to the fashion industry's microfiber pollution. The proposal combines supply chain mapping, a CLSC system that lowers plastic pollution risks, and enforcement measures to promote compliance.

I. FAST FASHION AND THE MICROPLASTIC PROBLEM

A. *The Rise and Impact of Fast Fashion*

Fast fashion is characterized by cheap prices, low-quality products, and rapid production.¹² The fast-fashion model encourages individuals to view their clothing as disposable because it can be readily and inexpensively replaced.¹³ Synthetic materials like nylon, rayon, and polyester are heavily

9. See Ngan Le, *The Impact of Fast Fashion on The Environment*, PRINCETON STUDENT CLIMATE INITIATIVE (July 20, 2020), <https://psci.princeton.edu/tips/2020/7/20/the-impact-of-fast-fashion-on-the-environment> (describing the industry's current trajectory; researchers anticipate there will be a 50% increase in global greenhouse gas emissions in the next decade); Morgan McFall-Johnsen, *The Fashion Industry Emits More Carbon Than International Flights and Maritime Shipping Combined*, BUS. INSIDER (Oct. 21, 2019, 12:22 PM), <https://www.businessinsider.com/fast-fashion-environmental-impact-pollution-emissions-waste-water-2019-10>.

10. See Le, *supra* note 9 (discussing how fast fashion harms the environment through clothing waste and pollution); see generally Akihlesh Ganti, *Positive Feedback*, INVESTOPEDIA, <https://www.investopedia.com/terms/p/positive-feedback.asp> (Sept. 29, 2022) (defining a feedback loop). The cycle of consumer demand and manufacturer response, which then leads to increased consumer demand and so on, is known as a feedback loop.

11. This Note focuses on United States solutions, but most statistics in this Note are global as the impact of plastic pollution cannot be confined to a single country.

12. Linden, *supra* note 8, at 4.

13. See Rachel Bick et al., *The Global Environmental Injustice of Fast Fashion*, ENV'T HEALTH, Dec. 27, 2018, at 1, 2, <https://ehjournal.biomedcentral.com/articles/10.1186/s12940-018-0433-7>.

used in the production of fast fashion due to their low cost.¹⁴ However, due to the throw-away clothing culture fast fashion promotes, those plastics frequently end up polluting the environment instead of in people's closets.¹⁵

The rise of consumer culture during the Second Industrial Revolution laid the groundwork for people to view clothing as disposable.¹⁶ For the first time, a large portion of society had disposable income and middle-class people were buying clothes they did not need.¹⁷ This served as an early indicator that clothing waste was being produced.¹⁸ The Second Industrial Revolution introduced early synthetics like rayon.¹⁹ World Wars I and II led to the opening of large factories that could mass-produce clothing faster than ever before.²⁰ In the early 1900s, an abundance of new fashions entered the market, and synthetics such as spandex, polyester, and nylon became available for mass consumption.²¹ This foreshadowed the fashion industry's plastic pollution as synthetics became widely available.²²

The onset of globalization in the late 1980s and early 1990s not only created new international markets for the fashion industry but also marked the true beginning of the fast fashion era.²³ With the rising popularity of the internet in the 1990s, consumers now had access to "e-commerce," which allowed for rapid consumption from a wider array of retailers than was ever

14. See Olivia Gecseg, *The Rise of Fashion's Obsession with Plastic Fibers*, THE SUSTAINABLE FASHION COLLECTIVE (July 8, 2019), <https://www.the-sustainable-fashion-collective.com/2019/07/08/fashions-obsession-with-plastic-fibres>.

15. See *id.* (explaining that materials like polyesters were favored in the rise of fast fashion as a cheaper alternative to typically higher end products); see also Marc Bain, *If Your Clothes Aren't Already Made Out of Plastic, They Will Be*, QUARTZ (June 5, 2015), <https://qz.com/414223/if-your-clothes-arent-already-made-out-of-plastic-they-will-be/> (discussing manufacturers' preferences for non-biodegradable synthetic in clothing production and the rise in consumer demand for cheap clothing).

16. See Eric Niiler, *How the Second Industrial Revolution Changed Americans' Lives*, HIST., <https://www.history.com/news/second-industrial-revolution-advances> (July 25, 2023) (describing the Second Industrial Revolution and its impact on growth); Ben Fine & Ellen Leopold, *Consumerism and the Industrial Revolution*, 15 SOC. HIST., 151, 167 (1990); See generally *Economic Growth and the Early Industrial Revolution*, U.S. HIST. (2021), <https://www.ushistory.org/us/22a.asp> (attributing the increase in a standard of living to increased productivity from machine-made products).

17. Fine & Leopold, *supra* note 16, at 161, 165. Americans were spending long hours working in factories, which led to less time available to make goods and clothing at home. However, this resulted in increased spending, which fueled the economy. Ganti, *supra* note 8.

18. Fine & Leopold, *supra* note 16, at 173.

19. Mallory Knee, *A Brief History of Synthetic Fabrics in the Fashion Industry*, DETROIT FASHION NEWS (Jan. 26, 2022, 8:53 AM), <https://detroitfashionnews.com/2022/01/26/a-brief-history-of-synthetic-fabrics-in-the-fashion-industry/>.

20. Bailey Marie Burningham, *An Investigation of the Impact of Changing Social Norms on Female Clothing Attire Pre and Post WW II (Spring 2018)* (B.A. Honors Thesis, Utah State University) (on file with Digital Commons, Utah State University).

21. Knee, *supra* note 19; Gecseg, *supra* note 14.

22. Knee, *supra* note 19.

23. Ledezma, *supra* note 7, at 72, 73.

imagined.²⁴ The accessibility of the internet and popularity of social media increased the demand for clothing into the 2000s.²⁵

The consumer demand that has been growing since the 1990s has only been exacerbated by the ease of access provided by the internet and false sense of demand created by an accelerated “trend cycle.”²⁶ The trend cycle is the ebb and flow of what is and is not “in style.” Worldwide, approximately 80 billion pieces of clothing are consumed every year.²⁷ This is a 400% increase from only two decades ago in the year 2000.²⁸ The increasing supply-and-demand feedback loop for affordable and trendy clothes led to a shorter trend cycle.²⁹ Trend cycles affect how manufacturers create their collections, what consumers purchase, what is kept in closets, and what is thrown out.³⁰ Traditionally, the fashion industry released collections that were curated around seasons.³¹ In contrast, major fast-fashion retailers like Zara and H&M now have 52 trend cycles a year instead of four.³² Product floods into the market, making consumers feel like they must constantly buy new products to keep up with the latest trends.³³ The extremely fast turnover of what is and is not in style is known as “micro-trending.”³⁴ This has led to fast-fashion retailers competing for lower prices during production to maintain a competitive edge, one reason why outsourcing overseas is so common.³⁵ Fast fashion results in a huge amount of textile waste and the lack

24. See *id.* at 74 (discussing the general interplay between globalization, online shopping, and fast fashion).

25. Riley Johnson, *How Social Media Affects the Fast Fashion Industry*, UNTITLED MAG. (Apr. 23, 2021), <http://untitled-magazine.com/how-social-media-affects-the-fast-fashion-industry/>.

26. Ledezma, *supra* note 7, at 74; Felipe Caro & Victor Martínez-de-Albéniz, *Fast Fashion: Business Model Overview and Research Opportunities*, in *RETAIL SUPPLY CHAIN MANAGEMENT* 250 (Narendra Agrawal & Stephen Smith eds., 2d ed. 2015).

27. India Horner, *Conscious Consumerism: Fast Fashion Fueling Fashion Failure?*, GREENPOP (Mar. 6, 2019), <https://greenpop.org/conscious-consumerism-fast-fashion-fuelling-fashion-failure/>.

28. *Id.*

29. Caro & Martínez-de-Albéniz, *supra* note 26, at 250.

30. Zhai Yun Tan, *What Happens When Fashion Becomes Fast, Disposable and Cheap?*, NPR (Apr. 10, 2016, 12:29 PM), <https://www.npr.org/2016/04/08/473513620/what-happens-when-fashion-becomes-fast-disposable-and-cheap>.

31. Caro & Martínez-de-Albéniz, *supra* note 26, at 250. This would lead to the release of only two collections per year: a fall-winter collection and spring-summer collection, *id.* This made it easier for consumers to keep up with trends and led to inherently less consumption due to lower availability of product in the market, *id.*

32. Audrey Stanton, *What is Fast Fashion, Anyway?*, GOOD TRADE (Sept. 5, 2023), <https://www.thegoodtrade.com/features/what-is-fast-fashion>.

33. Nathalie Remy et al., *Style That's Sustainable: A New Fast-Fashion Formula*, MCKINSEY SUSTAINABILITY (Oct. 20, 2016), <https://www.mckinsey.com/business-functions/sustainability/our-insights/style-thats-sustainable-a-new-fast-fashion-formula>.

34. Izzy Copestake, *Please Stop Falling for Fashion Microtrends*, VICE (Nov. 11, 2022, 4:00 AM), <https://www.vice.com/en/article/k7bg5a/fashion-microtrends-bad-for-environment>.

35. See Remy et al., *supra* note 33 (discussing how the apparel industry has developed a system to decrease production costs while keeping up with the current fashion trends).

of regulation throughout supply chains means that there is little accountability for any waste produced by fashion retailers.³⁶

B. Supply Chains, Moving Offshore, and a Shifting World

During the 1980s and 1990s, globalization was on the rise and it became increasingly common in the United States to move manufacturing overseas.³⁷ As manufacturing shifted overseas, supply chains became increasingly complex,³⁸ with retailers seeking to accommodate consumer demand for cheap fashion by cutting costs and avoiding regulation.³⁹ Clothing production requires low-level technology but is labor-heavy.⁴⁰ This incentivizes retailers to move operations to countries with lower labor costs and fewer “barriers to entry.”⁴¹ However, every country has different labor laws and resources. Retailers may source through hundreds or even thousands of suppliers throughout different countries to maximize their profit margins and their flexibility.⁴² This generates almost no retailer accountability or responsibility in how plastics are created, disposed of, or reused. Retailers rely heavily on the cheap labor, production, and resources of offshore manufacturing.⁴³ Experts estimate that 97% of all clothing and shoes purchased by Americans is imported from countries with lower

36. See *id.* (explaining lack of regulation and accountability on the apparel industry allows for quick trends and increased textile waste as a result).

37. Peter Doeringer & Sarah Crean, *Can Fast Fashion Save the US Apparel Industry?*, 4 SOCIO-ECON. REV. 353, 360-61 (2006). Globalization and emphasis on free trade during the 1990s set a perfect stage for American apparel companies to create supply chains in foreign countries, *id.* at 360; Ledezma, *supra* note 7, at 72; see also Lauren Sherman, *Unravelling the Myth of ‘Made in America’*, BUS. OF FASHION (Nov. 7, 2016), <https://www.businessoffashion.com/articles/news-analysis/the-myth-of-made-in-america-ttp-agreement> (“In 2015, 97 percent of all clothes sold in the US were imported.”).

38. See Adolfo Carballo-Penela et al., *The Role of Green Collaborative Strategies in Improving Environmental Sustainability in Supply Chains: Insights from a Case Study*, 27 BUS. STRATEGY & ENV’T 728, 729 (2018) (defining supply chains as “a set of upstream and downstream linkages between suppliers of materials and services which affect different processes and activities that produce goods and services delivered to consumers.”).

39. Piyya Muhammad Rafi-Ul-Shan et al., *Relationship Between Sustainability and Risk Management in Fashion Supply Chains*, 46 INT’L J. RETAIL & DISTRIBUTION MGMT. 466, 476 (2018). This is further exacerbated by faster information technology, the ability to buy clothing online, and fast fashion trends, *id.*; see also Remy et al., *supra* note 33 (discussing Zara and H&M rapidly producing new lines to keep up with fashion trends).

40. See Rafi-Ul-Shan et al., *supra* note 39, at 472 (explaining costs of technology in fashion supply chains).

41. *Id.*

42. *Id.* Many manufacturers maintain a smaller number of key suppliers but “smaller” is a relative term and these supply chains are still very complex, *id.*

43. See Rafi-Ul-Shan et al., *supra* note 39.

production costs, which demonstrates the heavy reliance on overseas production.⁴⁴

C. The Fashion Industry and Plastic Pollution

The tiny microfibers hiding in our clothes are often overlooked in favor of more obvious environmental damage caused by the fashion industry.⁴⁵ However, microfibers are a unique threat to the global environment because they cannot be easily collected or cleaned up once they infiltrate the environment; therefore, this type of pollution is almost irreversible if it is not prevented.⁴⁶

Plastic pollution occurs at all stages in the fashion industry from production of clothing to its consumption and disposal.⁴⁷ The fashion industry is responsible for 35% of all microplastics in the environment, making it the single largest source of microplastics.⁴⁸ The fashion industry has become one of the main culprits of microfiber pollution because of the high content of synthetic plastic materials used in clothing production.⁴⁹ Microfibers are present in 64% of all clothing,⁵⁰ and in 2015, only 3% of the plastics used in clothing production were made of recycled material.⁵¹ Microfibers enter the environment either as primary sources, meaning they are tiny microfibers already, or as secondary sources, meaning they are released from much larger plastic materials such as discarded clothing.⁵²

44. Matea Gold et al., *Ivanka, Inc.*, WASH. POST (July 14, 2017), <https://www.washingtonpost.com/graphics/2017/politics/ivanka-trump-overseas/?utmterm=.014d82f4984e>.

45. See *How Much Do Our Wardrobes Cost to the Environment?*, THE WORLD BANK (Sept. 23, 2019) <https://www.worldbank.org/en/news/feature/2019/09/23/costo-moda-medio-ambiente> (describing environmental impacts for which the fashion industry is responsible, including contributing 10% of global carbon emissions and the pollution of waterways with clothing dye).

46. Hayley McIlwraith et al., *Capturing Microfibers – Marketed Technologies Reduce Microfiber Emissions from Washing Machines*, 139 MARINE POLLUTION BULL. 40, 41 (2019).

47. *Fashion and Waste: An Uneasy Relationship*, COMMON OBJECTIVE (June 8, 2018), <https://www.commonobjective.co/article/fashion-and-waste-an-uneasy-relationship>. Nearly 39 million tonnes of consumer textile waste is created every year, and this is primarily in garment form, *id.* This has massive consequences due to the lack of recycling that takes place, and 57% of all discarded clothing ends up in a landfill, *id.*

48. See De Falco, *supra* note 2, at 2 (“Synthetic clothes contribute by about 35% to the global release of microplastics.”).

49. Phil Byrne, *Microfibres: The Plastic in Our Clothes*, FRIENDS OF THE EARTH (Sept. 14, 2018) <https://friendsoftheearth.uk/plastics/microfibres-plastic-in-our-clothes>; A.P.W. Barrows et al., *Marine Environment Microfiber Contamination: Global Patterns and the Diversity of Microparticle Origins*, 237 ENV'T POLLUTION 275, 276 (2018). This does not account for all the single-use plastic that clothing is wrapped and shipped in, which is different than the microfibers in clothing. Courtney Lindwall, *Single-Use Plastics*, NRDC (Jan. 9, 2020), <https://www.nrdc.org/stories/single-use-plastics-101#what>.

50. Byrne, *supra* note 49. Some common plastics noted on clothing labels are polyester, nylon, and acrylic, *id.*

51. Tobin, *supra* note 2.

52. Henry et al., *supra* note 2, at 484.

1. Plastic Production and Carbon Emissions

In addition to adding plastic to the environment, the process of creating plastic microfibers for clothing emits huge quantities of carbon dioxide (CO₂), which is harmful to the atmosphere.⁵³ Producing a single polyester shirt can create 12.13 pounds of CO₂, which is roughly equivalent to driving 13 miles in a standard-size passenger car.⁵⁴ Sixty-five million tons of plastic were produced solely for textile use in 2016, which represents 20% of the worldwide plastic production for that year.⁵⁵ “Typical fossil plastics have a global warming potential of between 1.7 and 3.5 [kilograms] of CO₂, depending on the type of plastic. This means that for every kilogram of fossil-based plastic produced, there [are] between 1.7 and 3.5 kilograms of [CO₂] released.”⁵⁶ In 2016, 65 million tons of plastic produced for textiles released approximately 221 to 455 billion pounds of CO₂ into the atmosphere.⁵⁷

The emissions generated in the production of the average polyester shirt are 20% more than those generated in the creation of the average cotton shirt, demonstrating how much of a difference creating plastics makes on the environment.⁵⁸ The effects of greenhouse gases, such as CO₂, on the environment are incredibly detrimental,⁵⁹ and producing plastic for fashion textiles in such large quantities is a principal contributor to this ongoing problem.⁶⁰

2. Microfiber Shedding and Primary Sources

“Microfiber shedding” is the process of microfibers coming off clothing during production, day-to-day wear, or washing, which releases microfibers into the environment.⁶¹ The washing of clothing is one of the most substantial

53. Tobin, *supra* note 2.

54. WILL GRIMOND & JOSIE WARDEN, RSA, FAST FASHION’S PLASTIC PROBLEM: SUSTAINABILITY & MATERIAL USAGE IN ONLINE FASHION 4 (2021), <https://www.thersa.org/globalassets/reports/2021/fast-fashions-plastic-problem.pdf>.

55. Tobin, *supra* note 2; Henry, *supra* note 2, at 484.

56. *What is the Carbon Footprint of Plastic?*, WOODLY (May 26, 2021), https://woodly.com/carbon_neutrality/what-is-the-carbon-footprint-of-plastic.

57. Henry et al., *supra* note 2, at 484.

58. Grimond & Warden, *supra* note 54.

59. *Overview of Greenhouse Gases*, EPA (Aug. 25, 2023), <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>. The effects of greenhouse gases are well documented and include rising temperatures, which have detrimental effects on the environment overall, *id.* This Note does not focus on the effects of carbon dioxide emissions specifically, but it is important to note that the creation of plastic for textiles contributes to this significant problem.

60. Walter Filho et al., *An Overview of the Contribution of the Textiles Sector to Climate Change*, 10 FRONTIERS IN ENV’T SCI. 1, 1 (Sept. 5, 2022).

61. See generally Libiao Yang et al., *Microfiber Release from Different Fabrics During Washing*, 249 ENV. POLLUTION 136, 136 (June 2019) (defining microfiber shedding).

contributors of microfiber shedding.⁶² A single load of laundry can release up to 700,000 microfibers.⁶³ The wastewater treatment plants that are meant to protect the environment catch only about 40% of these fibers,⁶⁴ and the rest go directly into waterways.⁶⁵ This indicates the systematic failure to acknowledge and prevent microfiber pollution.⁶⁶ Treatment plants were designed with larger and more traditional waste in mind; due to their dimensions, microfibers slip through the cracks in the systems.⁶⁷ The fashion industry alone is responsible for 35% of all microfibers released into the oceans and microfibers released by washing are the primary source of ocean microplastics.⁶⁸

3. Clothing Dumping and Secondary Sources

Microfibers also enter the environment via the breakdown of textiles. Due to consumer demand and the rise of fast fashion, the fashion industry overproduces clothing by approximately 30–40% every season, which is equivalent to approximately 13 million tons of clothing per year.⁶⁹ Some of this clothing is burned; the rest of it is dumped in landfills.⁷⁰ In landfills, because plastic is not biodegradable, clothing can accumulate for thousands of years.⁷¹ Any clothing dumped in landfills is prone to microfiber shedding.⁷² This allows the microfibers to end up in the air and the soil.⁷³ Seventy-three percent of all clothing ends up in landfills, which means that

62. De Falco et al., *supra* note 2, at 1; Henry et al., *supra* note 2, at 485.

63. Tobin, *supra* note 2.

64. Tobin, *supra* note 2; De Falco et al., *supra* note 2, at 1.

65. Tobin, *supra* note 2. This includes rivers, lakes, and oceans and through the process of evaporation many of the microfibers in the water will also end up in the air again, *id.*

66. See De Falco et al., *supra* note 2, at 1 (acknowledging the “open debate” on whether microfibers can be blocked by wastewater treatment plants at all).

67. See *id.* (discussing studies observing the abundance of microfibers found in wastewater treatment plant effluents around the world). There are filters that can be purchased and attached to washers to decrease the number of microfibers released but they are not standard. Tobin, *supra* note 2.

68. Clare Lissaman, *Fashion's Impact On The World's Oceans*, COMMON OBJECTIVE (Nov. 26, 2021), <https://www.commonobjective.co/article/microfibres-what-to-know-and-do-beatplasticpollution>; see also Christine Gaylarde et al., *Plastic Microfibre Pollution: How Important is Clothes' Laundering?*, 7 HELIYON 1, 2 (2021) (discussing the pollution microfibers create when released into the ocean from laundry washing).

69. Valentina Portela, *The Fashion Industry Waste is Drastically Contributing to Climate Change*, CALPIRG (Mar. 9, 2021), <https://calpirg.org/blogs/blog/cap/fashion-industry-waste-drastically-contributing-climate-change#:~:text=The%20fashion%20industry%20overproduces%20products,of%20water%20and%20plastic%20pollution>.

70. *Id.*

71. Henry et al., *supra* note 2, at 484. This is in stark contrast to natural materials used for clothing which degrade in the presence of microorganisms present in soil, *id.*

72. See *id.* (discussing how synthetic textiles can degrade in landfills slowly over long periods, producing small particles that become airborne).

73. *Id.*

this issue is particularly pressing.⁷⁴ In 2018, that was equivalent to about 17 million tons of textile waste in the United States alone, according to the Environmental Protection Agency (EPA).⁷⁵

Wastewater treatment plants are also a major secondary source contributor of microfibers to the environment.⁷⁶ The sludge from wastewater treatment plants is routinely used as agricultural fertilizer, which means that the large percentage of microfibers not filtered out in treatment end up in that sludge and subsequently in the soil.⁷⁷ Wastewater treatment plants also allow microfibers to enter into rivers; the rivers then carry them along to the oceans or allow them to evaporate and later be redispersed throughout the environment via rain.⁷⁸

D. How Microfibers Impact the Environment and Put Human Health at Risk

Microfibers are very difficult to clean up or remove from the environment once they are released.⁷⁹ Microfibers have been found in 90% of surface waters worldwide.⁸⁰ They have been found in locations as deep as the Mariana Trench, the deepest point on Earth, and as high as the top of Mount Everest.⁸¹ Research shows microfibers pose an escalating risk to the environment and to human health due to their ability to infiltrate everything from drinking water to microorganisms' digestive tracts to the air inside our homes.⁸²

74. Debbie Moorhouse, *Making Fashion Sustainable: Waste and Collective Responsibility*, 3 ONE EARTH 17, 17 (2020).

75. Rachel Brown, *The Environmental Crisis Caused by Textile Waste*, ROADRUNNER (Jan. 8, 2021), <https://www.roadrunnerwm.com/blog/textile-waste-environmental-crisis>. To put this into an individual perspective, every year American citizens individually generate approximately 80 pounds of textile waste, *id.*

76. Jianli Liu et al., *Microfiber Pollution: An Ongoing Major Environmental Issue Related to the Sustainable Development of Textile and Clothing Industry*, 23 ENV'T DEV. SUSTAINABILITY 11,240, 11,246 (2021).

77. *Id.*; Byrne, *supra* note 49. Sixty percent of microfibers are not filtered out by the wastewater treatment plants. Tobin, *supra* note 2.

78. Liu et al., *supra* note 76, at 11,246; *see also* Matt Simon, *Plastic Rain is the New Acid Rain*, WIRED (June 11, 2020, 2:00 PM), <https://www.wired.com/story/plastic-rain-is-the-new-acid-rain/> (describing the phenomenon of "plastic rain" and how it has been compared to acid rain for its potentially disastrous environmental consequences).

79. McIlwraith et al., *supra* note 46, at 41.

80. Gaylarde et al., *supra* note 68, at 1–2.

81. Carolyn Wilke, *Plastics are Showing up in the World's Most Remote Places, Including Mount Everest*, SCIENCE NEWS (Nov. 20, 2020, 11:00 AM), <https://www.sciencenews.org/article/plastics-remote-places-microplastics-earth-mount-everest>.

82. NAT'L GEOGRAPHIC SOC'Y, *supra* note 2; Gaylarde et al., *supra* note 68, at 2; Henry et al., *supra* note 2, at 486.

Microfibers, like most plastics, are generally resistant to biodegradation.⁸³ This leads to a vast accumulation of microfibers in the environment.⁸⁴ There is strong evidence that microplastics alter soil structure.⁸⁵ Microfibers have a critical impact on how water, microorganisms, and the soil ecosystem function.⁸⁶

Toxins present on the surface of microfibers, which are added during the production of textiles, present a threat to the biosphere.⁸⁷ In addition, over time microfibers may also accumulate persistent organic pollutants (POPs), which include chemicals and pollutants such as “PAHs, DDT, PCBs, and dioxins.”⁸⁸ POPs cling to microfibers and, even in low doses, can be damaging to the systems of young animals and humans.⁸⁹ The most POPs are accumulated when microfibers come in contact with aquatic environments.⁹⁰ The risks are then redistributed to humans via ingestion, the food chain, and our drinking water.⁹¹

Microorganisms are considered the crux of aquatic life, serving as the building blocks for much of the marine food chain.⁹² Microfibers are frequently ingested by microorganisms and due to the small size of the microorganisms, the microfibers have a much more significant impact on the functioning of their systems.⁹³ Studies have shown that microfibers have a

83. Henry et al., *supra* note 2, at 484. There are some plastic polymers that have been created that break down more easily such as polyethylene terephthalate, but this is still a relatively new development and most plastic is not readily degrading, *id.*

84. Henry et al., *supra* note 2, at 484.

85. See Matthias C. Rillig et al., *Microplastic Fibers Affect Dynamics and Intensity of CO₂ and N₂O Fluxes from Soil Differently*, MICROPLASTICS & NANOPLASTICS, Mar. 29, 2021, at 1, 2 (explaining that microplastics can be deposited in soil via the air, discarded clothing, or rainfall, and, once there, may affect the levels of greenhouse gases emitted in the soil, which alters the soil ecosystem).

86. See *id.* (summarizing environmental impacts of microfibers); see also Lili Li et al., *Biodegradability Study on Cotton and Polyester Fabrics*, 5 J. ENGINEERED FIBERS & FABRICS 42, 47 (2010) (explaining that the lack of biodegradation is particularly pertinent in soil-based ecosystems). A study from Cornell University showed that polyester (a form of plastic) fabrics showed minimal initial degradation and then remained intact in both lab and compost conditions, *id.* at 47. Due to the long life of microfibers in soil, the fibers will continue to build up and affect the quality of the soil and ecosystem, as opposed to cotton-based fabrics, which showed an accelerated degradation rate, *id.*

87. Gaylarde et al., *supra* note 68, at 5. These toxins come from the coatings on microfibers from commercial dyes, as well as “softening agents, dyes, anti-wrinkle substances and water repellents.” *Id.*

88. *Id.*; see Madeleine Smith et al., *Microplastics in Seafood and the Implications for Human Health*, 5 CURRENT ENV'T HEALTH REP. 375, 377 (2018) (classifying polycyclic aromatic hydrocarbons (PAHs), and organochlorine pesticides like dichlorodiphenyltrichloroethane (DDT) or hexachlorobenzene (HCB) as POPs).

89. Smith et al., *supra* note 88, at 381.

90. See *id.* at 377 (explaining that POPs have a greater affinity for plastics than water and therefore concentrate on microplastics than in the surrounding waters).

91. *Id.* at 381.

92. EPA, WHAT YOU SHOULD KNOW ABOUT MICROFIBER POLLUTION 1, 2 (July 28, 2020), <https://www.epa.gov/trash-free-waters/what-you-should-know-about-microfiber-pollution> (go to PDF).

93. Mary Cathrine O’Conner, *Humans, Fish and Other Animals Are Consuming Microfibers in Our Food and Water*, ENSIA (July 2, 2018), <https://ensia.com/features/microfiber-impacts/>.

significant impact on aquatic species in particular,⁹⁴ finding that “[i]ngestion of microplastics has been recorded in many crustaceans, seabirds, sea snakes, sea turtles, penguins, seals, sea lions, manatees, sea otters, fish, and half of all marine mammals.”⁹⁵ The ingestion of microfibers by these aquatic animals can lead to toxic effects on digestive abilities, nutritional deficiencies, and metabolic issues.⁹⁶ However, because of the nature of the food chain, this impact is not isolated. As microorganisms are consumed, the negative effects of the accumulating microfibers are able to travel upwards along the chain to larger aquatic and land species (including humans).⁹⁷

Studies have detected airborne microplastics both indoors and outdoors.⁹⁸ These microfibers are small enough to be inhaled by humans, which can lead to asthma-like reactions, chronic bronchitis, and other issues with the lungs.⁹⁹ These health issues are most often seen in textile workers who work in close contact with synthetic materials and are regularly inhaling them.¹⁰⁰ However, these problems could become pertinent in the general population as microfibers increase in concentration throughout the environment and are less localized in factories. Additionally, because of how small the microfibers are, they cannot safely be removed from the lungs.¹⁰¹

In a study of tap water, microplastics were found in 83% of samples (out of 159 samples total); 99.7% of all of these plastics were microfibers from clothing.¹⁰² Humans are also consuming microfibers via fruits and vegetables grown in contaminated soil and animals that have already consumed microfibers.¹⁰³ Once a human ingests microfibers, those that are smaller than 2.5 micrometers¹⁰⁴ are capable of entering the gastrointestinal tract.¹⁰⁵ Over time, the accumulation of microfibers may cause issues relating to

94. Henry et al., *supra* note 2, at 487.

95. Gaylarde et al., *supra* note 68, at 5 (citing M. Taylor et al., *Plastic Microfibre Ingestion by Deep-Sea Organisms*, SCI. REP., 2016, at 1).

96. *See id.* (showing how ingestion can lead to various maladies).

97. Gaylarde et al., *supra* note 68, at 5.

98. Henry et al., *supra* note 2, at 486.

99. Claudia Campanale et al., *A Detailed Review Study on Potential Effects of Microplastics and Additives of Concern on Human Health*, INT’L J. ENV’T RSCH. & PUB. HEALTH, Feb. 2020, at 1, 5, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7068600/>.

100. *Id.*

101. *Id.*

102. Henry et al., *supra* note 2, at 486.

103. Campanale et al., *supra* note 99, at 15.

104. A millimeter is the equivalent of 1000 micrometers. While there is no consensus, one suggested definition of microfibers is “natural or artificial fibrous materials of threadlike structure with a diameter less than 50 [micrometers], length ranging from 1 [micrometer] to 5 [millimeters], and length to diameter ratio greater than 100.” Jianli Liu et al., *Microfiber Pollution in the Earth System*, REVS. ENV’T CONTAMINATION & TOXICOLOGY, Dec. 2022, at 1, 2.

105. Campanale, *supra* note 99, at 15.

inflammation, pH imbalance, diminished effects on nutrient absorption, and reproduction.¹⁰⁶

Experts have acknowledged that the approach to microfiber pollution needs to change, saying “[t]he current global approach to addressing microfiber pollution, such as devices to mitigate microfiber release from clothing during washing or to capture microfibers released in the wastewater, is failing.”¹⁰⁷ The fashion industry is the single largest contributor to microplastics, and there is currently no effective solution for cleanup due to these particles’ tiny size, so efforts to address the mitigation of these plastics entering the environment in the first place is essential.¹⁰⁸

II. LEGAL BASIS FOR SUPPLY CHAIN AND PLASTICS REGULATION

A. Regulation of Supply Chains

1. Federal Regulation

Supply chain regulation has been at the forefront of national policy discussions for the last few years, largely triggered by the COVID-19 pandemic.¹⁰⁹ The United States has faced shortages of many goods, extended wait times for deliveries, and significant spikes in prices, making it an ideal time to take a more critical look at overseas supply chains.¹¹⁰ During his tenure, President Trump largely focused on the importance of domestic manufacturing and the goal of “reshoring” manufacturing.¹¹¹ In 2021, President Biden signed Executive Order 14,017, which stated that the United States “must work with allies and partners to diversify supply chains away from adversarial nations and sources with unacceptable environmental and labor standards.”¹¹² However, this was regarding “critical minerals and

106. *See id.* at 16 (describing the various deleterious effects that microfibers have on the human body); *see also* Smith et al., *supra* note 88, at 381.

107. Liu et al., *supra* note 76, at 11,247.

108. *See* De Falco, *supra* note 2, at 2 (discussing use of synthetic fibers in the “apparel industry”); *see also* Tobin, *supra* note 2 (discussing use of synthetic fibers in “fashion industry”).

109. Oma Seddiq et al., *Trump Falsely Suggests There Were No Supply Chain Issues When He Was President*, BUS. INSIDER (Jan. 26, 2022), <https://www.businessinsider.com/trump-falsely-suggests-there-were-no-supply-chain-issues-when-he-was-president-2022-1#:~:text=Trump%20sought%20to%20use%20pandemic,be%20reliant%20on%20foreign%20nations.%22>.

110. Exec. Order No. 14,017, 86 Fed. Reg. 11,849 (Feb. 24, 2021).

111. Oma Seddiq et al., *supra* note 109.

112. *Fact Sheet: Biden-Harris Administration Announces Supply Chain Disruptions Task Force to Address Short-Term Supply Chain Discontinuities*, WHITE HOUSE (June 8, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/06/08/fact-sheet-biden-harris-administration-announces-supply-chain-disruptions-task-force-to-address-short-term-supply-chain-discontinuities/>.

materials,” and there was no reference to general environmental standards in the plan.¹¹³

Legislators have proposed, but not passed, the Break Free From Plastic Pollution Act in an attempt to address and curtail plastic pollution.¹¹⁴ This Act is a major step forward in confronting plastic consumption and waste management domestically.¹¹⁵ The Act would “[r]equire big corporations to take responsibility for their pollution by requiring producers of plastic products to design, manage, and finance waste and recycling programs.”¹¹⁶ However, the Act does not mention overseas waste nor does it require corporations to take responsibility for the plastic produced by their overseas supply chains.¹¹⁷

A failure to hold United States companies accountable for the actions occurring in their overseas supply chains has been the norm. United States courts can apply *forum non conveniens* when United States retailers are sued for damage caused overseas.¹¹⁸ While this has been most frequently applied to labor cases, it is possible that courts would apply similar principles to environmental damages as well.¹¹⁹ This leaves plaintiffs who suffer injury due to the environmental damage of overseas supply chains little recourse for recovery.¹²⁰

2. State Regulation of Plastics

Due to broad gaps in federal supply chain regulations, some states have implemented more specific plastics legislation to manage waste. Much of this is due to the federal waste management scheme under the Resource Conservation and Recovery Act (RCRA).¹²¹ RCRA requires that the disposal of non-hazardous materials be handled by the states, and plastics and textiles

113. *Id.*

114. Break Free from Plastic Pollution Act of 2021, S. 984, 117th Cong. (2021).

115. Merkley, Lowenthal Lead Introduction of Congress’s Most Comprehensive Plan to Protect Americans’ Health from Growing Plastic Pollution Crisis, JEFF MERKLEY (Mar. 25, 2021), <https://www.merkley.senate.gov/news/press-releases/merkley-lowenthal-lead-introduction-of-congress-most-comprehensive-plan-to-protect-americans-health-from-growing-plastic-pollution-crisis-2021>.

116. *Id.*

117. *See generally id.* (providing little mention of overseas waste or corporate accountability for supply chains).

118. Peter Rott & Vibe Ulfbeck, *Supply Chain Liability of Multinational Corporations?*, 23 EUR. REV. PRIVATE L. 415, 417 (2015). *Forum non conveniens* is the doctrine that permits a case to be transferred to another forum that is better suited to hearing the case. *Forum non conveniens*, LEGAL INFO. INST., https://www.law.cornell.edu/wex/forum_non_conveniens (last updated Dec. 2022).

119. *Id.*

120. *See supra* Section II.D. (illustrating the scope of damage microplastics cause and the variety of ways potential plaintiffs could be impacted).

121. *Resource Conservation and Recovery Act (RCRA) Overview*, EPA (July 14, 2021) <https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-overview>.

are classified as non-hazardous.¹²² This designation as non-hazardous is preventing the federal government from providing a broader scheme for plastic disposal under RCRA.¹²³

Massachusetts, for example, has banned textiles from solid waste facilities and will instead divert textiles, aiming to increase donations, reuse, and local management.¹²⁴ California was among the first states to address microplastics. Its Safe Drinking Water Act requires “the State Water Resources Control Board to adopt regulations requiring annual testing for, and reporting of, the amount of plastics in drinking water, including public disclosure of those amounts.”¹²⁵ Its Ocean Protection Council: Statewide Microplastics Strategy Act requires the Ocean Protection Council to create a statewide microplastics strategy to better understand the risks of microplastics in the ocean.¹²⁶

a. New York State Legislation as a Model for Sustainability

On January 7, 2022, New York State Senator Biaggi and New York Assembly Member Kelles announced the Fashion Sustainability and Social Accountability Act (Act), which has the potential to serve as a model and set precedent for fashion sustainability law.¹²⁷ If passed, this Act would make New York the first state to implement a law specific to sustainability in the fashion industry.¹²⁸ The Act has three key requirements: mapping of supply chains, disclosure of environmental and social impact metrics, and establishment of a community benefit fund.¹²⁹

The supply chain mapping requirement is similar to the solutions proposed in this Note. It requires a “good faith” effort from corporations to map at least 50% of their entire supply chain.¹³⁰ The environmental and social impact metrics give companies an 18-month timeline to collect the

122. *See id.* (providing a list of hazardous wastes that does not include plastics or textiles).

123. *See generally id.* (identifying which substances are non-hazardous).

124. Dacia Meng, *MassDEP Proposes Waste Disposal Ban on Textiles and Mattresses*, NAT'L L. REV. (Oct. 30, 2020), <https://www.natlawreview.com/article/massdep-proposes-waste-disposal-ban-textiles-and-mattresses>.

125. *See Microplastic Legislation Passes in California*, SURFRIDER FOUND. (Oct. 1, 2018), <https://www.surfrider.org/coastal-blog/entry/microplastic-legislation-passes-in-ca>.

126. *Id.*

127. A.B. 8352, 204th Gen. Assemb., Reg. Sess. (N.Y. 2021); Mackenzie S. Schoonmaker et al., *New York Proposes to Require Sustainability Reporting for the Fashion Industry*, NAT'L L. REV. (Jan. 12, 2022), <https://www.natlawreview.com/article/new-york-proposes-to-require-sustainability-reporting-fashion-industry>.

128. Schoonmaker et al., *supra* note 127.

129. N.Y. A.B. 8352.

130. Schoonmaker et al., *supra* note 127. This includes all of production from the raw materials to the final product, *id.*

initial data before requiring annual disclosure.¹³¹ “Companies would be required to disclose, and have independently verified, the annual volume of material they produce, including a breakdown by material type, and how much production has been displaced with recycled materials.”¹³² The climate change targets must be absolute and include all scopes of production.¹³³

The Act’s enforcement provisions are essential to its effectiveness.¹³⁴ The Act allows the New York Attorney General to pursue violations of the disclosures and climate change target requirements mentioned above. Moreover, “[v]iolations can result in a fine of up to 2% of annual revenues of \$450 million or more.”¹³⁵ The Act also creates a “community benefit fund” where all the fines will be collected and used to support certain environmental justice projects.¹³⁶

B. Internal Controls on Supply Chains

1. Corporate Social Responsibility (CSR)

Many retailers create internal controls for their supply chains.¹³⁷ This is broadly considered CSR and embodies a corporation’s general practices towards the environment, labor, and philanthropy.¹³⁸ The reasons retailers place internal controls on their supply chains vary, but three main goals have been identified: “(1) external demands from stakeholders, (2) threats posed by suppliers, and (3) opportunities to create new products.”¹³⁹ These factors are rooted in sustainable supply chain management; however, many retailers fail to implement any sustainability initiatives that are not financially beneficial.¹⁴⁰ Therefore, CSR can fall short of real reform, particularly when it is not backed up by legal requirements and enforcement mechanisms.¹⁴¹ Absent these safeguards, retailers often employ superficial measures to

131. *Id.* This is in addition to the parallel requirements for greenhouse gases, chemical management, and water usage.

132. *Id.*

133. *Id.*

134. *Id.*

135. *Id.* Annually, a list will be made public of all the companies that are out of compliance. This is useful for any individuals, government entities, or companies that do not want to endorse or associate with companies failing to meet environmental standards and encourages transparency. *See* N.Y. A.B. 8352, *supra* note 125.

136. *Id.*

137. Garth Hickie, *Extending the Boundaries: An Assessment of the Integration of Extended Producer Responsibility Within Corporate Social Responsibility*, 25 BUS. STRATEGY & ENV’T 112, 113 (2017).

138. *See id.* at 114 (discussing how CSR is often implemented within the corporate structure, regulatory codes, and legislation).

139. *Id.* at 114.

140. *Id.*

141. *Id.*

appease consumers or stockholders, as opposed to taking deeper action for the sake of the environment.¹⁴² CSR also has the potential for a free-rider problem¹⁴³ “due to its emphasis on firm-specific activities rather than broader industry initiatives.”¹⁴⁴

2. Closed-Loop Supply Chains (CLSCs)

The majority of the plastic created every year for fashion is not recycled or reused.¹⁴⁵ CLSCs address that issue by using and reusing products from different stages of the supply chain, particularly once consumers have finished with the final product.¹⁴⁶ “The key goal is to keep all materials within the lifecycle and minimize any flow into the external environment” by actively working to recover the final product.¹⁴⁷ CLSCs are critical in managing the prevention of waste from entering the environment.¹⁴⁸ “[W]aste products and emissions can be recycled as a raw material for use in the same or different production process,” or the waste may be used in new ways.¹⁴⁹ A popular example is Nike’s “Reuse a Shoe” program, in which people can bring their old shoes to Nike stores to be repurposed.¹⁵⁰ H&M also collects any unwanted clothing in stores.¹⁵¹ CLSCs are gaining favor among more progressive companies, often as part of their CSR framework, but it is not the industry norm.¹⁵² A significant challenge in CLSCs is navigating the complexities of the supply chain and actually “closing the loop.”¹⁵³

142. *See id.* (explaining shortcomings of CSR).

143. *Free Rider Problem*, INVESTOPEDIA (Dec. 29, 2020), https://www.investopedia.com/terms/f/free_rider_problem.asp (defining free-riding as what results when a party benefits from the outcome of an action taken by a larger group without having had to contribute to that action).

144. Hickle, *supra* note 137, at 114.

145. *See supra* text accompanying note 51 (describing how only 3% of plastics used in clothing production are from recycled materials).

146. Alison Ashby, *Developing Closed-Loop Supply Chains for Environmental Sustainability*, 29 J. MFG. TECH. MGMT. 699, 701 (2018).

147. *Id.*

148. *Id.* at 703.

149. *Id.* The waste could also be sold to another company, *id.*

150. Hickle, *supra* note 137, at 115.

151. *Id.*

152. Ashby, *supra* note 146, at 702.

153. *Id.*

3. Extended Producer Responsibility (EPR)

EPR is a policy-based approach that holds manufacturers responsible for the environmental impact of their products.¹⁵⁴ Under EPR, “producers are given a significant responsibility—financial and/or physical—for the treatment or disposal of post-consumer products.”¹⁵⁵ While EPR legislation does not exist in the United States for the fashion industry, it does exist with respect to other products.¹⁵⁶ Since 2004, 19 states have established some form of mandated EPR program, generally addressing the disposal of mattresses, paint, pharmaceuticals, and pesticides.¹⁵⁷ EPR programs more commonly apply to toxic waste than plastic because it is viewed as a more pressing issue.¹⁵⁸ However, as evidenced in Part II of this Note, plastic pollution needs to be addressed. EPR may risk weak internal incentive structures that cannot be relied on if the financial stakeholders (in this case the retailers) are not held financially responsible for reducing their pollution.¹⁵⁹ Some experts suggest that there is not enough financial incentive across the board for firms to truly integrate EPR into their corporate policies.¹⁶⁰ The stakeholders of EPR should be held directly responsible through legislation and fines to ensure they have sufficient incentive to act.¹⁶¹

EPR has worked elsewhere for textiles; France successfully implemented a textile EPR program under Article L-541-10-3 - *Code de l'Environnement*.¹⁶² This holds all textile and footwear producers responsible for collecting at least 50% of all textiles output per year.¹⁶³ The external enforcement of the EPR program provides the incentive retailers need to integrate the program effectively into their business model.

154. Hickle, *supra* note 137, at 116. EPR is distinct from CSR, which is largely voluntary and much broader in scope, *id.*

155. Hannes Jakob, *Producer and Consumer Responsibility for Circular Economy*, RETHINKING CLIMATE (May 27, 2021), <https://rethinking-climate.org/2021/05/27/producer-and-consumer-responsibility-for-circular-economy/>.

156. Gemma Alexander, *The State of Producer Responsibility in the United States*, EARTH911 (July 17, 2020), <https://earth911.com/business-policy/producer-responsibility-in-the-united-states/>.

157. *Id.*

158. *Id.*

159. See Harri Kalimo et al., *Greening the Economy through Design Incentives: Allocating Extended Producer Responsibility*, 21 EUR. ENERGY & ENV'T L. REV. 274, 278 (2012) (discussing the allocation of responsibility among producers generally versus clothing retailers specifically).

160. Hickle, *supra* note 137, at 121.

161. Kalimo et al., *supra* note 159, at 278.

162. Mohammad Abdullatif Bukhar et al., *Developing a National Programme for Textiles and Clothing Recovery*, 36 WASTE MGMT. & RSCH. 321, 323 (2018).

163. *Id.*

III. GAPS IN THE FRAMEWORK

A. Lack of Liability and Reliance on Internal Controls

The federal landscape has gaps when it comes to addressing plastic pollution, particularly within the fashion industry. The United States provides limited regulation of supply chains, especially of their environmental impact. Many of the controls placed on supply chains are created internally by the retailers themselves.¹⁶⁴ However, internal controls do not necessarily meet the same standards and rigor of external regulation and are falling short of effecting actual change. Supply chains have become so complex that any supplier, buyer, or producer at one stage of production can claim ignorance of any other stage.¹⁶⁵ Due to supply chains' structure and lack of liability, the retailer has very little incentive to intervene, even when their internal compliance mechanisms suggest they should.¹⁶⁶ The United States has not legislated any liability, and other countries do not hold the retailer accountable for what their subcontractors do.¹⁶⁷ This situation requires states to legislate on plastic reform in order to mitigate environmental damage, but there is still a significant gap in regulation without federal legislation.

The current legal framework in the United States for imposing any kind of liability or responsibility on fashion retailers relies too heavily on internal controls. CSR relies on the good will of retailers to create the policies and enforce them. This ultimately results in free-rider problems, insufficient liability when there is an environmental disaster, and a lack of transparency with consumers.

1. Greenwashing

As consumers demand more ethically sourced clothing, many retailers are coming under scrutiny for their environmental practices.¹⁶⁸ “Greenwashing” is “a tactic that retailers use to ‘appear’ more sustainable

164. Julia Zenker, *Made in Misery: Mandating Supply Chain Labor Compliance*, 51 VAND. J. TRANSNAT'L L. 297, 301 (2018).

165. *Id.*

166. *Id.* at 301–302.

167. *See Doe v. Wal-Mart Stores, Inc.*, 572 F.3d 677, 683–84 (9th Cir. 2009) (finding that the retailer did not owe the plaintiff employees of Walmart's international suppliers any common law duty of care over alleged mistreatment). While that was a labor case, the principles are applicable to environmental liability as well. It is likely that a court would make a similar ruling in favor of limited liability for the retailer in the case of environmental torts.

168. *See* Durva Simone Bose, *Greenwashing in Fashion Is on the Rise, Here's How to Spot It*, GREEN QUEEN, <https://www.greenqueen.com.hk/greenwashing-in-fashion-is-on-the-rise-heres-how-to-spot-it/> (Sept. 3, 2022) (discussing the rising interest in sustainability among consumers).

than they actually are.”¹⁶⁹ Greenwashing is often used within the fast-fashion environment to make consumers feel better about their purchases.¹⁷⁰ The International Consumer Protection and Enforcement Network found that 40% or more of environmental claims on retail websites were misleading to consumers.¹⁷¹ With fast-fashion consumerism and throw-away culture being so prevalent,¹⁷² it can make consumers feel better to believe their inexpensive clothing is not so bad, and major retailers market to that sentiment.¹⁷³ Greenwashing is a significant issue because retailers do not have accountability outside of their internal CSR setups. This allows faux responsibility and environmentalism for show without actual change.

The supply chain can complicate greenwashing when it comes to proper labeling and verification.¹⁷⁴ It is difficult to ensure that upstream suppliers are not misleading downstream sellers when it comes to the legitimacy of their sustainability practices.¹⁷⁵ This ultimately has to do with the varying standards of consumer protection laid out by each country.¹⁷⁶ Fashion attorney Douglas Hand stated that the most frequent issue he has come across is “misrepresentation of brands’ supply chain[s] by agents of the brand,” which is intentional greenwashing.¹⁷⁷ In 2022, the Federal Trade Commission announced that it will assess whether to update the “Green Guides,” which outline rules against greenwashing, but no further information has been released.¹⁷⁸

B. State-by-State Approach

New York is a good example of a state taking initiative to protect the environment by addressing supply-chain issues. However, relying on states to do this individually means that most states would not have these protections. Additionally, even if other states followed New York’s lead,

169. *Id.* There are several tactics that a company may use to appear more “green,” including releasing “sustainable collections” without any proof of how sustainable the collections are, *id.* Claims that products are made of recycled material are also popular. See *supra* note 52 (describing how some brands identify themselves as environmentally friendly for using recycled plastics, despite evidence that these garments shed plastic debris).

170. *Id.*

171. Bella Webb, *The Big Global Greenwashing Crackdown*, VOGUE BUS. (May 27, 2021), <https://www.voguebusiness.com/sustainability/the-big-global-greenwashing-crackdown>.

172. See Kerli Kant Hvass, *Post-Retail Responsibility of Garments – A Fashion Industry Perspective*, 18 J. FASHION MKTG. & MGMT. 413, 413–14 (2014) (describing how fast-fashion purchases and the trend of throw-away fashion are growing in popularity and creating post-consumer textile waste).

173. Bose, *supra* note 168.

174. Webb, *supra* note 171.

175. *Id.*

176. *Id.*

177. *Id.*

178. *Id.*

they would be implementing regulations without unified oversight or guidelines.¹⁷⁹

As mentioned previously, some states have implemented microplastics legislation (California) or bans on throwing away textiles (Massachusetts). But these states are the exceptions and relying on their activism is a form of free-riding.¹⁸⁰ Additionally, states that have implemented EPR programs have not yet done so with respect to plastics or textiles. Therefore, the fashion industry's plastic pollution is still not being addressed in most states.

Further, although New York's pending legislation serves as a good baseline model for other states, it lacks the EPR and CLSC mechanisms that are crucial to keeping the plastic out of the environment in the first place.¹⁸¹ It is essential that these methods are legislated on a federal scale to diminish microplastics pollution and ensure retailer compliance.

IV. A FEDERAL SOLUTION

The federal government needs comprehensive legislation to address the microplastics pollution generated by the fashion supply chains that United States retailers have overseas. This legislation would create a full federal scheme centralized through EPA, with administration delegated to the states using a cooperative federalism model.¹⁸² This model would allow states and the federal government to work together on overlapping functions and ease the burden of administration on the federal government. It would also allow states that want to exceed federal minimums to be more proactive about microplastics regulations, while still considering key environmental protection goals. This legislation would target United States fashion retailers who rely on overseas supply chains for production and manufacturing.

A. Combining EPR and CLSC

The ideal solution for preventing microplastics from entering the environment would integrate the EPR model with CLSCs. An integrated EPR/CLSC approach would hold each retailer accountable for the plastic generated by each link in its supply chain. In addition, such an approach

179. See *Why Do Companies Incorporate in Delaware*, UPCOUNSEL, <https://www.upcounsel.com/why-do-companies-incorporate-in-delaware> (explaining why Delaware, where many companies are incorporated, has the incentive to maintain less strict regulation to appease business owners).

180. See *supra* note 143 and accompanying text.

181. See *supra* Section II(A)(2)(a) (identifying New York as a good example of a state proactively addressing supply chain issues).

182. See *Cooperative Federalism*, ECOS, <https://www.ecos.org/cooperative-federalism/>. Many United States environmental laws use cooperative federalism, so this would not be a departure from the norm, *id.*

would require the retailer to recycle and reuse a certain percentage of textiles and plastic to reduce its environmental impact. Each retailer would be required to map its supply chain, report its environmental impact, and collect and reuse a certain percentage of plastic every year. A retailer would incur fines for failing to meet reporting and recycling requirements.¹⁸³

1. Supply Chain Mapping

The Secretary of State in each state would manage the supply-chain mapping portion of the legislation and report it to EPA. Most fashion retailers are private businesses who are already required to file business disclosures with the Secretary of State of the state they are incorporated in.¹⁸⁴ Therefore, it would streamline the process to have each Secretary of State manage supply-chain mapping. The disclosures would then be submitted to and compiled by EPA and made available for public access. These disclosures would be a set of reporting requirements modeled after New York's legislation; the federal legislation would require United States retailers to map a minimum of 50% of their supply chain.¹⁸⁵ Retailers would be required to disclose the annual volume of textiles they produce; the breakdown of produced materials by textile material type; and the percentage of materials recycled or repurposed into the supply chain through the CLSC initiative.¹⁸⁶ During the initial establishment of the plan, the retailers would have 24 months to compile and disclose all environmental and social impact metrics from the supply chains. After this period, the impact metrics would need to be updated and made publicly available annually. This process must be independently verified by a third party.¹⁸⁷

183. See Hvass, *supra* note 172, at 416 (describing existing mandatory EPR models that use the “polluter pays” principle and place the burden on producers instead of consumers); see also Kalimo et al., *supra* note 159, at 278. An integrated EPR/CLSC model was developed successfully in the European Union as part of the Directive on Waste Electrical and Energy Equipment (WEEE), *id.* This directive is considered the gold standard for EPR legislation. This model established collective financial responsibility and was so successful in part because it distributed the costs based on how effective each producer was at recycling. This approach to accountability is mirrored in this legislation by fines that only apply when there is a failure to meet targets, *id.*

184. Zoeanna Mayhook, *Privately-Held Companies: Legislation, Regulation, and Limited Dissemination of Financial Information*, DOCUMENTS TO THE PEOPLE, Winter 2019, at 28, 28.

185. A.B. 8352, 204th Gen. Assemb., Reg. Sess. (N.Y. 2021) (including all production from the raw materials to the final product).

186. *Id.* The proposed legislation would be modeled on New York's legislation but modified to address CLSC goals.

187. SCS Global Services is an independent third party that provides “certification, validation, and verification for environmental, sustainability, and food safety and quality performance claims,” and is one example of a third-party system that could be used. *Featured Services*, SCS, <https://www.scsglobalservices.com/>. The EPA regularly uses third parties for verification, such as to verify its green power products using the Center for Resource Solutions's Green-e Energy program, which specializes in renewable energy. *Certification and Verification*, EPA (Feb. 25, 2022), <https://www.epa.gov/green-power-markets/certification-and-verification>.

The legislation achieves two objectives by mapping the supply chain and making environmental impact reports publicly available. First, retailers are setting themselves up to be aware of the actual impact of their supply chains. Often, supply chains become so complex that retailers are not aware of what is happening multiple links down the chain. This solution forces accountability for microfiber pollution. It also allows the retailers to set up the CLSC model discussed in Part II.B.2 to take textiles that could have ended up in the environment and minimize that pollution. Second, publicizing the environmental impact reports allows consumers to make informed decisions about the retailers they purchase from. This also allows stakeholders to hold retailers accountable more effectively. This increases transparency, alleviating the greenwashing problem.

2. Closing the Loop

Under EPA, RCRA already handles hazardous waste management in a scheme known as “cradle-to-grave,” which is designed to ensure the responsible management of toxic substances from their inception to their disposal.¹⁸⁸ EPA is the ideal agency to implement this legislation because the CLSC method takes “cradle-to-grave” a step further by ensuring that retailers are reusing their non-hazardous textiles as opposed to disposing of them at the end of the product cycle, also known as “cradle-to-cradle.”¹⁸⁹ The fashion industry overproduces by 30-40% every year, and the majority of that clothing ends up in landfills, causing microfibers to pollute the environment.¹⁹⁰ In response, this legislation would mandate that retailers must recycle or repurpose 35% of their textiles every year to make up for that overproduction.

As mentioned earlier, there are retailers who engage in programs like CLSC, such as Nike and H&M.¹⁹¹ Madewell also offers an incentive program for customers to bring in any pair of denim in return for a discount on a new pair of jeans.¹⁹² By offering programs like these, retailers can ensure that old products are being repurposed and recycled. This will also help lower costs for the retailer over time, because some materials are very expensive and repurposing textiles is economically beneficial to them as well.¹⁹³ Closing

188. Olivia Suraci, *The Best-Dressed Polluter – Regulation and Sustainability in the Fashion Industry*, 27 HASTINGS ENV'T L. J. 225, 238 (2021).

189. EPA, *supra* note 121 and accompanying text. While states currently regulate plastic under RCRA, the practices used by the EPA (cradle-to-grave and cradle-to-cradle) still exist and can easily be applied to this legislation under the CLSC model, *id.*

190. Portela, *supra* note 69.

191. Hickie, *supra* note 137, at 115.

192. *Recycle Your Denim with Us*, MADEWELL, <https://www.madewell.com/inspo-do-well-denim-recycling-landing.html> (last visited Sept. 17, 2023).

193. Ashby, *supra* note 146, at 703.

the loop is necessary, particularly when it comes to microfibers, because of how difficult it is to remove them from the environment.¹⁹⁴ By implementing CLSC and reusing textiles in the next stage of production, retailers can significantly reduce their environmental impact when it comes to plastics. These recycling statistics would be included in the environmental and social impact metrics mentioned in Part II.A.2.a.

3. Enforcement

Enforcement provisions for this legislation are essential. As mentioned in Part III, much of the failure in regulation up until this point has been due to a lack of adequate incentive to change internal processes. Each state will have to meet the federal minimums established by legislation; however, they will have the option to apply stricter standards if they see fit. Should any state fail to enforce federal guidelines as laid out by this legislation, EPA has the right to administer the legislation.¹⁹⁵ In each state, the Attorney General will have the power to impose fines on the retailer if it is not meeting the standards set forth in the legislation.¹⁹⁶ These fines may amount to three percent of their annual revenue. Like in New York's Act, these fines would be used to support environmental justice non-profits and organizations that are addressing plastic pollution.¹⁹⁷ The more effective each retailer is in mapping their supply chain and meeting CLSC goals, the lower any fines would be.

This will encourage retailers to commit to a more environmentally friendly business model over time. To avoid potential abuse of fines, there will be a citizen suit provision to allow for recourse should a retailer feel they have not been treated appropriately. Finally, EPA's Office of Inspector General is an independent organization that performs audits and investigations and will have the ability to audit state Attorneys General at random to assist in preventing fraud of this new system.¹⁹⁸

194. McIlwraith et al., *supra* note 46, at 41.

195. See *Other Regulators: Response to Environmental Compliance Violations at Federal Facilities*, EPA (Jan. 18, 2022), <https://www.epa.gov/enforcement/other-regulators-response-environmental-compliance-violations-federal-facilities> ("EPA retains parallel authority to enforce federal requirements even when EPA delegates program authority to a state or tribal government. . . . EPA generally will take enforcement action under the following circumstances: the state or tribal government fails to take timely and appropriate action. . . .").

196. See *supra* Sections II(A)(1) and II(A)(2).

197. A.B. 8352, 204th Gen. Assemb., Reg. Sess. (N.Y. 2021).

198. *About EPA's Office of Inspector General*, EPA (Feb. 11, 2022), <https://www.epa.gov/office-inspector-general/about-epas-office-inspector-general>.

B. Potential Criticism and Concerns

Retailers and businesses will likely push back against this legislation. First, obtaining the supply-chain metrics is likely to be difficult and cost-intensive for retailers. Different retailers have different systems and levels of complexity to their supply chains.¹⁹⁹ This could lead to difficulty in accurately obtaining this information, especially when manufacturers benefit from it remaining private, and the information may not be obtained consistently across all retailers.²⁰⁰ However, the initial mapping period is 24 months, which gives retailers adequate time to fully explore the supply chain and to mitigate the costs over a longer period if necessary.

Second, and probably the main concern for retailers, shareholders, and consumers, is that compliance and sustainability are expensive.²⁰¹ As mentioned previously, manufacturing moved overseas to reduce costs, and forcing retailers to assess their supply chains and microfiber pollution will likely raise the cost of production.²⁰² Once again, this is why this plan gives ample time to make the initial assessments. It is also why the CLSC component is so essential. Reusing and recycling existing textiles will lower the cost of production and, while it may not mitigate all the costs from more environmentally ethical production, it will offset it.²⁰³ Additionally, if consumption is pushed in a more sustainable direction, this may drive retailers to produce clothing in a way that has more long-term wear in mind. This will save the consumer money because they will not need to purchase so frequently.

Third, there is the concern of how difficult it is to pass new legislation. In the meantime, there are temporary solutions to ensure plastic pollution from the fashion industry is addressed. EPA enforces the Clean Water Act (CWA), and it is possible to bring a claim under the citizen suit provision to address plastic pollution in waterways because plastic qualifies as waste under the CWA.²⁰⁴ However, this is a temporary and limited solution for several reasons. First, the citizen must have standing, and the CWA only addresses water-based plastic pollution. Additionally, the CWA does not mention microplastics, only plastics broadly, and EPA stated in a 2021 memo that “EPA’s research into plastics is in its early stages and . . . the Office of

199. See Jason M. Halper et al., *Is Sustainability En Vogue or the Newest Staple? What New York’s Proposed Fashion Sustainability and Social Accountability Act Could Mean for the Fashion and Other Industries*, NAT’L L. REV. (Feb. 11, 2022), <https://www.natlawreview.com/article/sustainability-en-vogue-or-newest-staple-what-new-york-s-proposed-fashion> (describing the variability in complexity of various retailers’ supply chains).

200. *Id.* Hence, why third-party verification is essential.

201. *Id.*

202. Rafi-Ul-Shan et al., *supra* note 39, at 471.

203. Ashby, *supra* note 146, at 700.

204. Clean Water Act, 33 U.S.C. § 1365 (2018).

Research and Development has not yet conducted enough research to determine risks to public health and the environment from plastic exposure.”²⁰⁵ This highlights EPA’s current lack of focus on plastics and the need for a more focused piece of legislation.

The United States attempted to legislate on microplastics in 2015 with the Microbead-Free Waters Act, which banned microplastics in select cosmetics.²⁰⁶ This Act only addressed cosmetics, which is only one source of microplastics; it did not address secondary source microplastics.²⁰⁷ There is the potential to expand this Act to address a broader range of microplastics. However, the goal is to address the root of the problem—lack of regulation of overseas fast-fashion supply chains. There is only so much that can be achieved by putting a bandage on the problem. To create real and sustainable change, the root of the pollution must be addressed; that is best done through an integrative EPR/CLSC model that prevents pollution, creates a circular waste economy, and holds retailers accountable for their contributions to microplastic pollution.

CONCLUSION

A federal solution is essential to creating a uniform approach to combat the fashion industry’s microfiber pollution. Combining the tenets of EPR and CLSC is the most effective way to minimize the impact of United States retailers’ extensive supply chains. While resistance is anticipated, the long-term advantages of tracking supply chains far outweigh the short-term costs. Consumers seek transparency from fashion retailers. If this legislation is successful, it would significantly reduce the number of microfibers that enter the environment. This would prevent major consequences to the balance of the ecosystem, marine life, the food chain, and human health. Microfibers cause irreparable harm once they enter the environment, and this legislation is the first step in preventing that damage.

205. EPA, REPORT NO. 21-P-0130 4 (2021).

206. Microbead-Free Waters Act of 2015, 21 U.S.C. § 331 (2015).

207. See *supra* Section I(C)(3); see also Jason P. McDevitt, *Addressing the Issue of Microplastics in the Wake of the Microbead-Free Waters Act*, 12 ENV’T SCI. & TECH. 6611, 6611 (2017).