



DEAR INTIMATE APPAREL INDUSTRY LEADERS,

Article & Illustrations by Fern Clausius
Edited by Daniel Levinson Wilk

In the Summer of 2018, design portfolio and resumé in hand, I walked into a leading intimates design firm for an internship interview. I presented my zero-waste lingerie collection, a response to the tragic 2013 Rana Plaza factory collapse, to one of the head designers. To my surprise, she admitted that the company showed no concern for environmentally sustainable practices and noted that I would not be happy working there. It was disheartening to experience a leading firm turn a blind eye toward the environment. Knowing they were not the only ones dismissing the importance of sustainability made me question pursuing a career in intimate apparel. However, it also had me wonder how we could improve our industry as a whole.

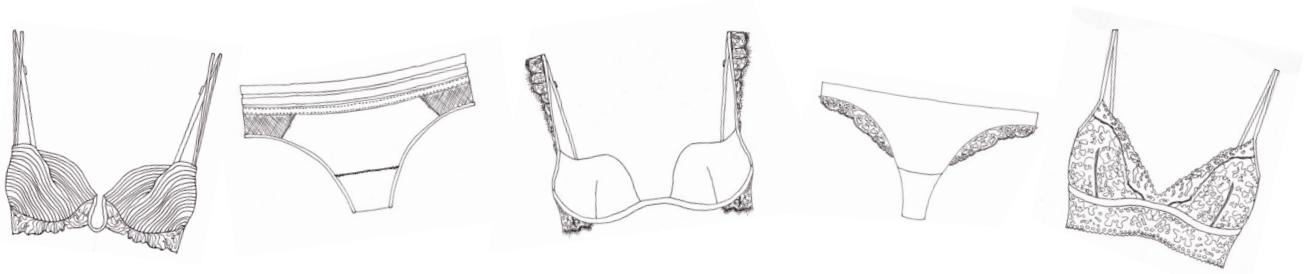
Studying the threat that our actions pose to our planet has been a lifelong passion. At the age of twelve, I started practicing sustainability education and during high school conducted solar research with the University of Toledo. My environmental research included the development of a solar-powered dress,

featured at the Intel International Science and Engineering Fair. This was the centerpiece of my 2015 application to the Fashion Institute of Technology (SUNY-FIT) Fashion Design program. Working with the composting club, Ego Sum Terra, became my first introduction to sustainability at FIT. It was founded by students to close the loop on muslin textile waste in the classroom. Junior year, I became heavily involved in the development of fashion sustainability 501(c)(3) “esa New York” with recent FIT graduates. Together, we explored current issues ignored within our industry and educated consumers about the impact of fast fashion through an e-magazine. During fashion week we hosted events featuring up-and-coming sustainable designers based in NYC. Extracurricular programs like the BioDesign Challenge and the celebrated Annual Sustainability Conference were available at FIT; however, a demanding course load, internships, and studies abroad made engagement in these activities increasingly challenging.

As students of the Intimate

Apparel Design program, my classmates and I became frustrated at the lack of attention paid to sustainability within our classrooms. Speaking with Eveningwear Design students, I discovered that many of them held a similar frustration. Sportswear currently has more classroom discussion on the subject than the other specializations, but the only area with intense sustainability focus is Knitwear. Especially in intimates, integrating conscious design into projects is difficult to achieve as the program is tied to classic methods of instruction. FIT does provide a series of elective courses dedicated to sustainable design which encompasses many aspects of the industry from packaging design to dyeing processes.

The lack of attention to sustainability studies in the major area courses, though, reflects the current behavior of the industry. Sustainability continues to be a side-thought, instead of a fundamental piece of the design process. This inspired my senior research thesis, as part of FIT’s Presidential Scholars program, investigating



the specific challenges that the intimate apparel industry faces in regard to protecting environmental and human health.

Many issues explored in my thesis still require attention despite today's emerging innovation. As part of my research, I interviewed ten senior intimates students at FIT regarding the industry they were about to enter. Half said they would weigh a brand's sustainability or openness to sustainability when considering a job opportunity. All students said they would try to proactively integrate and grow conscious environmental and ethics practices in their future jobs, but only half believed they would have the capability to make a positive change on the industry. It is our responsibility as members of this industry to actively implement change while creating an environment where young professionals are empow

Additionally, we need to increase production of sustainable intimates for consumers. Two interviewed seniors commented that they believe mass-market brands could easily have the resources they need to make a positive change, but these companies make a conscious choice to stay static. Regardless of size, we all have a responsibility and the potential to make our companies environmentally conscious. With careful thought, explore and determine which of the following steps you have the power to take at your company, to drive us toward a more sustainable and ethical industry.

First, we must highlight the need for textile development. Textile scientists will only develop fibers limiting post-consumer environmental impact if companies demand the research. Use of stretch, our most integral fiber, is one of the largest issues

is no longer viable. Many textiles can be repurposed into housing insulation at shredding facilities. Unfortunately, establishments like New York's Fabscrap (recycler of industry textile waste) must reject textiles containing spandex. Fabscrap's Reuse Coordinator, Lindsey Troop explains, "the factory we use to process scraps into insulation cannot shred material with spandex or Lycra® and cannot separate those [fibers] out of blended material. This has been industry standard to our knowledge." Imagine the percentage of our textiles, elastic trims, and laces that cannot be recycled. Though there is no current solution for recycling spandex, the Girlfriend Collective recently developed a specialized process of separating fibers in their polyester/spandex blend leggings, to recycle the polyester. Until these separation solutions are more available,

To make a significant change in the world, we need leaders who are willing to look at the longterm investment, rather than just the short term cost.

ered to contribute sustainably.

Intimates relies on specialized materials beyond those of ready-to-wear (RTW) fashion like stretch lace, mesh, elastic, and foam. We must commit to research and application of sustainability in intimates, both in the classroom and the workplace. Doing so, we can equip future designers with the tools needed for our industry's necessary long-term improvement.

we face. So often, natural fibers are blended with elastane/spandex and LYCRA®. The RTW market has fewer functional restrictions compared to intimates, which revolves around smooth form-fitting garments. This makes it easier for RTW to integrate more raw, natural, and non-stretch materials.

As soon as natural materials like cottons and silks are blended with stretch fibers, composting

designers and product developers should decrease the use of stretch fiber blends and invest in developing biodegradable stretch alternatives like those at Hong Kong-based company, Hang Song. Meanwhile we can source stretch fibers like Invista's LYCRA® T400®, derived from recycled bottles and plant material and LYCRA® lastingFIT (10x the lifespan of regular LYCRA®) to extend garment lifespans.

An increasingly popular “sustainable” solution for the intimates industry is recycled polyester. It’s inspiring that smaller lingerie companies are making their products more conscious. There are, however, several concerns with recycled polyester and polyamide as permanent solutions. Very little research investigates whether these fibers contain BPA or estrogenic activity (EA) mimicking chemicals. These EA chemicals are present in most plastics today and pose health threats, according to a 2011 article by Chun Z. Yang, Yaniger et al. in the *Journal of Environmental Health Perspectives*. Another major concern raised in a 2020 study by scientists at the National Research Council of Italy and the University of Plymouth, is that microplastics are released into our environment during washing and wearing of synthetic garments.

A reliable solution is a return to natural fiber use, ensuring materials are sourced responsibly from factories with small ecological footprints. Initially, the production of natural fibers may have an increased impact on the environment, but they will ultimately decrease damage to human health and the environment if paired with post-consumer recycling and composting options. This would allow garments to follow a Cradle-to-Cradle life-cycle, sourcing and returning materials to the earth. As we convert to natural materials, we can encourage customers to purchase microfiber filters for washing machines (available through the Girlfriend Collective) and by partnering with recycling companies like Bra Recycling Agency (B.R.A.), founded in 2010 by Kathleen Kirkwood to keep used bras out of landfills. Sending excess fabric to organizations like Fabscrap or donating unused supplies to fashion schools, we can divert our production waste from landfills.

Simultaneously we must focus on the impact on human health. Fabric treatments for intimates create many concerns, especially for our skin, the largest organ. Regrettably, our quality control in regulating heavy metal use in dye processes and fabric treatments is lacking. Nguyen & Saleh’s 2017 study in the *Journal of Environmental Science and Health* performed tests measuring the heavy metals present on an assortment of over 120 gar-

ments purchased from 11 intimates brands, from Victoria’s Secret to Fruit of the Loom. The following chemicals were found in several garments above federal regulation levels: chromium, nickel, zinc, copper, lead, and arsenic. Long-term exposure to trace amounts of these metals can cause negative health effects, including allergenic skin reactions, liver damage, pulmonary congestion, and cancer.

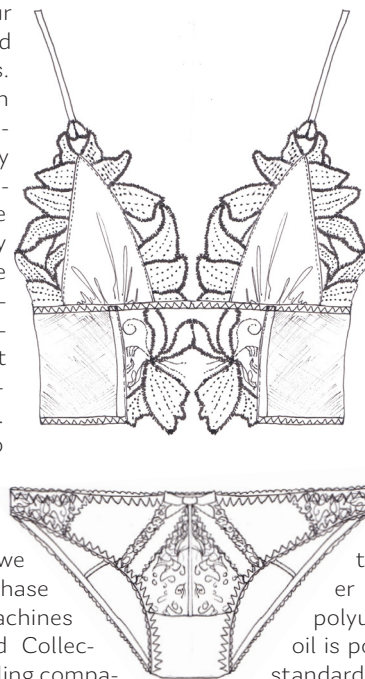
The introduction of plastics and fire retardants into everyday items, as well as polyester and spandex in bras, may also have significant impacts on health. In the 1960s, the rate of breast cancer was one in 20 women. Today, in our synthetics-saturated world, it is one in eight. Plastics and fire retardants are

known to contain cancer- and disease-causing agents. Polyurethane foam is generally required by U.S. law to be treated with flame retardants. We must ensure that our factories do not treat bra foams with fire retardants and that we notate chemical information on product tags. Quality control for heavy metals and chemicals needs to be accurately and aggressively reported. There can be no margin for error.

Manufacturers can address these issues by pushing suppliers like China Petrochemical, Toray Industries, and Eastman Chemicals to stop lobbying against health and environmental regulations and start using safer materials. For example, bio-based polyurethane derived from vegetable oil is potentially a safer alternative to our standard petroleum-derived polyurethane.

If suppliers do not respond to these requests, manufacturers ought not to order their products. We must stop funding suppliers that jeopardize our customers’ health. The priority is to ensure that our products are safe to wear.

Consumers need brand transparency. Enlisting a third party to analyze and publish your company’s current ethical and environmental behavior will increase consumer loyalty and encourage other businesses to do the same. Companies can create a narrative of continuing progress in ethics and sustainability, and use it to engage and educate customers online. It cannot be up to consumers to drive demand for sustainability; it is our responsibility to lead and



“It cannot be up to consumers to drive demand for sustainability; it is our responsibility to lead and educate them.”

educate them. Based on a survey of customers conducted for my thesis research, 84% rated their knowledge of sustainability and ethics as only one to three, on a scale of five. Yet, 85.4% of the sample group reported that sustainability is important to some degree in their lives. We often expect that customers are consciously aware of sustainability in fashion, but just under 52% of those surveyed had considered sustainability in regard to clothing; 61% said they had never considered it in regard to intimate apparel. The majority of consumers (72.8%) were interested in learning more about the fashion industry, production, and sustainability; showing a consumer demand for education.

Leading luxury and mass market companies have the power, money and influence over consumers to make a difference. Referencing models like Kering Group’s “Environmental Profit and Loss” system can help translate your company’s sustainability efforts into a long-term business investment. When established brands make proactive changes, new brands can more easily adopt sustainable options with lower production minimums. Change is more than simply developing a “sustainable” line in addition to your current product. It is about incorporating sustainability in all collections. Collectively, we have the power to make a difference and generate a range of safe, conscious products for our consumers. The most effective way to imple-

ment long-lasting change is if industry leaders, from business to design, initiate the change. When reaching out to industry professionals for comment on this article, I was met with resistance — many were concerned that revealing these issues would hurt my chance at a successful career in this industry. However, I do not wish to work for an industry that actively ignores sustainability. If sharing my research can bring some semblance of change, then the risk is worth it. In doing so, I hope to shape an industry that my classmates and I would be proud to work for. I urge you to invest in this young generation of graduates, passionate about launching the sustainability and ethics practices in your company; many of whom struggle to find jobs amidst the pandemic.

Though the fashion industry as a whole has major room for developing its sustainability and ethics practices, there are factors that make development in the Intimate Apparel industry more complicated. In discussing the issues most relevant to intimates, we can begin to tackle them together. This is a critical moment for our industry. We are already being forced to re-evaluate our business models due to the hardships of our current economy. What better time to build sustainability into our foundations and work together to find long-lasting solutions?

**SINCERELY,
FERN CLAUSIUS**

Sustainably moving toward the future
of luxury design



OUR NEXT STEPS ***AS AN INDUSTRY:***

- 1.** Create an environment where employees are empowered to contribute sustainably.
- 2.** Commit to research & development while integrating sustainable discoveries into current products.
- 3.** Create demand for biodegradable stretch alternatives by investing in textile research and temporarily switching to recycled and longer lasting varieties of spandex.
- 4.** Partner with companies like Fabscrap and Bra Recycling Agency (B.R.A.) to divert production and consumer waste from landfills.
- 5.** Steadily return to natural fibers with mindful ecological footprints, to decrease microfiber pollution.
- 6.** Intensively monitor chemical levels, always questioning current methods and looking to alternatives for foams and chemical treatments.
- 7.** Ensure fire retardants are not used in products like bras, unless mandated.
- 8.** Address suppliers that lobby against health and environmental regulations, refusing to continue business unless changes are made.
- 9.** Lead and educate consumers about sustainability, as many lack the information that would significantly change shopping habits.
- 10.** Increase brand transparency around ethics & sustainability to encourage consumers to raise expectations for other brands.