

# TOXIC TEXTILES

2019 REPORT  
MADE BY GREEN AMERICA

**The Environmental and Social  
Impacts of our Clothing**





# CONTENTS

EXECUTIVE SUMMARY • 3

TOXIC TEXTILES: 2019 REPORT • 5

CLOSING THE LOOP: WASTE AND RECYCLING • 7

TOXIC TEXTILES: THE CHEMICALS IN YOUR CLOTHING • 10

TOXIC FROM THE START: MATERIALS IN OUR CLOTHES • 13

FASHION AND LABOR: AN UNHEALTHY & UNFAIR RELATIONSHIP • 16

WHAT ARE (AND AREN'T) COMPANIES DOING? • 20

SCORECARD APPENDIX • 24

ENDNOTES • 40

Research & Writing: Caroline Chen

Editor: Todd Larsen

Designer: NineBar Creative



## EXECUTIVE SUMMARY

**SUSTAINABILITY:** it's not a word usually associated with the fashion industry, yet one that consumers are increasingly seeing more when we go shopping. But is sustainability just the next "trend" in fashion - or something that companies are actually moving towards?

While a lot of attention has been focused on the fast fashion industry – how cheap clothes are driving overconsumption by consumers, how fast turnaround times places heavy burdens on workers, how fast fashion is contributing to increased clothing disposal and waste, here is the dirty truth: these are only some of the challenges facing the industry.

- Approximately 20% of industrial water pollution comes from textile manufacturing.
- Less than 1% of clothing inputs are recycled into new clothing.
- Companies are legally obligated to pay minimum wage to workers abroad – but these wages are not high enough for workers to sustain a living.
- Due to a long and complex supply chain, the fashion industry alone emits 10% of global carbon emissions.
- 43 million tons of chemicals are used in textile production every year.

It's clear that continuing with business as usual is unsustainable – for people, for planet, and, in the long run, for profits.

With this in mind, Green America explored a variety of environmental and social challenges in the fashion industry in this report and looked at 14 major American apparel companies frequently found in shopping malls to see what, if anything, they are doing to address these issues in their supply chains. We reached out to companies with detailed surveys, read corporate social responsibility (CSR) reports when available, and reviewed corporate websites.

Some of our key findings include:

- Large commitments without concrete plans, metrics, or timelines: Companies often say that they have a policy addressing an environmental or labor issue without going into detail about what they are doing to measure their progress or achieve their goal.
- Transparency is improving but mostly still lacking: four companies (Target, VF (which owns The North Face and Jansport), Nike, and Gap) identify chemicals used in their supply chains through a Manufacturing Restricted Substances List (MRSL), and an Restricted Substances List (RSL), while three companies (Ascena Retail, The Children's Place, Urban Outfitters) rely on an RSL as their chemical management policy. An MRSL restricts chemicals used in the manufacturing process, while an RSL restricts what



chemicals can be found in the final consumer product. Meanwhile, six companies (Target, VF, Nike, Gap, Ascena, Abercrombie & Fitch) list factories that they source from.

- Token sustainability initiatives and brands: Companies are increasingly incorporating sustainability efforts into their policies, but often will use one policy that addresses an issue in some detail or produce a line of clothes made a little more sustainably to demonstrate their commitment to sustainability when in reality, they are not addressing most issues in their supply chains.
- Leaders and laggards overall: While none of the major brands are true leaders in the field, Green America identified the following companies as having better environmental and labor practices – Target, VF, Nike – and several companies that were clearly laggards – Carter’s, J.Crew, Forever 21.
- Consumers who are concerned about toxins in clothing can purchase used clothing when possible, purchase better quality clothing and wear that clothing until it wears out, and when purchasing new clothing, look for clothes that are certified by sustainability initiatives like GOTS or bluesign to ensure higher standards around labor and toxins.

Overall, we found that companies are starting to move in the right direction, but much more has to be done to fully address the scope of the environmental and social challenges in textile supply chains. Consumer outrage and horror at the Rana Plaza collapse spurred companies to start taking factory safety in Bangladesh more seriously. Consumer interest in reducing waste and consumption has led to increase in in-store recycling programs and the rise of the secondhand market. While the solutions are not always perfect, they are steps in the right direction. When consumers want something, the markets listen – and we must continue to demand more of companies.



## TOXIC TEXTILES: 2019 REPORT

**SUSTAINABILITY:** it's a word that is not usually tied to the apparel industry, especially with the rise of fast fashion and consumer consumption. Yet it's one that consumers are increasingly seeing more when we go shopping. But is sustainability just the next "trend" in fashion - or something that companies are actually moving towards?

Although fast fashion feels ubiquitous to consumers now, it wasn't too long ago when the thought of shopping for new clothes monthly - or even weekly - seemed ludicrous. Traditionally, clothes were produced for a set number of seasons every year - but thanks to fast fashion companies such as Forever 21, H&M, and Zara, new clothes are entering stores on a weekly, sometimes daily basis. With the prospect of something new always available, consumers have increased the amount of clothing they purchase. The American Apparel and Footwear Association estimates that in 2016, Americans on average purchased over 65 articles of clothing.<sup>1</sup>

Yet fast fashion companies have not only changed the way most consumers shop for clothing, they've influenced how traditional retailers do business too, as they feel pressure to compete with the nimble business models favored by younger consumers and the ever-rotating selection of clothing available in stores and online. Meanwhile, social media has led to a new trend of ultra-fast fashion - where companies are able to design, manufacture, and sell hundreds of products mere weeks after the initial conception of design, thanks to a large network of local and international factories. Some ultra-fast fashion companies, such as Fashion Nova, release 600 new items a week -- and sell out most of them too. We've entered an age where clothing is made to be worn and subsequently discarded, where "good-enough" is the metric for the quality of our clothes.

Much has been said about the resources used and discarded by the fashion industry - both by companies and by consumers. Between 2000 and 2015, clothing production almost doubled, from about 50 billion units a year to over 100 billion units a year<sup>2</sup>. Meanwhile, the amount of clothing Americans dispose of annually has almost tripled during that time. The Environmental Protection Agency estimates that in 2015, Americans generated 16 million tons of textile waste, with almost 12 million tons of it consisting of clothing and footwear. Most of it - 66% - was sent to landfills, while only 15% of was recycled.<sup>3</sup> To break it down: the Council for Textile Recycling estimates that Americans throw away 70 pounds of clothes and other textiles every year.

***The Council for  
Textile Recycling  
estimates that  
Americans throw  
away 70 pounds of  
clothes and other  
textiles every year.***



While a lot of attention has been focused on the fast fashion industry – how cheap clothes are driving overconsumption by consumers, how fast turnaround times place heavy burdens on workers, how fast fashion is contributing to increased clothing disposal and waste, here is the dirty truth:

**Fast fashion is not the only culprit when it comes to the damaging environmental and social issues that plague the industry.**

While it's true that the tantalizingly low prices fast fashion offers have affected consumer shopping habits and contribute to the sheer consumption of resources needed to produce high volumes of clothes, many of the traditional retailers consumers shop at are complicit as well. And although there may be a perception that paying more for an article of clothing means it is higher quality, or made under better conditions, that is not always the case.

This is because not only are our consumption and disposal habits unsustainable, the very process of turning raw materials into clothing is unsustainable as well. Meanwhile, due to a long, complex, and global supply chain, the fashion industry leaves a large carbon footprint, emitting 10% of global carbon emissions<sup>4</sup>.

It's clear that continuing with business as usual is unsustainable – for people, for planet, and, in the long run, for profits. The challenges the industry face are complex, and rooted in the model of how clothes are made: using vast amounts of resources to create clothing which are meant to have one life. This is known as a linear model, as the lifecycle of clothing has a definite start and ending point.

Luckily, it seems like the apparel industry is finally taking note. These past couple of years, the term “circularity” has become an industry buzzword, with companies making commitments to improve the efficiency of the apparel manufacturing process and recapture more resources throughout it. Meanwhile, apparel companies are increasingly showcasing different corporate initiatives that are meant to demonstrate their commitment to their workers and the environment. But it's no longer enough for companies to publish a page on their websites saying that they support the environment and their workers. And although some companies have committed to having sustainability at the heart of the process, many treat it as a buzzword, the next “trend” in fashion.

We took a look at some of the largest American apparel companies to see what – if anything – they're doing to improve the sustainability in their supply chains. We examined their policies related to environmental sustainability and stewardship, as well as their labor commitments. We also looked into whether or not the companies are involved with multi-stakeholder initiatives (MSIs), which can range from developing tools or standards to align industry efforts to convening discussions. Given the complexities of the environmental and social issues that face the apparel industry, collaboration and increased transparency is key.



## FASHION AND THE ENVIRONMENT

The fashion industry is one of the most polluting industries in the world, due to, in part, a long supply chain, chemical and energy intensive manufacturing processes, and the large amount of unrenewable resources used.

## CLOSING THE LOOP: WASTE AND RECYCLING

Currently, two-thirds of textiles end their existence in landfills. Could the industry reuse this fabric instead?

### RECYCLING

Clothing brands like H&M are increasingly implementing clothing recycling collectors in their stores. The catchy phrasing belies consumer concerns about over-consumption. Bring your old clothes in – we'll recycle them, and you get a discount on your new clothes.

### **This sounds great on paper but what, exactly, does recycling your clothes actually mean?**

Some companies, such as Eileen Fisher, will collect old articles of clothing and repurpose them into new pieces. Patagonia will buy back its own products, repair them, and then sell them as used items at a discounted price. However, recycling often means sending clothes to the secondary market – a charity or secondhand store, for instance, or a company that processes secondhand clothing. And if you've ever cleaned out your closet and wondered, "Can someone really find a use for all of this clothing?", the answer is, "Probably not."

***Trans-Americas Trading Co., a company that processes secondhand clothing, sorts through 70,000 pounds of clothing a day.***

Unlike paper recycling, where old paper can be recycled into new products, less than 1% of the resources used to make clothing is recaptured and reused to create new clothing.

The Council for Textile Recycling estimates that charities only sell 20% of the clothes that are donated to them. Larger charities with more established sorting systems, such as Goodwill or the Salvation Army, may be able to sell more. But the reality is the secondary clothing market is overwhelmed from the volume of clothes being donated, and increasingly low quality – and therefore, low value – of clothes being

donated. Trans-Americas Trading Co., a company that processes secondhand clothing, sorts through 70,000 pounds of clothing a day.

Clothing that cannot be sold in stores will end up getting sorted and salvaged by textile recyclers. Contrary to what the name suggests, textile recyclers do not actually recycle textiles; instead, they buy the leftovers for pennies per pound, and sort the clothes by quality. Clothes are then sold based on quality, with wearable clothing getting exported to other countries. The United States is the largest exporter of second-hand clothes, exporting about 45% of clothing that has been recycled to other countries as secondhand clothing.



If clothing can't be resold, then the fabric will be downcycled into rags for industrial uses, or processed into building insulation, carpet padding, or other industrial needs. Essentially, how we recycle clothing is primarily delaying when our clothes will end up in a landfill and in what form.

Although 35% of our clothes are technically being diverted from American landfills, they may end up in a landfill in another country. This means that two of the most environmentally destructive aspects of the apparel production system – the manufacture of textiles and the disposal of unwanted clothing – is happening disproportionately in other, oftentimes developing, countries. Furthermore, countries that traditionally have imported second-hand clothing are reducing the amount they are importing.

Why all this waste, and why the burdensome system? It's because the way clothes are manufactured, it is nearly impossible to recycle and recapture the materials used to make them. The Ellen MacArthur Foundation estimates that less than 1% of materials used to make clothing can be recaptured and reused to create new clothing. Textiles that blend different materials, such as cotton-polyester blends, are the most commonly used, but are not recyclable.

For cotton that has been untreated, there is a closed-loop chemical recycling process. However, most cotton – and other natural textiles – are treated with chemicals, meaning that when they are recycled, they must be mechanically recycled. This process takes the textile and mechanically shreds it. This process shortens and weakens the fibers, and often damages the fibers. Fibers that survive the mechanical shredding process must then be blended with other virgin fibers to improve their strength. The yarn produced creates a lower-quality textile. When downcycling fabrics into insulation or other industrial uses, the lower quality does not matter as much; however, low-quality fiber does limit the applications for apparel. Furthermore, since recycled cotton needs to be blended with other fibers to improve its integrity, recycled cotton cannot continuously be re-recycled.

Recycled polyester is increasingly being touted as an environmentally friendly alternative to virgin polyester. Recycled polyester is derived from plastic bottles and is touted as an ecological alternative to conventional polyester as it doesn't require the use of net new petroleum, takes less energy to produce than conventional polyester, and diverts plastic bottles from landfills.<sup>5</sup> However, recycled polyester is more expensive to produce, and requires high-quality polyester – usually from other industries, such as plastic bottles, rather than from other textiles.

The Ellen MacArthur Foundation notes that the Sustainable Apparel Coalition's Higg Index, a tool that helps companies assess the sustainability of their supply chain, estimates that there are over 165,000 material combinations possible when producing materials, **which helps explain why textile blends for the most part cannot be recycled.** This, coupled with insufficient knowledge about which chemicals are being used in the production of textiles, contribute to the challenge of efficiently recycling and recapturing resources being used.

Our technology – both for manufacturing and for recycling – isn't where it needs to be in order efficiently recapture and reuse inputs when manufacturing clothes. New, innovative technology needs to be developed to

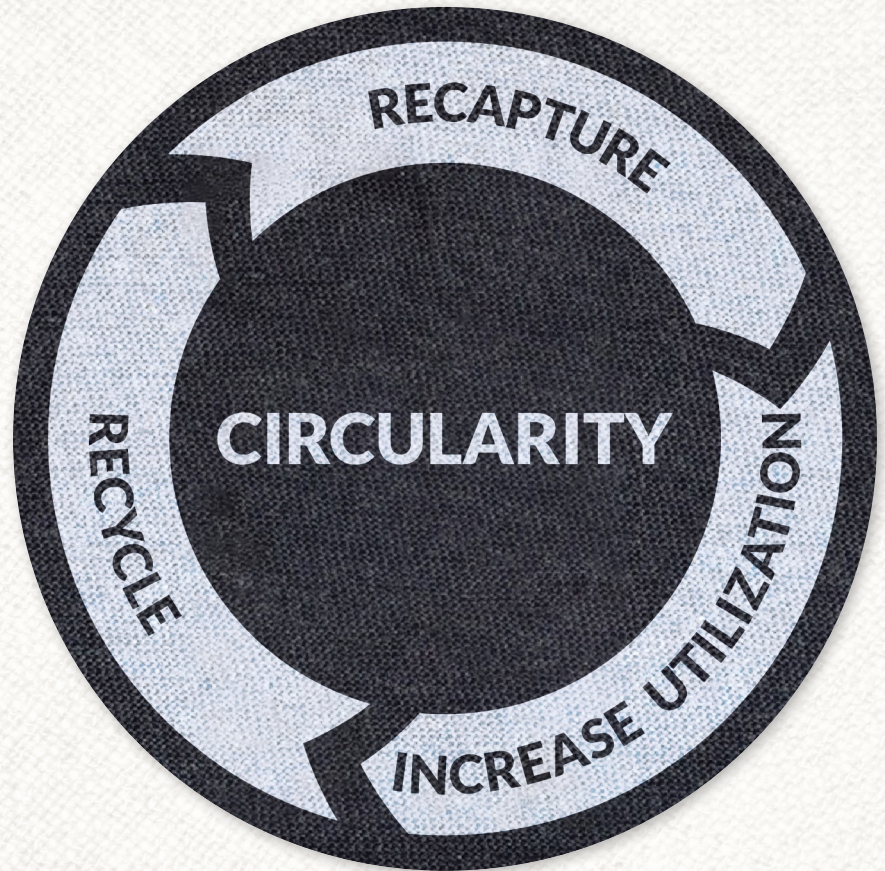


improve recycling; meanwhile, more industry alignment and transparency on how clothes are made and with what inputs is also needed. Some innovative recycling methods exist, but are not commercially scalable yet. In September 2018, H&M and the Hong Kong Research Institute for Textile and Apparel opened a “pre-industrial” sized recycling facility to recycle cotton-polyester blends through a hydrothermal process. The technology can extract polyester as fiber and cotton as cellulose powder, which can be “applied to functional products or regenerated fibres.” One facility, of course, is not enough to process all of the cotton-polyester textiles that are currently in circulation; however, it is an important step in the right direction.

## CIRCULARITY

The current production model for the apparel and textile industry is linear, meaning that there is a definite beginning point and an end point for products, with the landfill or incinerator as the final destination for clothing. But in recent years, the terms ‘circular economy’ and ‘circularity’ have been increasingly brought up throughout the industry. The idea behind that is to shift from the single use model – where resources are used once and then eventually discarded – into one where resources could be used continuously to generate new clothes.

This is an ambitious goal that would require industry-wide coordination, and increased transparency. **Although companies are starting to talk more about how they are incorporating circularity principles into their business models/supply chains, it is important to keep in mind that within the current structure, true circularity will be difficult – if not impossible – to achieve.**



The Ellen MacArthur Foundation has proposed four audacious goals for the fashion industry to adopt in order to achieve circularity:

- Substances of concern need to be phased out of the manufacturing process, and the release of microplastics must be reduced;
- Clothing utilization, or how often we wear our clothes before disposing of them, must increase;



- Current recycling methods need to be improved – and innovative recycling methods need to be developed;
- Resources have to be used efficiently, with transitions to renewable alternatives when possible.

These are goals that no one brand or supplier can achieve alone, no matter how many sustainability and social responsibility programs it implements. Increased transparency is important to identify strengths, weaknesses, and gaps of the different methods companies are employing to address sustainability issues in their supply chain. Industry initiatives and organizations are helping align goals amongst different stakeholders. The Sustainable Apparel Council, for instance, is working on standardizing reporting efforts of environmental and social impacts of its member companies' supply chains. ZDHC, an organization that is working to eliminate priority hazardous chemicals, is also trying to standardize information gathering across the industry, including establishing a manufacturing restricted substances list (MRSL) as a guideline for its members to follow. These programs and organizations have ambitious goals to transform the industry. In order to do so, more brands and retailers have to take part in these initiatives, or use these tools as a baseline to develop their own programs.

**How to spot a leader:** *Look for companies that are measuring their waste impacts, looking into incorporating more recycling and recycled products into their supply chain, and are investing in innovative recycling techniques. Also look for companies that are taking part in industry initiatives to help standardize information tracking – the more companies that take part and share information on their supply chains and their efforts, the more effective industry efforts to improve circularity will be.*

## TOXIC TEXTILES: THE CHEMICALS IN YOUR CLOTHING

While much of the public discourse has, deservedly so, been focused on the wasteful nature of the linear fashion cycle, it is not the only environmental disaster that is taking place within the industry.

If you've ever wondered, how does a piece of cotton become denim? How can we take bamboo and turn it into a shirt? The answer is: a lot of chemicals. The higher quality the fabric, the more chemically intensive the manufacturing process is. **The production of textiles uses an estimated 43 million tons of chemicals every year** – and this figure doesn't even take into account the amount of pesticides used to grow natural resources, such as cotton, annually<sup>6</sup>. Meanwhile, an estimated 20% of industrial water pollution comes from the production of textiles.

Chemicals are used heavily throughout the production of textiles – the process of turning raw materials into textiles uses over 8,000 different chemicals<sup>7</sup>, while it is estimated that there are over 10,000 different kinds of dyes<sup>8</sup>. Yet while there is some research and literature about the effects of some chemical usage in the production process, we – consumers,

**The Swedish  
Chemicals Agency  
tested 2,400  
chemicals and found  
that about 30% of  
them were toxic.**



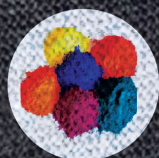
## COMMON CHEMICALS OF CONCERN IN CLOTHING



### Polyfluorinated Chemicals (PFCs)

*Used For:*  
Makes clothing waterproof and stainproof.

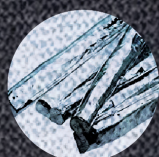
*Health Risk:*  
PFCs can affect liver health and disrupt hormonal functions.



### Azo Dyes

*Used For:*  
One of the most common dyes used (60%-70%).

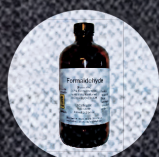
*Health Risk:*  
Can release aromatic amines, which is a carcinogen.



### Heavy Metals (Cadmium, lead, mercury)

*Used For:*  
Found in dyes and leather tanning.

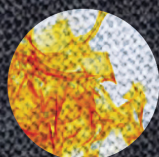
*Health Risk:*  
Can damage nervous system or kidneys; can be carcinogenic.



### Formaldehyde

*Used For:*  
Used to keep clothing wrinkle-free and shrink-free.

*Health Risk:*  
Known respiratory irritant and carcinogen.



### Flame Retardants

*Used For:*  
Used to fireproof clothing, especially baby clothes.

*Health Risk:*  
Can be hormonal disruptors.

scientists, activists, and companies – still don't have a full understanding of the chemicals that are used. For instance, the Swedish Chemicals Agency tested 2,400 chemicals and found that about 30% of them were toxic.

Chemicals are used throughout the manufacture and processing of textiles – both for synthetic fabrics and fabrics made from natural products. Textiles are bleached, dyed, and processed in chemicals baths before getting rinsed, a process that uses an enormous amount of water. While most chemicals will get rinsed off textiles and clothing during the manufacturing process, some chemicals may linger in the final product, affecting workers throughout the supply chain as well as consumers. Furthermore, clothes may be treated with finishing chemicals for effects such as making them wrinkle-free, stain- or water-resistant, or softer.

Much of this process takes place in developing countries. According to the documentary *Riverblue*, which examines the role textile manufacturing facilities have on major freshwater sources in manufacturing countries, the textile industry discharges 2.5 billion tons of wastewater annually. Despite the fact that effluent treatment plants are readily available and can mitigate some of this waste, factories see little incentive to use them. Exposure to these chemicals during manufacturing and processing can be detrimental to worker health.

Once released into the water, chemicals can also affect the community, through exposure to water sources, but also due to the leaching of chemicals into the soil, which affects the local agricultural system. The chemicals that are commonly used in the manufacturing process pose a variety of health and environmental risks. There isn't a lot of transparency about what specific chemicals are used in the manufacturing process, which is especially



concerning when it comes to the workers who are directly exposed to the chemicals, sometimes without adequate safety protection.

Some of the most commonly found priority chemicals that industry leaders are working on phasing out include perfluorinated and polyfluorinated chemicals (PFCs), which are used to make clothing water and stain proof. Many PFCs are persistent, meaning that once they enter the environment, instead of breaking down in the environment they linger there. Persistent chemicals also have the potential to travel long distances, thereby spreading their hazardous effects to other regions. PFCs can affect liver health, and studies have linked PFCs to some cancers.

Flame retardants, such as brominated and chlorinated flame retardants, are persistent chemicals as well. Brominated flame retardants can interfere with hormone systems. Flame retardants are still commonly found on children's clothing.

Organotin compounds, which are used for their anti-bacterial properties, can interfere with the health of a person's hormonal system. Organotin compounds can be found in PVC products, like synthetic/vegan leather.

Experts estimate that over 10,000 dyes are used to dye textiles. Heavy metals, such as cadmium, lead, and mercury, are commonly found in dyes and are known to cause cancer. Azo dyes, which make up 60-70% of dyes, are used because they adhere to a variety of textiles well, produce bright, vibrant colors, and are cheap to use; however, azo dyes release a known carcinogen, aromatic amines. Conventionally available eco-friendly dyes are derived from non-renewable materials, further emphasizing the need for a circular economy where these resources can be retained and reused.

While some chemicals have been banned/restricted in consuming countries, that chemical may be found in the waterways of the manufacturing country, exposing not just workers to these hazardous chemicals, but also the community at large. In China, 70% of the rivers and lakes are polluted. Villages that reside near polluted rivers have increased incidents of cancer and other health complications. In Bangladesh, the Buriganga River is so polluted with toxic chemicals and heavy metals that it can no longer sustain life.<sup>9</sup>

Industry-wide, there is a need for more transparency and data about the chemicals that are being used, as well as their effects on health and the environment throughout the life cycle of the textile/garment. Some companies have started publishing manufacturing restricted substances lists (MRSLs), which restrict/ban chemicals used in the manufacturing process, and restricted substances lists (RSLs), which restricts what chemicals can be found in a finished product. Certifications like the Global Organic Textile Standard restrict what chemicals are allowed in the manufacturing process or found in the final product in order to receive certification. Organizations like the Zero Discharge of Hazardous Chemicals (ZDHC) are helping align companies to industry-wide standards, such as developing an MRSL and water management policies, in order to standardize efforts amongst different stakeholders. The American Apparel and Footwear Association and AFIRM provide RSLs for members. The



European Union introduced REACH in 2007, which regulates chemical production and usage in products. Companies must identify chemicals used throughout the supply chain, if used or produced above a certain threshold, and demonstrate how they are managing this use. By registering these chemicals, the REACH Regulation aims to gain clarity on which chemicals are in the European Union marketplace.

**How to spot a leader:** *Look for companies that have chemical management policies, such as public MRSs and RSLs, and/or are a part of industry initiatives to phase out the most dangerous chemicals. Companies should also have water treatment plans as well, to help clean up water that is discharged.*

## TOXIC FROM THE START: MATERIALS IN OUR CLOTHES

The environmental impacts of clothes begins long before fibers are spun into textiles. From polyester textiles, which makes up 55% of textile production, and cotton textiles, which makes up 27% of textile production, the process of making clothes is often a polluting one from the start.

In 2015, an estimated 98 billion tons of petroleum was used by the textiles industry to create synthetic textiles, fertilizers for growing crops, and chemicals used to process textiles. The higher the quality of fabric, the more chemically intensive the manufacturing process is. Annually, an estimated 53 million tons of fiber are produced for clothing.<sup>10</sup>

## NATURAL ≠ BETTER

### COTTON

Cotton makes up 27% of textile production. The Ellen MacArthur Foundation estimates that annually, 200,000 tons of pesticides and 8 million tons of fertilizers are used to grow cotton<sup>11</sup>. Exposure to these pesticides is linked with cotton farmer illnesses. Cotton is also a water-intensive crop – an estimated 2,700 liters of water is needed to grow the amount of cotton needed to make a t-shirt.<sup>12</sup> Additional water is needed when dyeing and finishing cotton textiles. The process of ginning, spinning, and weaving cotton into a textile is energy intensive.

Companies are increasingly including organic cotton clothing in their offerings as a sustainable alternative. The narrative for consumers is enticing: by using organic cotton, consumers are ensuring that farmers – and the land they work on – are not exposed to excess pesticides, which contain toxic chemicals that can lead to pesticide poisoning. Pesticide poisoning can lead to vomiting, dizziness, respiratory and visual problems, and even death. And the market is responding: The Better Cotton Initiative, an organization that trains farmers to grow cotton more sustainably as well as connects companies/suppliers to sustainable cotton, provides 30% of the market's cotton.

However, organic cotton, as a term on its own, does not necessarily mean it is cleaner cotton. Much of the environmentally damaging aspects of cotton occurs after harvesting, during the stages where cotton is chemically altered into fine yarns. Meanwhile, organic cotton farming uses three times more water than conventional/



genetically modified cotton, and often offers lower yields.<sup>13</sup> This is a problem as the top organic cotton producers – India, China, Kyrgyzstan, Turkey, and Tajikistan – tend to be water scarce countries.

Furthermore, organic cotton still needs to be chemically processed to become a textile – so unless the organic cotton has been certified by standards such as GOTS, which restricts which chemicals can be used in the manufacturing process, or OEKO-TEX, the product safety certification, organic cotton clothing may still be treated with hazardous chemicals as it gets processed into yarn, woven into textiles, and finished with treatments.

## **RAYON/VISCOSE**

Rayon, also known as viscose, is cellulose (plant) based, semi-synthetic fiber, often from trees. Its silky quality and durable nature make it a cheap alternative for silk, and it is an increasingly popular textile due to its versatility.

Rayon is made through a chemical, energy, and water-intensive process that converts wood pulp into a textile. The rise in rayon production has led to an increase in deforestation. In fact, an estimated 30% of rayon is made from wood sourced from protected or endangered forests. The NGO Canopy Style estimates that over 150 million trees are turned into fabric every year. Pulp mills dissolve wood pulp in a chemical solution, which then produces a substance that can be spun into a fiber. 60-70% of the tree is lost in this process.

Meanwhile, a report found that viscose manufacturing factories in China were contributing to severe air and water pollution, and residential areas near factories had three times the allowable limit of carbon disulphide, a chemical central to the production of rayon.<sup>14</sup> Carbon disulphide has been linked with heart diseases, birth defects, and cancer. The rayon manufacturing factories were not only adversely affecting the health of the workers, they were also leaving a negative impact on the community as well.

Companies are increasingly pledging to not knowingly use rayon made from ancient or endangered forests; however, it is not yet an industry-wide commitment. Furthermore, as demand for rayon increases, more trees will have to be used. Although rayon is made from quick growing trees, deforestation is still a concern as there is no guarantee about the sustainability of the sourcing practices, especially for companies that rely on large volumes of rayon production for their clothing. The rise of fast fashion and the need for more resources provided faster and cheaper lends itself to practices that prioritize output and turnaround time over sustainability. NGOs are working to make the rayon manufacturing process more sustainable, working with mills and brands to implement more sustainable sourcing and manufacturing practices; however, they are still the exception and not the norm.

## **SYNTHETIC MATERIALS**

60% of the materials used to make clothing comes from synthetic fibers such as polyester, nylon, and acrylic. Polyester is the most commonly used material for clothes, making up 55% of textile production.<sup>15</sup> In 2015, an estimated 50 million tons of polyester was produced<sup>16</sup>. Meanwhile, as consumers move away from animal products in clothing to ‘vegan’ options, it’s important to keep in mind that, although there are some innovative alternatives to animal products, most vegan alternatives are derived from synthetic materials such as PVC.



Despite the fact that polyester is derived from petroleum, there are arguments that polyester is actually a more environmentally friendly alternative to cotton. Polyester production uses less water than growing cotton. Furthermore, polyester retains dyes better than cotton, and uses fewer chemicals during the dyeing process than cotton. However, polyester is derived from petroleum, a non-renewable resource, and is not biodegradable. Polyester production also relies on the use of heavy metals, primarily antimony, a possible carcinogen. Although antimony is bound into polyester clothing and is technically not harmful to the wearer, it is a carcinogen if inhaled – a problem during the manufacturing process for workers. Furthermore, antimony can be leached from the fabrics during the dyeing process, and then get released into the water.

Pollution does not only come from the production of synthetic materials. Every time you wash a fleece sweater, a polyester shirt, or an acrylic sweater, your clothes shed microplastics which end up in water sources. Although microplastics are, as the name suggests, small, they collectively make up a significant part of ocean pollution. A 2016 study estimates that 700,000 fibers could shed in a typical wash cycle; another suggests that half a million tons of microplastics are released into the ocean every year, the equivalent of 50 billion plastic water bottles<sup>17</sup>. Regardless of what the actual number is, the impact is staggering. One of the largest plastics pollution problems is one that we cannot see with the naked eye. Not only are microplastics piling up in oceans, they can also bioaccumulate throughout the food chain as fish ingest these particles.

Microfibers get ingested by fish and other wildlife. Although harmful to wildlife on their own, microfibers can also absorb toxins in the water. While there isn't enough research to conclusively say how microfibers affect the health of animals and people, there are concerns that the chemicals used to produce plastics – and possibly the toxins they've absorbed – can be released once ingested.

And while it's still too difficult to assess just how much apparel and textiles contributes to microplastic pollution, it's clear that, if we are to continue using synthetic fabric, companies need to look into ways to manufacture synthetic materials that do not shed microfibers.

## **THE “ECO-FRIENDLY” ALTERNATIVES: BAMBOO, HEMP, TENCEL**

### **BAMBOO**

If you look through a pile of clothing made of alternative materials, you are likely to come across textiles made from bamboo. Bamboo fabric is a popular alternative to conventional textiles, as bamboo can be grown more sustainably than conventional cotton. Bamboo plants can produce larger yields on less land than cotton, and are grown using fewer pesticides than conventional cotton.

However, the most common way to process bamboo fabric is by turning it into bamboo rayon. Rayon is a fabric that is derived from a cellulose (natural) raw material, which then goes through an energy- and chemical-intensive process with hazardous chemicals to become a semi-synthetic material. The chemicals used generally aren't recaptured, and instead are released into waterways. Bamboo linen is a less commonly found textile, as it requires



a more costly and time-intensive process to make. While the mechanical process to make bamboo linen is less toxic than the chemical process, it is an energy intensive process.

## **HEMP/FLAX**

Flax, which produces linen, and hemp can be grown more sustainably than cotton. Flax and hemp are grown using little to no pesticides and fertilizers. They can also be grown on land not suitable for other agricultural products. However, the standard mechanical process of turning hemp and flax into textiles is energy intensive. Furthermore, some companies are starting to chemically process flax into textiles, as the process is less expensive and faster than the mechanical process.

## **LYOCELL/TENCEL(C)**

Lyocell, the generic version of TENCEL, is a cellulose based fabric. Lyocell can be made from wood, including bamboo, or even cotton scraps, while TENCEL is made from eucalyptus trees that have been certified as sustainable and ethically grown. The manufacturing process of producing lyocell is energy intensive. Furthermore, although the chemical solvents used are non-toxic, they are petroleum based. However, lyocell is manufactured in a closed-loop system, meaning that most of solvents are retained and reused.

The bottom line is, there isn't a perfect eco-friendly clothing available to consumers, although some options are, in certain ways, preferable to others.

Some companies, primarily smaller companies that prioritize environmentalism, have already started experimenting with innovative alternative textiles, although many of these processes are difficult to scale up to the volume of what large apparel companies use. Others are taking current systems and trying to make them more sustainable, such as switching to renewable power sources for factories that engage in energy-intensive manufacturing practices or sourcing more responsibly made materials. This demonstrates the importance for consumers to keep demanding more alternative textiles – both ones that are currently available on the market as well as innovative new technology. Progress shouldn't be the enemy of perfection, and by supporting alternative materials that are more sustainable than conventional ones, consumers can demonstrate to companies a market that needs to be filled.

**How to spot a leader:** *Look for companies with goals and benchmarks to incorporate more sustainable textiles into their supply chains, and are not limiting sustainable alternatives to one line of clothing or one type of clothing. Companies should also be transparent about how they are defining sustainable alternatives.*

## **FASHION AND LABOR: AN UNHEALTHY & UNFAIR RELATIONSHIP**

Most consumers, at this point, are aware that our increasing appetite for cheap clothes is exacerbating labor abuses in the apparel supply chain. Major companies have a Code of Conduct that they expect suppliers and vendors to follow, which often address, in the broadest sense, their commitment to worker safety. Codes of conduct also often address how companies rectify violations found in the supply chain, which range from



terminating a contract with a violator to working with the violator on a corrective action plan (CAP). Corrective action plans may work to fix specific problems in the work place, but do not necessarily address underlying, structural causes of the problem. The strength of a code of conduct lies with the standards outlined in the code of conduct, and how the code of conduct is implemented. Some companies will proactively use their codes of conduct to assess their suppliers and vendors and monitor for violations; others will reactively use their codes of conducts once violations have been publicly reported. The process of auditing adherence to codes of conducts is not always transparent, and without more information about how exactly companies are grading their factories, it is difficult for consumers to truly understand the conditions workers are working in.

## **WORKER SAFETY AND RIGHTS**

In April 2013, the deadliest garment factory accident in modern history took place in Bangladesh, the world's second largest producer of clothes. The Rana Plaza collapse led to the deaths of over 1,300 garment workers and injured 2,500 more. The Rana Plaza disaster led to an increased scrutiny over the conditions garment workers work in, and how the pressure from increased consumption of clothing by consumers contributed to the disaster. It also brought back into focus the tendency for companies to shift production to countries with loose environmental and labor laws, allowing them to (truthfully) claim that they abide by local laws while also taking advantage of more favorable manufacturing environments. Meanwhile, since the Rana Plaza collapse, the Bangladeshi clothing export industry has grown, with an estimated \$30 billion worth of clothing leaving the country every year.<sup>18</sup>

In the aftermath of the Rana Plaza collapse, the Bangladesh Accord for on Fire and Building Safety (The Accord) and the Alliance for Bangladesh Worker Safety (The Alliance) were established. The Accord and the Alliance were both five-year industry initiatives designed to improve factory safety in Bangladesh's ready-made garment factories. The Accord was created in conjunction with trade unions and apparel companies, while the Alliance was created by and comprised of primarily American companies. In 2018, the original Accord and Alliance commitments concluded. Whereas the Bangladesh Accord will continue past its five-year commitment as the Bangladesh Transition Accord, the Alliance has wrapped up its official activities, although its website assures visitors that companies will continue to work with factories. By the end of 2017, 63% of Bangladesh's over 7,100 ready-made garment factories were covered by the Accord and Alliance. However, fixing the structural problems endemic in factories is a challenging and expensive task – in the first four years of the two programs, only 79 factories were successfully able to remediate their problems. In lieu of renewing the Alliance, Alliance member companies have instead pledged to maintain standards related to factory safety. As of publication, the Bangladesh Accord has been in legal limbo regarding its operation in Bangladesh and ability to finish out its mandate.

The ready-made garment industry is just one part of Bangladesh's garment industry. Factories that are covered under the Accord and Alliance only make up about 31% of apparel factories in the country, meaning that although the attention to factory safety is important, it is not as expansive as consumers may imagine as other factories, such as textile focused ones, are not covered. Furthermore, the Accord and Alliance focuses on structural, fire, and electrical safety of the factories, which is an important component of improving worker safety; however,



other safety and labor problems continue to persist in Bangladeshi factories, including low wages, worker intimidation, forced overtime, and child labor.

While a lot of attention has been paid on Bangladesh's ready-made garment factories, because of the Rana Plaza disaster as well as the fact that Bangladesh is the second largest manufacturer of clothes, factory safety problems persist in other countries as well. The Better Work Initiative, a collaboration between the International Labor Organization and the International Finance Corporation of the World Bank, works to improve working standards and labor rights in seven countries. Currently, there are 1,600 factories that are part of the Better Work Initiative<sup>19</sup> but tens of thousands of factories are not included. This highlights the continued importance of consumers demanding fair and safe working standards – and the need to continue expanding these programs. Although current initiatives and programs are helpful and have made a difference, they are not comprehensive enough.

Most of the focus on factory safety has been focused on Tier 1 factories, or the ones that assemble and make the final garments, in part because of its closer proximity to companies. Other types of factories have different hazards for workers; for instance, in textile plants where spinning and weaving occurs, noise pollution is a health hazard. In wet processing factories, where dyeing and chemical processing of textiles take place, workers are often exposed to chemicals they know little about and are provided inadequate – if any – safety protective gear. Factory safety has been focused on concerns like air quality, safer facilities, and more reasonable workloads; however, codes of conducts don't always address environmental issues that affect workers, such as chemical exposure or proper effluent management.<sup>20</sup>

And of course, worker safety extends beyond factories and into the fields. Cotton farming, in addition to being one of the most resource-intensive portions of the apparel value chain, is also the source of worker safety concerns. Conventional cotton farmers, for instance, are exposed to toxic pesticides that can irrevocably affect a farmer's health. Forced labor is another concern in the industry. Uzbekistan is one of the largest exporters of cotton. The Uzbek government established state-sanctioned forced and child labor to ensure productive cotton growing and harvesting, forcibly enlisting over a million workers a year. In light of this news, brands and retailers signed the Uzbek Cotton Pledge, stating that they would not knowingly source cotton from Uzbekistan. In response to a growing list of companies boycotting Uzbek cotton, labor conditions gradually improved. During the 2017(18) harvest season, the Department of Labor, along with the International Labor Organisation (ILO) and international labor advocates, monitored cotton picking season in Uzbekistan and determined that conditions have improved. While there are still concerns about labor practices in Uzbekistan, this development has allowed labor activists to shift gears and focus on the labor crisis in Tajikistan, which has a similar problem of state-sanctioned use of forced and child labor in cotton fields to meet quotas<sup>21</sup>.

**How to spot a leader:** *Companies that are transparent about labor practices and sourcing. Things to look for include companies that regularly publish audit information, with benchmarks on how factories are assessed; publish lists of the factories that they supply from; are members of industry initiatives to improve worker safety and standards.*



## LOW WAGES

Companies are legally obligated to pay their workers the minimum wage, including in producing countries. However, research conducted by The Asia Floor Wage Alliance, a coalition of trade unions, workers' rights and human rights organizations, has determined that the minimum wage in Asian manufacturing countries is far below a living income. A living income would ensure that workers could comfortably provide for their family necessities such as food, education, and healthcare. For instance, the minimum wage in Bangladesh is about \$63 USD/month, with the government proposing that it be raised to \$96/month<sup>22</sup>. Meanwhile the living wage as calculated by Asia Floor Wage is \$293.19.

Asia Floor Wage advocates for an increased wage on behalf of workers, as workers may lose jobs. Without an adequate wage, workers are forced to work overtime in order to make ends meet. They also have little freedom to take days off due to illness or refuse work in dangerous working conditions; furthermore, protesting unfair conditions can lead to dismissal from jobs. And for workers in developing communities, these jobs are necessary. In January 2019, over 5,000 garment workers were fired for protesting low wages. Furthermore, when workers protest unfair conditions and low wages, they are often treated as activists and may be jailed – regardless of if they actually are or not. According to labor unions, many of the dismissed workers are also facing legal challenges brought upon them by factory owners.<sup>23</sup>

**Asia Floor Wage estimates that only 0.5% - 3% of a clothing's price goes to the workers who made them.**

Even when companies make commitments to provide workers with living wages, they don't necessarily come into fruition. In 2013, H&M announced that by 2018, it would have structures in place to pay workers in factories that produced 60% of its clothes a fair living wage, a commitment that would benefit 850,000 garment workers. But despite calls for benchmarks and data, H&M did not provide this information; as the deadline approached, the Clean Clothes Campaign, a coalition of labor unions and labor rights organizations, called out H&M for watering down its commitments while still claiming progress. Instead of committing to a living wage, H&M instead set the goal of having factories that represent 50% of production to use the Fair Wage Method. The CCC notes the Fair Wage method does not indicate whether or not workers are earning a living wage.

Low wages and poor conditions continue to persist even in the United States. During a four-month period in 2016, the Department of Labor conducted investigations of 77 garment factories in Los Angeles and found labor violations in 85% of the factories that made clothes for companies including Ross Dress for Less, Forever 21, and TJ Maxx.<sup>24</sup> The Department of Labor discovered that workers were getting paid between \$4 - \$7/ hour. The minimum wage in Los Angeles in 2016 was \$10/ hour. The investigation concluded that 835 workers were owed over \$1.3 million in backpay. Investigators reported that many of the workers were immigrants with limited



## **The investigation concluded that 835 domestic workers were owed over \$1.3 million in backpay.**

English abilities, and may not be aware of their rights nor feel comfortable speaking up about their working conditions.

The International Labor Organization (ILO) has determined that earning a living wage is a human right, and it is one that millions of workers in the apparel supply chain do not have. It's important for companies to work with governments and trade unions, and human and worker rights organizations to improve the wage of workers in their supply chains; it's also important for consumers

to hold companies to a higher standard as to how their workers are treated.

**Leaders to look for:** *Companies that have made a commitment to provide a living income to their workers.*

## **WHAT ARE (AND AREN'T) COMPANIES DOING?**

Green America examined the environmental and social sustainability policies of 14 major American apparel companies. The companies are a mix of traditional and fast fashion retailers. We looked at publicly available information, such as codes of conducts, corporate social responsibility webpages and sustainability reports, if available. We also sent companies on the scorecard a survey with a list of questions to supplement this information.

It's important to note that even if a company has some policies in place to address sustainability within its current supply chain, it does not negate the sheer volume of resources used and lost annually to manufacture new clothes.



For this scorecard, we chose to focus on American apparel companies that:

- Are readily accessible to consumers, whether through malls/shopping centers or as a part of their everyday lives;
- Primarily have their own brands of clothing, rather than retailers that sell a variety of brands.

**Scorecard of Environmental & Social Practices of Major US Apparel Companies**

COMPANY	ALT. RESOURCES	CHEMICAL MGMT	FACTORY LIST	FACTORY SAFETY	WATER MGMT	WASTE & RECYCLING
Target	+	+	+	/	+	/
VF (The North Face)	+	+	+	/	+	/
Nike	/	+	+	/	/	+
Gap (Old Navy, Banana Republic)	+	+	+	/	/	/
Ascena Retail (Ann Taylor)	/	•	+	/	/	/
Ralph Lauren	+	/		/	/	/
Walmart	+	/		/	/	
Abercrombie & Fitch	/	/	+	/	/	
American Eagle	/	/		/	/	
The Children's Place	/	•				
URBN (Urban Outfitters, Anthropologie, Free People)		•				
Carter's (Osh Kosh B'Gosh)	/					
J. Crew (Madewell)	/					
Forever 21						

• Notes that the company has a Restricted Substances List, which focuses more on consumer safety, but does not have a Manufacturing Restricted Substances List, which applies to how the product is made.

A (+) indicates that the company has a detailed policy described and shares its benchmarks/progress. A (/) indicates that the company states that it has a policy, but there are no details about how it measures progress and/or what its goals are. The scorecard examines if a company has a policy, and does not necessarily translate to an endorsement of that particular policy.

**SCORECARD THEMES:**

**Big goals and commitments without detailed plans:** You can see from the scorecard that many companies will simply state that they have a policy, without going into detail about what the policy is, what its goals are,



and how/when it hopes to accomplish this goal. Larger companies tend to have more commitments and goals. Environmental responsibility sometimes just applies to corporate practices, such as energy use and recycling in corporate offices – which is important; however, it is also important to address supply chain impacts.

Sustainability programs are still voluntary so there isn't necessarily standardization across different stakeholders, nor regulatory enforcement. There is some legislation, such as the California Supply Chain Transparency Act, that require companies over a certain size to disclose if they are addressing certain issues in supply chains, but there generally aren't enforcement mechanisms beyond requiring the disclosure.

**Limited sustainable alternative material use:** Many companies have a specific line of clothing that uses 'sustainable alternative' materials to indicate a shift towards environmentalism without plans to incorporate more sustainable alternative materials/textiles into the supply chain.

**Transparency:** Improving but still lacking: 6 companies have published RSLs and/or MRSLs; 6 have published a list of supplier factories. There continues to be lack of transparency about assessment programs and metrics. Companies with reports on how factories are performing will report out the breakdown, but it's unclear what the different ratings actually mean. More transparency is needed for industry alignment, ensuring that supply chains are shaping up, and that company initiatives are truly improving the lives of workers and reducing environmental damage

**Piecemeal solutions:** Addressing the various environmental and social issues in supply chains is challenging. But most companies do not indicate how much further their work needs to go in order to be truly sustainable. For instance, a company may tout how many gallons of water it has saved through a more efficient washing process but without the context of overall water use. Or it may talk about the quality and quantity of organic cotton it is sourcing, but not talk about efforts regarding other materials.

Having sustainability programs that address certain aspects of the supply chain does not negate the overwhelming consumption of resources needed to manufacture high volumes of clothing, nor all of the clothing that ends up in our landfills.

### **So, What's Next?**

Companies pay attention to what consumers want. Noting a change in preference in consumer interest in fur and exotic skin products, luxury companies are beginning to make commitments to phase these materials out of their supply chain. Meanwhile, market research has demonstrated to companies that millennials care about sustainability and knowing where their products are coming from, leading to an increase in corporate rhetoric about the importance of sustainability and transparency.



The hard truth is this: there are no easy solutions to solve the environmental and social crises of the fashion industry, nor are there truly 100% sustainable ways for consumers to shop. It will take a mix of shifting consumer habits as well as advocating for sustainable alternatives to truly make a difference.

The first – and most important – thing for consumers to do is **reduce their consumption of new clothes**. Even the more eco-friendly alternatives to conventionally made textiles and clothes aren't without their own concerns.

By cutting back consumption of new clothes, consumers can help reduce the amount of resources being used to process and manufacture new clothing. Reusing clothes can help negate the carbon footprint used to manufacture new clothes - reusing a cotton t-shirt, for instance, can reduce a shirt's polluting contribution to global warming by 14%.<sup>25</sup> This also helps lessen the burden on workers throughout the supply chain to continually meet higher demands through higher quotas.

**Shopping at consignment/secondhand stores and attending clothing swaps** help keep clothing in circulation longer. Companies like ThredUp, an online secondhand store, and The RealReal, a luxury consignment site, are helping consumers rethink the secondhand shopping experience. Meanwhile, clothing rental models have sprung up, which allow consumers to dress up for a fancy occasion or continuously update their wardrobes without disposing of them when they are ready for a change. An industry report conducted by Business of Fashion and McKinsey & Company predicts that rental, refurbishment, and resale market will grow in 2019, noting increased consumer interest in these markets. For these models to work, consumers need to also start thinking about the durability of the clothes they wear. If the quality of the clothing is low, no amount of mending and reusing can keep it out of a landfill.

**Consumers should also advocate for more clothing made with recycled inputs** to encourage technological innovation for textile recycling – recycling that actually recaptures inputs and allow them to be reused to create new textiles. Some companies have begun experimenting with ways to manufacture textile to make the process safer for workers and more environmentally sustainable; others are exploring possible innovative textiles. Many of these processes and innovations are not currently scalable support for traditional companies and are still considered cost-prohibitive. Environmentally and socially responsible clothing should not be only available to a select few who have the luxury of being able pay a premium for clothing, which is why it's key for consumers to demand traditional companies to explore alternative options as well.

When shopping for new clothes, consumers should shop with green businesses when possible and overall try to limit the amount of new clothing being purchased. Look for companies that hold certifications like GOTS, bluesign, and Oeko-Tek. Many Green America Green Business Network members hold these certifications.

**Consumers should also demand greater transparency throughout the supply chain and hold companies accountable** to their commitments. This includes knowing where our clothes are being made or resources are being harvested, in what conditions, and knowing how workers are being treated. It also means gaining a better understanding of what is actually going into our clothes, and how these inputs – chemical and otherwise - affect



workers, consumers, and the environment. Consumers can call 1-800 numbers, send e-mails, and reach out on social media to ask about these topics. If you decide to stop shopping with a company, let them know why – and what issues they should change on in order for you to start shopping with the magain.

**Finally, consumers should demand additional and improved chemical policy management and water management policies.** The chemical inputs in the manufacturing process can linger in the clothes, so it not only affects workers, their communities, and the environment, it also affects consumers. Water effluent plants, which help mitigate the discharge of toxins into water sources, already exist – however, many factory owners have little incentive to use them. The fashion industry’s talk of transitioning to a circular economy can only be achieved if, amongst other processes, hazardous chemicals are phased out of the textile and apparel supply chains.

The apparel industry faces significant challenges that will require increased transparency and industry-wide collaboration to overcome. Currently, some companies are voluntarily implementing programs to address certain issues within their supply chains, but in order to enact systemic change, action cannot be limited to certain actors. The entire system needs a drastic overhaul, which will require industry buy-in. This change won’t happen overnight, or even in a couple of short years. But in the meantime, as we advocate for these changes, we can still strive to make improvements within the current structure.

## SCORECARD APPENDIX

Company by Company Review of Policy and Actions on Chemical Management, Factory Safety, Water Management, and Recycling

Green America examined the environmental and social sustainability policies of major American apparel companies, focusing on companies who sell their own branded clothing. The companies are a mix of traditional and fast fashion retailers. We looked at publicly available information, such as codes of conducts, corporate social responsibility webpages and sustainability reports, if available. We also sent companies on the scorecard a survey with a list of questions to supplement this information. To keep the scorecard from becoming too cumbersome, we looked specifically at how their policies affect workers and environments in their supply chains – so while policies about greenhouse gas emissions, retail stores/corporate offices, and other operational aspects are important for companies to consider, they are not a part of this particular scorecard.

It’s important to note that even if a company has some policies in place to address sustainability within its current supply chain, it does not negate the sheer volume of resources used and lost annually to manufacture new clothes. Furthermore, there is still, unfortunately, no way for us to shop our way to sustainability.

*A (+) indicates that the company has a detailed policy described and shares its benchmarks/progress. A (/) indicates that the company states that it has a policy, but there are no details about how it measures progress and/or what its goals are. The scorecard examines if a company has a policy, and does not necessarily translate to an endorsement of that particular policy.*



## Scorecard of Environmental & Social Practices of Major US Apparel Companies

COMPANY	ALT. RESOURCES	CHEMICAL MGMT	FACTORY LIST	FACTORY SAFETY	WATER MGMT	WASTE & RECYCLING
Target	+	+	+	/	+	/
VF (The North Face)	+	+	+	/	+	/
Nike	/	+	+	/	/	+
Gap (Old Navy, Banana Republic)	+	+	+	/	/	/
Ascena Retail (Ann Taylor)	/	•	+	/	/	/
Ralph Lauren	+	/		/	/	/
Walmart	+	/		/	/	
Abercrombie & Fitch	/	/	+	/	/	
American Eagle	/	/		/	/	
The Children's Place	/	•				
URBN (Urban Outfitters, Anthropologie, Free People)		•				
Carter's (Osh Kosh B'Gosh)	/					
J. Crew (Madewell)	/					
Forever 21						

• Notes that the company has a Restricted Substances List, which focuses more on consumer safety, but does not have a Manufacturing Restricted Substances List, which applies to how the product is made.

**Chemical Management: (+)** means that the company has both a public manufacturing restricted substances list (MRSL), which restricts/bans chemicals in the manufacturing process and a public restricted substances list (RSL), which restricts/bans chemicals in the final consumer products; and/or are members of industry initiatives that address both of these issues such as ZDHC (MRSL) and AFIRM (RSL) or American Apparel and Footwear Association (RSL); (•) means that the company has a public restricted substances list (RSL) and/or are a member of an industry organization/initiative works on providing companies with an RSL; however, as an RSL does not address chemicals in manufacturing, the policy is not as complete as companies receiving an (+); (/) means the company publicly says it has a chemical management policy but does not go into detail about what it entails; blank means the company does not have a public policy.

**Factory Transparency: (+)** means the company has published a list of factories that it sources from; blank means the company does not disclose what factories it sources from.



**Factory Safety: (+)** means the company is transparent about its efforts to improve factory safety throughout the supply chain; **(/)** means the company has safety standards for some portion of the factories in its supply chain and/or is a member of organizations/initiatives that are working to improve safety standards, such as the Bangladesh Accord, Better Work, or Fair Labor Association (Note: As of 2018, the Bangladesh Alliance is no longer active), and shares the scope and results of its efforts; blank means the company does not have any public policies about how it is improving/managing factory safety beyond providing a standard code of conduct..

**Water Management: (+)** means the company is measuring water usage and has a goal, plan, and metrics to manage water and reduce water usage in its supply chain, and/or has a wastewater management policy with goals and metrics; **(/)** means the company says that it has a water management policy but does not provide specific details, goals, or timelines to achieve goals; blank means that the company does not mention any policies or standards about mitigating water usage in its supply chain.

**Alternative Resources: (+)** means the company has goals, metrics, timelines on using more sustainable alternatives throughout all its products and brands; **(/)** means the company says it is looking into incorporating more sustainable alternatives generally but does not provide specifics, goals, or timelines, and/or has a specific line of clothes that incorporates more sustainable alternatives but no plans/goals to expand to the rest of its offerings; blank means that the company does not talk about sourcing more sustainable alternatives.

**Waste & Recycling: (+)** means the company is measuring waste impacts in its supply chain and has concrete plans/goals in place to reduce waste/reuse resources in supply chain, such as using closed-loop processes when possible; **(/)** means the company mentions it has goals of reducing waste in its supply chain, utilizes closed-loop/recycling methods for certain lines of clothing/in certain aspects of the supply chain, and/or says it is investing/looking into recycling innovations; blank means that company does not have waste/recycling policies in its supply chain and/or the extent of its waste reduction/recycling initiatives is an in-store recycling program.



## ABERCROMBIE & FITCH (HOLLISTER)

Alternative Resources: /

Chemical Management: /

Factory Transparency: +

Factory Safety: /

Water Management: /

Waste & Recycling:

*\*Abercrombie and Fitch (A&F) provides content on its website regarding its sustainability efforts, but it does not publish an annual CSR report. Information on the website ranges from 2015 – 2017.*

**Waste reduction/recycling:** Information on the website ranges from 2015 – 2017. Environment & Chemicals: A&F mentions that it is “striving to contribute to the ongoing industry-wide goal of zero discharge of hazardous chemicals” but does not share any tangible goals, metrics, or plans on how it will achieve this goal. Its waste programs are focused on stores and corporate offices, and do not touch on waste throughout the supply chain. For its water policy, A&F states that its women’s jeans use 40-56% less water in the manufacturing process, and that one of its suppliers increased use of recycled water by 50%. It does not have concrete goals for water management. A&F has one line of jeans containing 24% recycled polyester, but does not have concrete goals of integrating more alternative materials into its clothing.

**Labor:** On the labor front, Abercrombie & Fitch signed the Bangladesh Accord and is a Better Works partner in four manufacturing countries. Better Work is a factory safety initiative started by the United Nation’s International Labour Organization and the International Finance Corporation (IFC). Its most recent audit information is from 2016. The breakdown of problems found at factories is from 2015 and addresses 17 countries; according to the website, A&F manufactures in 20 countries. A&F lists its Tier 1 factories.



## AMERICAN EAGLE

Alternative Resources: /

Chemical Management: /

Factory Transparency:

Factory Safety: /

Water Management: /

Waste & Recycling:

*\*American Eagle's most recent CSR report covers its efforts from 2014-2016.*

**Environment & Chemicals:** American Eagle joined the Sustainable Apparel Coalition, an industry initiative that is working to standardize environmental assessments of supply chains. There are broad descriptions about the policy, and no concrete goals about implementation across the supply chain. American Eagle also has plans to roll out “more sustainable washing”. For recycling/reducing waste, American Eagle partners with I:CO to collect old denim and downcycles them into insulation for homes, which are built in partnership with the Make It Right Foundation. Finally, American Eagle has started to source Better Cotton Initiative cotton, with a goal of “increasing the total Better Cotton volume” it sources, and is exploring using recycled plastic in its denim. There are no specific goals/timelines of incorporating alternative materials into its clothing in general. American Eagle has broadly stated that it is “increasing [its] focus on chemical and wastewater management to help factories improve their environmental performance” but does not have a more comprehensive chemical management policy. American Eagle launched a Wastewater Management Standard in 2013. 35 factories and laundries in five countries have been trained in this standard.

**Labor:** On its website, American Eagle states that it has 300+ factories in 20+ countries, and employs 25,000+ workers. While American Eagle shares a map of countries it sources from, it does not list the specific factories. American Eagle is a signatory to the Bangladesh Accord. American Eagle is also a Better Work partner, with programs in 52 factories in 5 countries. Better Work is a factory safety initiative started by the United Nation’s International Labour Organization and the International Finance Corporation (IFC). American Eagle publishes a breakdown of the factory audit process and how factories were rated, but does not go into detail about what constitutes the different ratings.



## ASCENA RETAIL (ANN TAYLOR, LOFT, MAURICE'S, DRESSBARN, JUSTICE)

Alternative Resources: /

Chemical Management: •

Factory Transparency: +

Factory Safety: /

Water Management: /

Waste & Recycling: /

*\*Ann Taylor & Loft's parent company, Ascena Retail Group, publishes a CSR report most recently in FY 2018. Ascena also own several other brands including Loft, Dress Barn, Lou & Grey, Maurices, Lane Bryant, Catherines, and Justice.*

**Environment & Chemicals:** Ascena states its goal is to “commit to setting environmental impact reduction goals in our supply chain,” which they hope to achieve by 2020. Overall, its environmental goals are ambitious but are not accompanied by concrete plans or metrics. It is looking into extending “product life cycle through recycling, upcycling, and partnerships.” For sustainable alternative materials, some brands have started to incorporate textiles made from recycled plastic or Better Cotton Initiative sourced cotton, but do not have firm goals of expanding their use throughout the different brands. Ascena has a partnership with AFIRM, which provides its suppliers with a Restricted Substances List (RSL). Ascena launched wastewater minimum compliance program, but does not go into specific plans, timelines, or goals. It is a member of the Sustainable Apparel Coalition and uses the Higg Facility Environmental Module.

**Labor:** Ascena details the different components that it audits for as part of its updated Code of Conduct for Merchandise Suppliers Program but does not have specific metrics or goals about improving factory conditions and does not share audit findings. Ascena publishes a list of its Tier 1 factories, which are the factories that sew and assemble clothes. Ascena is a brand partner with Better Work, although it does not share what steps, if any, it is taking to improve factory conditions in factories it sources from that are not a part of the Better Work program.



## CARTER'S

Alternative Resources: /  
Chemical Management:  
Factory Transparency:  
Factory Safety:  
Water Management:  
Waste & Recycling:

*\*Carter's has a Social Responsibility page but does not publish a CSR report.*

**Environment & Chemicals:** Carter's has a line of GOTS certified organic baby clothes, but no additional plans or goals of incorporating other alternative textiles into its clothing line.

**Labor:** The company's Social Responsibility Page notes that Carters has policies on issues such as child labor, freedom of association, environment, and health and safety, but does not detail what the policies are. Carter's notes that it works with other brands on supplier policies, once again not going into details about what the policies are, how effective they are or how widespread they are in the supply chain. Carter's is a member of the Alliance for Bangladesh Worker Safety, the industry-led initiative to improve factory safety in Bangladesh; the program ended in 2018.

## FOREVER 21

Alternative Resources:  
Chemical Management:  
Factory Transparency:  
Factory Safety:  
Water Management:  
Waste & Recycling:

*\*Forever 21 provides a web page listing its social responsibility efforts but does not have a sustainability report.*

**Environment & Chemicals:** Forever 21's focus is primarily on recycling and reducing energy and incorporating renewable energy at stores, distribution centers, and its corporate office. It does not have a chemical management plan, water management plan, nor plans to source alternative materials. Certain Forever 21 stores partner with I:CO to collect unwanted clothes. Clothes are then sorted and either resold or downcycled into insulation, carpet padding, or other purposes.

**Labor:** Forever 21 lists a Supplier and Vender Social Compliance policy, but does not go into specific details about how these policies are enforced. Forever 21 does not engage in partnerships with organizations or initiatives to improve factory safety standards, and does not list supplier factories.



## GAP INC (ATHLETA, BANANA REPUBLIC, GAP, OLD NAVY)

Alternative Resources: +  
Chemical Management: +  
Factory Transparency: +  
Factory Safety: /  
Water Management: /  
Waste & Recycling: /

*\*Gap publishes an annual CSR report. Its most recent report is from FY 2017.*

**Environment & Chemicals:** Gap is a member of Zero Discharge of Hazardous Chemicals (ZDHC) and uses ZDHC's Manufacturing Restricted Substances List (MRSL) as part of its chemical management program. Gap also has a published Restricted Substances List (RSL). For water management, Gap uses ZDHC's wastewater guidelines as part of its Water Quality Program and Mill Sustainability Program. Gap also has a goal of saving 10 billion liters of water in manufacturing by 2020, and Athleta specific goals for having 25% of Athleta products made using water saving techniques; however, it once again does not have similar goals for the other Gap brand. Gap has a goal of having 100% more sustainably sourced cotton in its supply chain by 2021, and a goal of having 80% of Athleta's supply chain made with sustainable fibers by 2020; however, it does not have similar goals for its other brands. Gap is a member of the Sustainable Apparel Coalition.

**Labor:** Gap was a member of the Bangladesh Alliance, the industry led factory safety initiative that ceased operations in 2018. Gap also works with Better Work, a factory safety initiative started by the United Nation's International Labour Organization and the International Finance Corporation (IFC). Gap uses a color-coded system to rate the factories it sources from, although it doesn't go into further detail about how different color tiers are determined beyond high performing, average performing, and poor performing. Gap provides a list of factories it sources from.



## NIKE (JORDAN, HURLEY, AND CONVERSE)

Alternative Resources: /  
Chemical Management: +  
Factory Transparency: +  
Factory Safety: /  
Water Management: /  
Waste & Recycling: +

*\*Nike publishes an annual CSR report. The most recent report is from FY 2018.*

**Environment and Chemicals:** Nike publishes a Chemistry Playbook which includes a Restricted Substances List (RSL), as well as a Manufacturing Restricted Substances List (MRSL) and Wastewater Guidelines via their partnership with Zero Discharge of Hazardous Chemicals (ZDHC). Nike has goals of having 100% more sustainable cotton in its supply chain by 2020; its other goals related to sourcing more sustainable alternatives do not have specific goals or timelines. On waste, Nike has published information about measuring the impact of manufacture waste from shoes and what steps it is taking to achieve its goal of reducing its waste index by 10%. Nike has a goal of reducing freshwater use in textile dyeing/finishing by 20% by 2020. Nike is a member of the Sustainable Apparel Coalition.

**Labor:** Nike provides a map of factories that it sources from. Nike uses a Sustainable Manufacturing and Sourcing Index to rate its factories. Nike works with the Fair Labor Association and Better Work to help audit its factories, although in 2017 Nike audited 390, FLA audited 1, and Better Work audited 15. Nike has a goal of sourcing 100% from factories rated Bronze or better based on its Sustainable Manufacturing and Sourcing Index, although Nike does not delve into specifics about how compliant a factory must be to receive that rating.



## J.CREW (MADEWELL)

Alternative Resources: /

Chemical Management:

Factory Transparency:

Factory Safety:

Water Management:

Waste & Recycling:

*\*J.Crew has social responsibility webpages but does not publish a CSR report. Madewell, its subsidiary, has its own social responsibility pages as well.*

**Environment & Chemicals:** J.Crew references a Responsible Sourcing policy that ensures its practices are environmentally sound, but does not detail what that entails. J.Crew does not have specific chemical management, water management, or waste reduction policies. Its subsidiary brand Madewell has a line of “eco denim” and a line of Fair Trade jeans, each of which incorporates sustainability components; however, it does not have any plans to expand these standards to the rest of its clothing, nor share any plans of incorporating additional sustainable alternative materials. J.Crew is a member of the Sustainable Apparel coalition.

**Labor:** J.Crew has a Vendor Code of Conduct that it expects its vendors to follow and shares how it checks for compliance. J.Crew is also a member of Fair Factories Clearinghouse. J.Crew does not share specific metrics or goals about improving factory conditions, share inspection findings, share the scope of how its membership in Fair Factories Clearinghouse is improving standards, nor has a list of supplier factories. Through Madewell’s one-off specialty lines of denim, some of its clothes have stronger labor standards attached, but it does not state plans or goals to expand this level of standards to the rest of its clothing.



## RALPH LAUREN

Alternative Resources: +

Chemical Management: /

Factory Transparency:

Factory Safety: /

Water Management: /

Waste & Recycling: /

*\*Ralph Lauren publishes a CSR report. As of publication, the most recent report is from FY 2019.*

**Environment and Chemicals:** Many of Ralph Lauren's environmental policies are focused on its facilities, such as offices and stores. Ralph Lauren broke down the different materials it sources and has plans to source 100% sustainable alternatives for each material by 2025.

For responsible sourcing, Ralph Lauren says it will eliminate the use of hazardous chemicals in its supply chain by 2025, and will adopt a manufacturing restricted substances list by 2020. Ralph Lauren also announced that it is working with NGOs and multi-stakeholder groups to develop a plan that will allow it to reduce water consumption by 20% throughout its supply chain.

**Labor:** On labor, Ralph Lauren details the different components that it audits as part of its Vendor Approval Process and Social Compliance Program. While it does have a cursory breakdown of audit results and top challenges to address, it does not have specific metrics or goals about improving factory conditions or have a list of supplier factories. Ralph Lauren partners with Better Work when manufacturing factories operate in a Better Work country, but there is no additional information about what, if any, additional steps the company takes for factories that operate in other countries.



## TARGET

Alternative Resources: +  
Chemical Management: +  
Factory Transparency: +  
Factory Safety: /  
Water Management: +  
Waste & Recycling: /

*\*Target publishes an annual CSR report most recently published in 2018.*

**Environment and Chemicals:** Target is a member of Zero Discharge of Hazardous Chemicals (ZDHC), an organization that works with members to discharge zero hazardous chemicals in textile manufacturing, and uses ZDHC's Manufacturing Restricted Substances List (MRSL) as part of its chemical management program. Target also has a Restricted Substances List (RSL) that it uses. An MRSL restricts/limits chemicals that can be used in the manufacturing process, while an RSL restricts/limits chemicals that can be found in the finished consumer product. Target also uses ZDHC's wastewater guidelines and NRDC's Clean by Design program to help it reach its goals of reducing annual water consumption by over 500 million gallons by 2025.

Target has goals to incorporate more alternative materials into its clothes; although it has a goal of sourcing 100% sustainable cotton by 2022, it does not have a targeted goal for replacing all conventional polyester in its apparel with recycled polyester. In addition to beginning to incorporate recycled materials into its clothing lines, Target has also committed to invest in textile recycling innovation. Target also has a goal for all clothes to be designed "for functional durability to last the life cycle of the product" by 2020, which sounds great in principle, but there isn't an indication of what the life cycle of a product is or how the goal will be achieved in practice. Target is a member of the Sustainable Apparel Coalition.

**Labor:** Target has a Standards of Vendor Engagement and shares its process for ensuring social compliance; however, Target does not share audit findings nor goals about improving factory conditions. Target publishes a list of its supplier factories. Target was a member of the Bangladesh Alliance, the industry-led factory safety initiative that ceased operations in 2018. Target has partnerships with a variety of organizations to address different labor issues in its supply chain, such as Verite, Responsible Business Alliance, and Laborlink although it doesn't provide additional information about the scope of the challenges they are addressing, specific timelines/goals to achieve, or results of these collaborations.



## THE CHILDREN'S PLACE

Alternative Resources: /

Chemical Management: •

Factory Transparency:

Factory Safety: /

Water Management:

Waste & Recycling:

*\*The Children's Place has a webpage dedicated to its responsible sourcing initiatives but does not have a CSR report.*

**Environment and Chemicals:** In lieu of having actual policies about environmental sustainability and chemical management in its supply chain, The Children's Place lists the different industry initiatives/ organizations it is a member of, such as the Sustainable Apparel Coalition; The AFIRM Group, which provides members with an RSL; and the Better Cotton Initiative, which helps companies source cotton that is more sustainable. The Children's Place does not have specific policies, goals, or metrics when it comes to its supply chain.

**Labor:** The Children's Place works with Better Work, Social & Labor Convergence, and Nest, and has a public Vendor Code of Conduct. The Children's Place does not have specific metrics or goals about improving factory conditions, does not share audit findings, or provide a list of supplier factories, nor the scope of its partnerships and the impact they have made.



## VF CORPORATION (THE NORTH FACE, JANSPORT, TIMBERLANDS, VANS)

Alternative Resources: +  
Chemical Management: +  
Factory Transparency: +  
Factory Safety: /  
Water Management: +  
Waste & Recycling: /

*\*VF, the parent company of The North Face, has a corporate responsibility report that covers all of its brands, the most recent of which addresses efforts in 2016. The North Face also has webpages dedicated to its sustainability/social responsibility efforts.*

**Environment and Chemicals:** The North Face has a Restricted Substances List (RSL). The North Face has goals of sourcing more sustainable materials into its supply chain, with dates for different material goals. VF has a RSL, which restricts/bans chemicals in the final consumer product, as well as a program called CHEM-IQ<sup>SM</sup> that identifies and eliminates chemicals of concern in the manufacturing process. VF states that through the Chem-IQ program they have eliminated hundreds of chemicals in its supply chain, and the company has also made the program available to other retailers VF talks about the various impacts water usage has throughout its supply chain and lists policies to address some of the concerns; however, some policies have more concrete goals than others. Many of VF's waste reduction efforts are focused on distribution centers, offices, and stores; however, they have ambitious goals to increase circular design, although no specific goals, metrics, or timelines to achieve them. VF is a member of the Sustainable Apparel coalition.

**Labor:** The North Face was a member of the Bangladesh Alliance, which ceased operations in 2018. It has an interactive map of its supplier factories. VF shares the global auditing process it uses on its factories, although it does not share a breakdown of results. VF has partnerships with a variety of organizations to address different labor issues in its supply change although it doesn't provide additional information about the scope of the challenges they are addressing, specific timelines/goals to achieve, or results of these collaborations



## URBN (ANTHROPOLOGIE, FREE PEOPLE, URBAN OUTFITTERS)

Alternative Resources:

Chemical Management: •

Factory Transparency:

Factory Safety:

Water Management:

Waste & Recycling:

*\*URBN, the parent company of Anthropologie, Free People, and Urban Outfitters, has a webpage dedicated to its sustainability efforts but does not publish a CSR report.*

**Environment and Chemicals:** Urban Outfitter's environmental initiatives are focused on its corporate office and store policies, and do not address any of the challenges in its supply chain. URBN does provide the American Apparel and Footwear Association RSL to its vendors.

**Labor:** URBN has a code of conduct and conduct audits of some facilities, and those can be unannounced. URBN does not share specific goals/plans related to improving factory safety for workers, breakdown of audits, or a list of its supplier factories.



## WAL-MART

Alternative Resources: +

Chemical Management: /

Factory Transparency:

Factory Safety: /

Water Management: /

Waste & Recycling:

*\*Walmart has a Corporate Social Responsibility report that addresses Walmart's efforts broadly, such as a company goal of "reducing waste from non-food items and packaging."*

**Environment and Chemicals:** Through Walmart's Sustainability Hub, Walmart provides more information about its sustainable textile efforts for its apparel supply chain. Walmart has a goal of sourcing 100% "more sustainable cotton" and 50% recycled polyester for its Walmart branded clothing. American Walmart stores will "endeavor to source" textiles/apparel from textile mills that use the Sustainable Apparel Coalition's Higg Index to measure performance by 2022, but the company does not have firm goals/metrics attached to them – but there is no additional specifics. Walmart has a goal of reducing "discharge of priority chemicals" from the manufacturing process by 2025, although it does not have more specific detail on goals or metrics.

Walmart does not have specific policies addressing water management, although it does incorporate the Sustainable Apparel Coalition's Higg Index Facility Environmental Module in its assessment of mills, which are one of the most water intensive parts of the process. However, it is not clear what the Higg Index Facility Environmental Module measures.

**Labor:** On the labor front, one of Walmart's companywide focuses was its efforts with the Bangladesh Alliance, the industry led factory safety initiative that phased out its efforts in 2018. The company provides a Standard for Suppliers that covers some, but not all, of the core areas of potential worker abuses, and a program to remediate and if necessary, eliminate suppliers that don't comply. They conduct audits based on their own evaluation of risk based on the country and how new the supplier is to Walmart's supply chain, so they do not audit all facilities. They use their party auditors and rate facilities based on compliance. On the Sustainability Hub, Walmart notes that it is committed to making the global supply chain more responsible, but does not have apparel specific goals/policies on its Responsible Sourcing page.



## ENDNOTES

- 1** Bain, M. Americans have stopped trying to stuff more clothes into their closets, Quartz, February 26, 2018, <https://qz.com/1212305/americans-have-stopped-trying-to-stuff-more-clothes-into-their-closets/>
- 2** Ellen MacArthur Foundation, A new textiles economy: Redesigning fashion's future, (2017, <http://www.ellenmacarthurfoundation.org/publications>)
- 3** Environmental Protection Agency, Textiles: Material-Specific Data, <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/textiles-material-specific-data>
- 4** United Nations Climate Change, UN Helps Fashion Industry Shift to Low Carbon, September 6, 2018 <https://unfccc.int/news/un-helps-fashion-industry-shift-to-low-carbon>
- 5** Natural Resources Defense Council, Polyester is a Synthetic, Non-Renewable Fiber, With Some Surprising Redeemable Qualities, [https://www.nrdc.org/sites/default/files/CBD\\_FiberFacts\\_Polyester.pdf](https://www.nrdc.org/sites/default/files/CBD_FiberFacts_Polyester.pdf)
- 6** Anguelov, N., (2015). The Dirty Side of the Garment Industry: Fast Fashion and Its Negative Impact on Environment and Society
- 7** Ravasio P., How can we stop water from becoming a fashion victim?, The Guardian, March 7, 2012 <https://www.theguardian.com/sustainable-business/water-scarcity-fashion-industry>
- 8** Chequer, Farah Maria Drumond, et al. "Textile Dyes: Dyeing Process and Environmental Impact." Eco-Friendly Textile Dyeing and Finishing, 2013
- 9** RiverBlue, directed by David McIlvride and Roger Williams, 2016, <http://riverbluethemovie.eco>
- 10** Ellen MacArthur Foundation, A new textiles economy: Redesigning fashion's future, (2017, <http://www.ellenmacarthurfoundation.org/publications>), p. 20
- 11** Ellen MacArthur Foundation, A new textiles economy: Redesigning fashion's future, (2017, <http://www.ellenmacarthurfoundation.org/publications>), p. 38
- 12** World Wildlife Fund, The Impact of a Cotton T-Shirt, January 16, 2013 <https://www.worldwildlife.org/stories/the-impact-of-a-cotton-t-shirt>
- 13** Anguelov, N., (2015). The Dirty Side of the Garment Industry: Fast Fashion and Its Negative Impact on Environment and Society
- 14** Hoskins T., H&M, Zara and Marks & Spencer linked to polluting viscose factories in Asia, The Guardian, June 13, 2017, <https://www.theguardian.com/sustainable-business/2017/jun/13/hm-zara-marks-spencer-linked-polluting-viscose-factories-asia-fashion>
- 15** Ellen MacArthur Foundation, A new textiles economy: Redesigning fashion's future, (2017, <http://www.ellenmacarthurfoundation.org/publications>), p. 119
- 16** Bain M., 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/>
- 17** Resnick, B., More than ever, our clothes are made of plastic. Just washing them can pollute the oceans, Vox, Jan 11 2019, <https://www.vox.com/the-goods/2018/9/19/17800654/clothes-plastic-pollution-polyester-washing-machine>
- 18** Kent, S., 6 Years After Rana Plaza, Worker Safety Is Under Threat in Bangladesh Again, Business of Fashion, February 18 2019
- 19** See Better Work: [www.betterwork.org](http://www.betterwork.org)



- 20** Angelov, N., (2015). The Dirty Side of the Garment Industry: Fast Fashion and Its Negative Impact on Environment and Society
- 21** See Clean Cotton Campaign: [www.cottoncampaign.org](http://www.cottoncampaign.org)
- 22** Kent, S., 6 Years After Rana Plaza, Worker Safety Is Under Threat in Bangladesh Again, Business of Fashion, February 18, 2019
- 23** Bergman B., Labor Department investigation finds 85 percent of LA garment factories break wage rules, SCPR.org, November 17, 2016, <https://www.scpr.org/news/2016/11/17/66200/labor-department-investigation-finds-85-percent-of/>
- 24** Farrant, Laura & Olsen, Stig & Wangel, Arne. (2010). Environmental benefits from reusing clothes. The International Journal of Life Cycle Assessment.
- 25** Amed, I. et al, The State of Fashion 2019: A year of awakening, McKinsey and Business of Fashion, November 2018, p. 40