



RESPONSIBILITY UPDATE 2017





EDITORIAL

Mike McCollam
Divisional Leader
Gore Fabrics

TAKING THE LONG VIEW

Whenever I get the chance in the spring or autumn, I love to spend a Saturday on the River Tay in Scotland, up to my chest in the cool water, casting a fly for salmon. Surrounded by trees and the serenity of the river, often with my 17-year-old son, time slows down and I can truly appreciate the beauty of the world around me. And if I'm lucky, I spend a few moments observing that silvery jewel of nature, a freshly run salmon, before releasing it to continue its journey upstream.

Days like those set me thinking about how we can achieve our goals: to keep this beauty protected while also living in the world of the outdoor industry. The patience and dedication required to achieve real, lasting change is very much like that necessary to catch the elusive Atlantic salmon: you put in many hours in difficult conditions with no reward -- but eventually, the dedication and focus pay off.

As we've ramped up our focus on sustainability at Gore Fabrics over the years, I've felt an increasing responsibility to carry forward our legacy of sustainable innovation. We share the expectation with our customers, buyers, and end-consumers for the best combination of high performing products with a low environmental footprint. We are striving to deliver these products every year, while also being patient with the complex processes that go into making new materials, new fabrics, and new products that serve our customers' needs and avoid undue burden for the environment.

I find inspiration in the interaction between Gore Fabrics' deliberate dedication to following the science and avoiding unnecessary burdens for the planet, and our faster-paced relationships with external stakeholders, on sustainability issues ranging from natural resource depletion, to social compliance, workers' rights, and community engagement.

With this Responsibility Update, we want to enhance transparency for those interested in our sustainability efforts of the last 12 months, from customers to civil society. We're taking a slightly different tack than in the past by offering a closer look at our sustainability program and internal processes. We remain committed to our ambitious goals around sustainability, but also feel we benefit greatly from approaching these issues as a dialogue with our stakeholders. The input we receive — from our customers, our suppliers, and even from outside environmental and social compliance groups — has helped us evolve our thinking, and adjust our behavior accordingly.

"The patience and dedication required to achieve real, lasting change is very much like that necessary to catch the elusive Atlantic salmon."

Since Gore's inception nearly 60 years ago, we've known that without some degree of risk and experimentation, our products would never leave the lab. We have learned in more recent years that this approach to risk should extend beyond our company walls and embrace the value of sharing: If we don't openly share our ideas and work with others, the world might move away from us.

We expect all our stakeholders to continue to hold us to our own exceptional standards. We're excited to learn from you, and to build on our tradition of continuous improvement to deliver reliable, best-in-class products that enable meaningful experiences in your active lives.

GORE FABRICS SUSTAINABILITY GOALS 2020

- ◆ **Bluesign®** approval for 85% of consumer garments laminate volume
-

- ◆ **OEKO-TEX®** certification for 100% of consumer garments products
-

- ◆ **Elimination of PFCs of Environmental Concern** from the lifecycle of consumer laminate shipments that correspond to 85% of finished products (jackets, shoes, gloves, accessories) by 2020; complete elimination by 2023
-



Bernhard Kiehl
Leader of the Gore Fabrics' Sustainability Program

Sustainability = Innovation + Cooperation

“Sound science must be the foundation of an effective sustainability program.”

“We want our stakeholders to understand what we do and where we are heading in terms of our environmental goals. Our future depends on sustainable innovation, but it also requires cooperation with our customers, our suppliers, the final users of our products and the communities where we work.”

◇ THE SCIENCE OF SUSTAINABILITY



Addressing PFCs of Environmental Concern — An Inside Look

Jon Hammerschmidt is having a good day. The team in the labs at Gore Fabrics has just confirmed that a new material they are developing is on track, and they are ready to take the next step. Before being used in a jacket, glove, or shoe, the prototype will undergo rigorous lab and field testing to make sure it protects the consumer without undue burden for the environment.

In order to ensure that everything they make meets Gore's high standards for durable performance, consumer safety, and a low environmental impact, Hammerschmidt and his colleagues work in what can be described as a fabric inventor's playground. In one lab that tests water-repellant coatings, the research and development team makes it rain: An artificial rainstorm generator creates environments that mimic real-world conditions, allow-

ing researchers to test a material's response with accurate raindrop size, distribution, and pressure. They can even control how much rain falls from the "sky."

In another facility, the focus is on human comfort: Researchers there can test how well the products protect individuals in virtually every environment on the planet – from the extreme cold of high alpine environments to the searing, dry heat of the desert, and even damp, windy coastal conditions. And in a third lab, the researchers use special tools to poke, prod, or otherwise try to make a fabric fail, to understand durability.

Science, Tools, Technology, Talent: The Core of Sustainability

The extensive research, sophisticated laboratory tools, and expert analysis are all a standard part of the approach applied to every product made by Gore Fabrics, ensuring that all its materials are "fit for use" and striving for the optimal combination of high technical performance and low environmental footprint. Indeed, every product made by Gore starts and ends with world-class materials science, using the best-available tools, technology, and talent to design innovative solutions for Gore's high-performance fabrics and apparel.

Gore Fabrics' deep commitment to research and development is the cornerstone of its efforts in product innovation and sustainability. "The challenge for every fabric manufacturer and designer is choosing the right chemistry and material for the intended end-use to give you the desired output – color, water repellency, comfort, durability – with the least possible environmental burden," says Bernhard Kiehl, the sustainability leader at Gore

Fabrics. "For us, it's a continuous process. We're always looking to improve our products across many dimensions relevant to the end-user."

Indeed, Gore was founded on a commitment to sound science. Bill Gore sought to establish the company as the leading expert in the manipulation and application of PTFE, a unique fluoropolymer that continues to be the basis of most of Gore's products. This expertise has positioned Gore as an innovation leader in the performance fabrics industry.

Today, Gore has applied this same commitment to sound science in its sustainability efforts, resulting in certifications from credible third parties such as bluesign® systems and OEKO-TEX® (see sidebar). Gore was also a founding member of the Sustainable Apparel Coalition, which works to expand sustainability across the entire apparel supply chain.

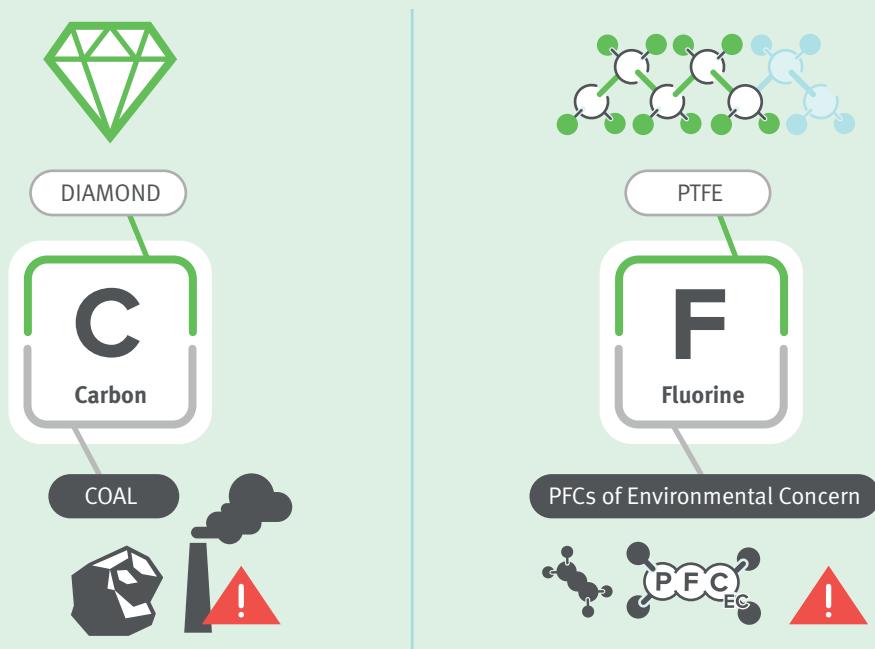
It's All About the Chemistry

Right now, a major focus for Hammerschmidt and his team is on the science surrounding a large group of chemicals, commonly referred to as per- and poly-fluorinated chemicals (PFCs). Gore has targeted a particular subset of PFCs, now defined as PFCs of Environmental Concern (PFCec) for elimination from the life cycle of its consumer apparel products. As it has always done, Gore Fabrics is back in the lab, working diligently to develop solutions.

As Kiehl explains, PFCs are a vast and diverse group of chemicals: "Each PFC has a unique molecular structure; some are gases, some are solids." What they all have in common is that they are highly fluorinated, and leverage the strength of the car-

bon-fluorine bond. Certain PFCs possess properties that make them attractive for manufacturers that need their products to be durable and resistant or impervious to grease, water, or stains, such as cookware, clothing, furniture, and food packaging. But not all PFCs are alike, Kiehl says, so it is necessary to differentiate and define the ones that are of concern to the environment.

CHEMICAL CONTEXT MATTERS



Carbon vs. Fluorine

Although PFCs contain the natural element fluorine, their properties vary as much as their applications. In this way, fluorine is similar to carbon. You find carbon in coal, sugar, and diamonds. While coal dust might cause concern, diamonds are stable and valuable, and sugar is an important part of daily life. The same applies for fluorinated materials. The presence or absence of fluorine does not make the product good or bad for the environment.

While some PFCs have the potential to be widespread in the environment if not properly controlled, a different group of fluoropolymers are stable, valuable, and do not cause the same environmental concerns. This is the case for the expanded PTFE in Gore Fabrics products.

The Road Traveled: Discovery & Innovation

The team at Gore Fabrics brought their deep scientific material knowledge when it entered into a dialogue with Greenpeace, one of the world's largest environmental advocacy organizations, in 2016. As a result of their science-based discussion, Gore and Greenpeace reached a mutual agreement on the properties that defined a PFC of Environmental Concern. Based on this understanding, Gore Fabrics established the goal of eliminating PFCs of Environmental Concern from the life cycle of its consumer fabrics products in two steps (see timeline infographic). The Gore Fabrics research and development team is now at full speed on this ambitious — but achievable — timeline to complete the task.

"As people say, 'you can't schedule inventions,'" Hammerschmidt says. "It requires a culture for success, new approaches, and many iterations to match the new sustainability requirements." But he underscores Gore's confidence in its ability to meet the timeline. "There is no more capable team to pull it off than Gore Fabrics," he says.

As Hammerschmidt explains, inventing new polymer materials starts with analyzing the raw materials that come from a number of different suppliers, and in some cases, working with the suppliers themselves to develop new polymers. After testing them for performance across the range of environmental, comfort, and durability functions, prior to any commercialization, each new

polymer must undergo verification that all applicable regulatory requirements will be met in each country where the materials will be manufactured, used, and sold.

Next, the research and development and manufacturing teams have to figure out how to scale up production. It's one thing to make a gram or kilogram of a new material for research, testing, and regulatory approval; it's an entirely different task to then design a process — including the manufacturing capability and expertise — to produce large amounts of raw material that will ultimately become many thousands of meters of fabric.

"As a climber, I truly believe sustainability is critical to preserve our natural heritage for future generations. I believe that outdoor industry can help achieve this goal by offering products with minimum environmental impact. It's not an option: It's an obligation. Gore Fabrics' PFC goals are a critical contribution, not just for Black Yak but for the entire outdoor industry."

Kang Taesun, Black Yak President & CEO





Targets On Track — and In Sight

The Gore Fabrics team is on target to reach its first milestone, which is to offer products with Durable Water Repellency (DWR) treatments that are free of PFCs of Environmental Concern, in the fall of 2018. These products are for general outdoor use such as day hiking, camping, and lift-served skiing. Hammerschmidt says that the fabric for these new products is now out of the lab and in the manufacturing stage.

In parallel to the DWR 2018 target work, the team continues working toward the next phase and the longer term goal of removing PFCs of Environmental Concern from all its consumer laminate shipments by 2023.

Meeting Gore Fabrics Goal of Eliminating PFCs of Environmental Concern over the full-life cycle of our consumer fabrics products also means understanding whether PFCs of Environmental Concern are generated at the end of product life, for example

“Gore Fabrics is one of Berghaus’ longest-term partners - it’s encouraging to see the company’s investment of over \$15 million to remove PFCs of Environmental Concern from the supply chain. We look forward to more innovation in performance and sustainability from Gore.”

Richard Leedham, Berghaus Brand President

during municipal incineration of consumer apparel containing our ePTFE membrane. Studies are publically available regarding the incineration of PTFE under conditions typical of municipal incineration conditions in the United States. “Based on those studies it is not expected PFCs of Environmental Concern are released during municipal incineration of our consumer fabrics products, but there are differences between municipal incineration conditions in the United States and in other part of the world,” says Hammerschmidt, “so we want to generate data during municipal incineration conditions typical of those in Europe and other countries too.” To gather these data, Gore has commissioned the Karlsruhe Institute for Technology in Germany, an institute with a distinct expertise in incineration, to design and carry out a study. The project is well underway and is expected to be published in 2018.

Gore Fabrics remains committed to continuously reducing the environmental footprint of its high-performance outerwear. “The PFC topic is a magnifying glass at the moment,” Kiehl says. “It’s a current focal point of our activities, but it doesn’t represent our entire program, which is driven by a broader, more holistic approach.”

“The PFC issue is truly an industry-wide topic, not just Gore Fabrics,” Hammerschmidt says. “And we are working with many stakeholders for new solutions. It’s exciting and fun, but it’s also a huge challenge — we will achieve the goal, but there’s substantial work ahead to get there.”

GREENPEACE & GORE FABRICS: How Open Dialogue Leads to Progress

Since 2011, Greenpeace's Detox Outdoor Campaign has been working with its members and the outdoor brand community to make "toxic-free fashion." The effort has focused on eliminating PFCs and other chemicals of environmental concern from the materials used by outdoor clothing manufacturers. "Our goal is to protect nature, and so we wanted to focus on companies that really supply things for people to enjoy nature," says Chiara Campione, one of the campaign leaders with Greenpeace Italy.

When the campaign kicked into high gear in 2015, Greenpeace realized that, as a key supplier to many outdoor brands and a company with extensive chemical expertise, Gore had significant leverage across the outdoor industry. Greenpeace had been in discussions with several outdoor brands, but "some of them were kind of scared of losing business from not using high-performing GORE-TEX® products," she says.

"Brands wouldn't commit to the Detox campaign if Gore Fabrics didn't move. So, while Gore itself was not the public target of our campaign," Campione says, "its customers put pressure on the company."

In that moment, Greenpeace and Gore Fabrics started discussions and knowledge sharing to push a solution-oriented dialogue. The early discussions kicked off what was to be an intensive, but ultimately fruitful, dialogue between Greenpeace and Gore Fabrics that would lead to a landmark agreement. "We wanted Gore to move," she says, "and fortunately, it seemed that they wanted to move as well."

By the fall of 2016, Greenpeace and Gore Fabrics brought together their scientific teams. "That's when we really started building the foundation for a proactive dialogue" Campione recalls.

Jon Hammerschmidt, a member of the Gore Fabrics technical team, recalls the face-to-face meetings with Greenpeace scientists: "It was ultimately scientists discussing a topic and trying to understand both sides of the story and what we could bring to bear." For many years before their meetings with Greenpeace, the Gore Fabrics team had been developing a deep understanding of the chemical composition of their materials, specifically with regards to PFCs of Environmental Concern.

The Gore and Greenpeace scientists exchanged huge volumes of reports, scientific updates, and data. "At the end of the day, if the Gore agreement was possible, it was because our science teams on both sides were able to be open and listen to each other" Campione says. "The science work and the open, but not always easy, communication between scientists has been the key."

A clear definition of PFCs of Environmental Concern was one of many achievements that stemmed from their agreement. The peer-to-peer exchange also resulted in a better understanding of the steps necessary for phasing them out of Gore Fabrics products. The result was Gore Fabrics' public goals, announced in February 2017, to eliminate PFCs of Environmental Concern from its general outdoor weatherproofing laminates by the end of 2020 and from its specialized weatherproofing consumer laminates by the end of 2023.

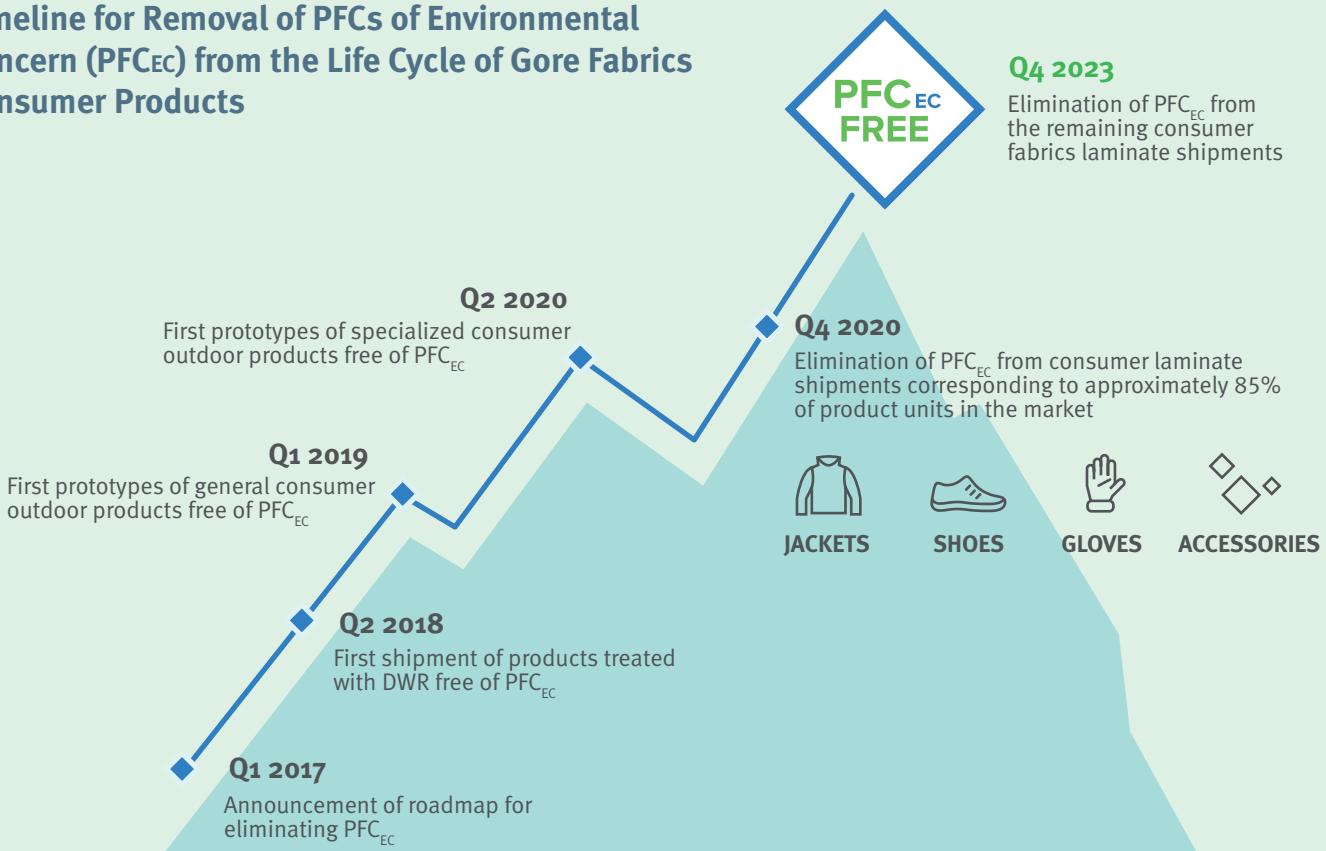


Chiara Campione
International Campaign Leader Greenpeace

"For our campaign, the Gore agreement is really a milestone for us for the PFC issue," Campione says. "The dialogue was always very sincere, which was especially important when building trust between an NGO and corporation. Ultimately, Gore put together a team, started a very long and, in some phases, exhausting process of discussion, but in the end, we made it."

A continuing challenge, Campione says, has been explaining to the Greenpeace base why Gore's participation was so important to the outdoor clothing industry. "Gore Fabrics is a leader in innovation and science, and due to its special role in the value chain, it really makes a difference if they decide to invest in something," she explains. "Gore Fabrics' agreement will definitely speed up the process of eliminating PFCs of Environmental Concern in the sector started by other smaller pioneers from the entire sector."

Timeline for Removal of PFCs of Environmental Concern (PFC_{EC}) from the Life Cycle of Gore Fabrics Consumer Products



Catalyzing Responsible Practices with bluesign® systems

Since its founding in Switzerland in 2000, bluesign® technologies AG has provided guidance and certification on chemicals management, textile production, environmental technology, workplace safety and related topics to a growing cohort of textile, apparel, and related industrial players. Its work helped catalyze the evolution of responsible chemical management throughout the textile industry. By following a strict code of confidentiality and maintaining independent standards, bluesign® system is a trusted source for sustainability expertise and information along the distributed textile supply chain. Confidentiality also allows bluesign to access and assess chemical information that is otherwise considered proprietary. This enables bluesign® and the system partners to make decisions based on deeper insight. The resulting “white list” of chemicals provides greater certainty and safety for supply chain and product.

Kilian Hochrein, who manages chemical product safety at Gore Fabrics, notes that bluesign® systems helps the entire industry up its game. “bluesign® systems keeps us alert to the latest developments, things that are hard for us to track on our own,” Hochrein says. “If there’s a chemical presented to the market that is safer or causes less environmental burden without compromising product quality, we want Gore and our partners to become aware and be able to convert.” The bluesign® system enables Gore Fabrics to keep abreast of global best practices in chemicals management and materials

innovation. “Leadership in any field requires a lot of listening,” Hochrein says. “By listening to bluesign® systems advice, we know we’re aware of the latest developments — and can help drive our own sustainability agenda into the broader ecosystem.”

So it made perfect sense for Gore Fabrics to begin a relationship with bluesign® to progress from a “finished goods” safety standard to implementing a comprehensive and proactive management system -- addressing chemicals, environmental impacts, resource usage, and workplace and product safety in its supply chain.

“While relatively large players like Gore Fabrics and our partners maintain best-in-class chemical management strategies, we’ve long understood that the way the industry handles chemicals on a global scale — all the way up the supply chain — was not sustainable” Hochrein says.



Kilian Hochrein
Chemical Product Safety

Enhancing Product Safety with OEKO-TEX®

Early efforts to actively manage product safety related to chemicals began in the 1990s, when OEKO-TEX® came to the fore in Europe; Gore Fabrics started working with OEKO-TEX® in the early nineties, obtaining its first certificate in 1996 around Gore's line of functional fabrics. Currently, almost 90 percent of consumer garment laminates are certified according to the OEKO-TEX® Standard 100, with the rest manufactured in compliance with its limits.

Gore Fabrics also applied the OEKO-TEX® Standard 100 to materials for protective apparel such as jackets worn by firefighters. These protective barrier materials not only protect against burns, but also have a moisture barrier — they are both flame and water resistant. Unlike many flame retardant technologies, Gore's fire-resistant jackets are made without the use of brominated flame-retardants, many of which became known for health and environmental hazards.

Gore was very early in the game in developing effective flame retardant solutions for its barrier materials that passed the stringent third party safety review by the OEKO-TEX® consortium; as a result Gore Fabrics' firefighting films are currently the only OEKO-TEX® certified flame retardant barrier layers in the North American market that offer breathability.



CHEMICAL MANAGEMENT GOALS



- ◆ Consistent with Gore Fabrics' Life Cycle Assessment for evaluating the environmental impact of its products and ensuring responsible chemical management practices, the company has been leveraging independent third-party validation for more than 20 years.
- ◆ Currently, almost 90% of consumer garment laminates are certified according to the OEKO-TEX® Standard 100, with the rest manufactured in compliance with its limits.
 - › By 2020, Gore Fabrics intends to have 100% of consumer garment laminates achieve OEKO-TEX® Standard 100 certification.
- ◆ Currently, 70% of consumer garment laminate volume is bluesign® approved.
 - › By 2020, Gore Fabrics is targeting 85% of its consumer garments volume to be bluesign® approved.

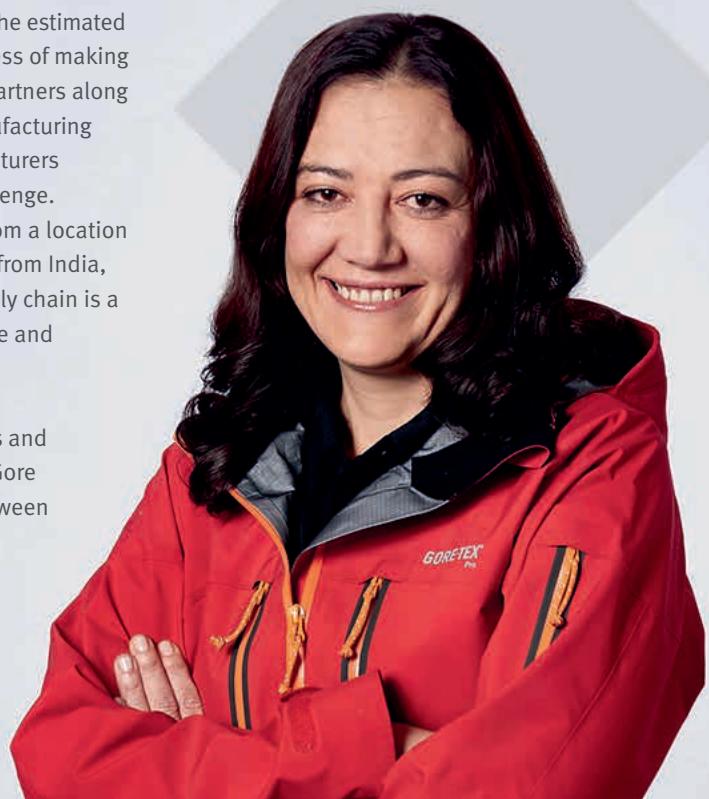
Championing Workers' Rights Globally

When Evre Kaynak was a student volunteering for human rights education, she investigated working conditions at factories in Turkey, a hub for European garment production; clothing and textiles account for seven percent of Turkey's GDP. Her experience there laid the groundwork for her current role, championing fair working conditions as part of the Gore Fabrics social compliance program.

Kaynak's job is to cooperatively ensure the fair and ethical treatment of the estimated half-million workers directly or indirectly engaged throughout the process of making finished jackets and shoes with Gore's textiles. Kaynak engages with partners along the Gore Fabrics value chain to achieve fair working conditions at manufacturing facilities; that value chain includes hundreds of suppliers and manufacturers spanning 57 countries. As she explains, keeping track is a unique challenge. "A small footwear company in Europe may receive assembled shoes from a location nearby," Kaynak says. "But the upper part of the shoe may be sourced from India, while the leather for the upper comes from Pakistan." Tracing this supply chain is a crucial component of Gore Fabrics' efforts to promote social compliance and responsibility in its value chain.

As part of her commitment to Gore Fabrics, Kaynak travels to customers and factories around the world to encourage and help them align with the Gore Guidelines on Social Responsibility, and to facilitate conversations between workers and management.

Evre Kaynak
Social Responsibility Champion



In Bangladesh, where textiles are a vital piece of the national economy, a key issue is worker health and safety. Kaynak has engaged with Gore customers planning production in Bangladesh, to align working conditions with the international standards for fire and electrical safety, as well as other health and workplace issues. As factories improved their conditions, Gore felt confident to go ahead and certify that the factories meet the GORE-TEX® quality standards.

In Myanmar, the Gore Fabrics team began discussions with manufacturing partners selected by customers about creating fair labor conditions after the country enacted a new labor law in 2015. Burmese workers had spent decades under military rule, and were sensitive to rules being forced on them. Kaynak and factory support teams worked closely with management about ways to avoid conflicts, and to enable their workers to be more vocal about working conditions. The efforts paid off: Gore Fabrics now has three manufacturers certified to process Gore textiles in Myanmar, for which assessments have verified compliance with the Guidelines.



Prioritize Workers for High Quality Products

“People working in factories often spend more time at their workplace than their homes,” Kaynak says. “At Gore Fabrics, we believe their well-being is a critical part of what makes a truly high-quality product.”

In the coming year, Kaynak says the social compliance program will focus on expanding its Guidelines for Social Responsibility into business partners making apparel to protect professionals and further into Gore Fabrics supply chain. Gore is also continuing its work with the Sustainable Apparel Coalition (SAC), of which it is a founding member, to expand the reach of the Higg Index.



“Transparency is key to moving the area of social compliance forward for the entire apparel industry.”

This past year was the first in which Gore Fabrics completed the social and labor facility module of the Higg Index for all its own manufacturing units. Higg Index is a self-assessment tool for companies to measure their environmental, social, and labor impacts, and identify areas for improvement. Gore is now actively encouraging its brand partners to use the Higg Index, including through incentives for participation.

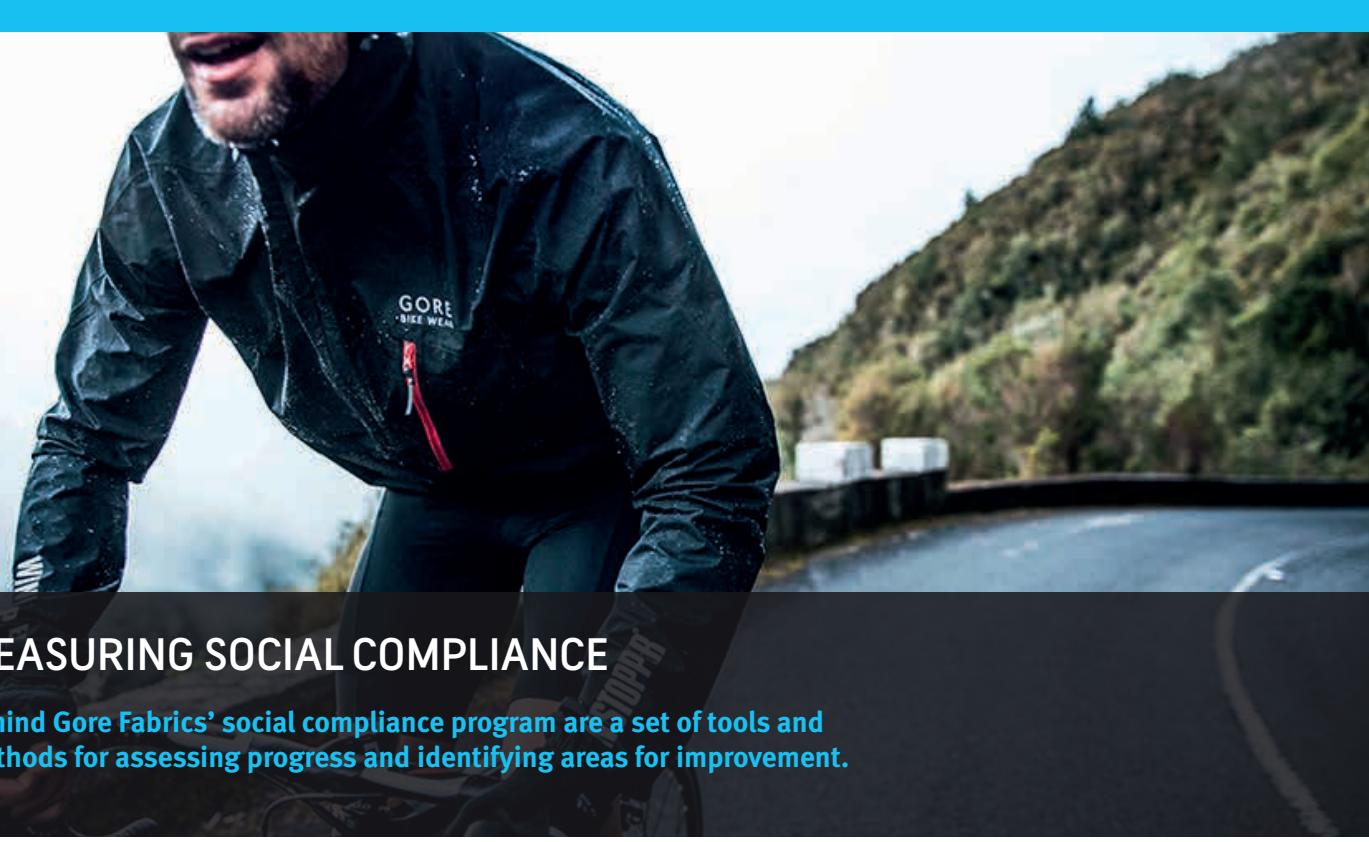
“The Higg Index is all about transparency,” Kaynak says. “And transparency is the key to moving social compliance forward for the entire outdoor industry.”

[**The Gore Guidelines on Social Responsibility**](#) is a code of ethics used by Gore to clarify its expectations of labor standards that business partners along the value chain should adhere to. They include guidance for healthy and safe working conditions, fair wages and benefits, and reasonable working hours, among other items.



GORE FABRICS' ROLE IN THE VALUE CHAIN

Gore Fabrics' typical role in the value chain is to provide textile solutions to wholesale business partners that make the finished apparel products from these textiles. The GORE-TEX® hang tag indicates that the manufacturing of the finished product has been carried out according to Gore's quality standards in certified factories. Gore Fabrics engages with business partners such as brands and factories to ensure fair labor conditions along the value chain.



◆ MEASURING SOCIAL COMPLIANCE

Behind Gore Fabrics' social compliance program are a set of tools and methods for assessing progress and identifying areas for improvement.

◆ FLA Accreditation:

Gore Fabrics' direct-to-consumer business for runners and bikers, branded Gore Bike Wear® and Gore Running Wear®, became affiliates of the Fair Labor Association (FLA) in 2012. In February 2017, the brands earned FLA's highest recognition: accreditation. This confirms that the brands have implemented effective systems and procedures for successfully upholding fair labor standards in their supply chain for finished apparel products.

Apparel manufacturing facilities in China, Italy, Latvia, Myanmar, Romania, Turkey, and Vietnam that supply to Gore Bike Wear® and Gore Running Wear® undergo independent, yearly audits to ensure compliance with the FLA code of conduct, which aligns with the Gore Guidelines on Social Responsibility (see main story). Elements include non-discrimination, protections against harassment, forced and child labor, freedom of association, collective bargaining, safe and healthy workplace, hours of work, and compensation. The assessments cover a factory tour, interviews with workers, record checks and a detailed review of all practices and policies. A detailed report identifies areas of non-compliance with guidelines for improvements.

"FLA standards often exceed a country's national standards," explains Caroline Oppenrieder, the social compliance champion of the Gore Bike Wear® and Gore Running Wear® brands. "In China and Myanmar, minimum wage requirements are lower than FLA recommendations. FLA promotes fair living wages, so all workers have enough money to have food, a home, and send kids to school, no matter where they live."



Higg Index:

The Higg Index is a self-assessment tool companies use to measure and share the impacts of their activities and products across a range of environmental, social, and labor issues. It was developed by the Sustainable Apparel Coalition (SAC), which represents about 40 percent of the global garment and footwear industry.

Gore Fabrics has been using the Higg Index since 2013, and is encouraging all of its customers and suppliers to participate by offering SAC membership and Higg Licensing discounts. “The more stakeholders start to talk about the Higg Index and the SAC, the more we’ll see increased interest and participation,” says Evre Kaynak of Gore’s social compliance program.



Convergence Initiative:

The multiple assessment tools that companies use to audit their manufacturers’ level of social compliance can lead to as many as a dozen audits per year — a waste of time and resources, says Kaynak. The Social and Labor Convergence Initiative of the SAC is working to change that.

“The Convergence Initiative will enable industry to use the same assessment tool to measure social and labor performance of facilities,” says Bernhard Kiehl, Leader of the Gore Fabrics’ Sustainability Program. “By aligning on a single assessment tool, we will redirect resources to building the needed capacity for sustainably improving labor conditions.”



Solution Dyeing and Recycled Fabric: A Yarn About Yarn

Thomas Kiebler spends a lot of time thinking about how yarn is made, and where it comes from. In some areas of the world, the yarn supply dates back hundreds of years – but it's due for an upgrade, says Kiebler, who leads a global team of textile engineers at Gore Fabrics. The upgrade Kiebler envisions covers two realms: Changing the sources of the yarn through the use of recycled materials, and changing how these yarns are colored in order to reduce the environmental impact of the products.

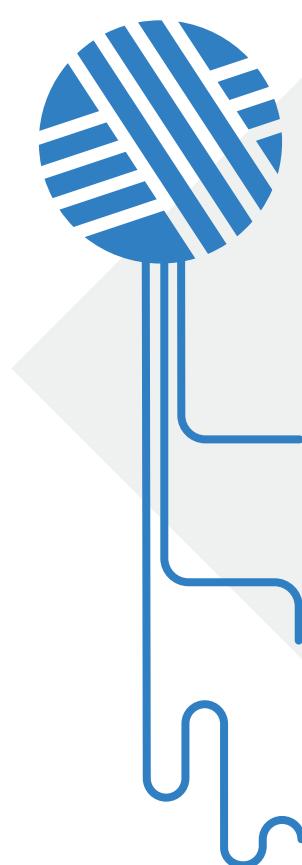
As a part of its commitment to continually improve the environmental impacts of its products, Gore follows the concept of Life Cycle Assessment, or LCA – a process that looks at the environmental performance not just in its own production facilities, but across the entire value and supply chain. This includes the extraction and refining of raw materials, plus their transport, use, disposal, and any other step that requires the consumption of natural resources, or that has material impacts on air, water, or human well-being. “When we looked at the results of our Life Cycle Assessment of a GORE-TEX® jacket, it became clear that the choice of material and how it’s finished plays an important role in sustainability,” Kiebler explains.

Until recently, most yarn dyeing involved a water-in-



“As investments into the necessary machinery and tools increase, solution dyeing is going to become more attractive within the industry,”

Thomas Kiebler,
Application Engineer Leader



UNSPOOLING SOLUTION DYEING

FACT:

22% of the total life cycle CO₂ emissions of a typical GORE-TEX® jacket come from Gore's textile supply chain.

Savings at Gore Laminate Level:

60%

Reduction in water use

45%

Reduction in CO₂ emissions for polyamide

58%

Reduction in CO₂ emissions for polyester

tensive process; yarns were soaked in dye to change their color. Now, Gore Fabrics and other players in the market are using a technique called “solution dyeing,” which uses up to 60 percent less water. In solution dyeing, colored dye is applied to “chips” that form the raw material before it is spun into yarn. When the chips are melted and spun, the resulting yarns are already colored.

“Solution dyeing results in much better color-fastness of the yarn from inside out,” Kiebler says — an advantage for garments subjected to extreme sun. It also reduces the energy consumed in creating the yarn, lowering CO₂ emissions up to 58 percent.

Gore Fabrics has been offering solution dyed products since 2016, for the Berghaus' GORE-TEX® collection. The use is now expanding to other brands and customers, including Arc'teryx, who will offer a specially developed solution-dyed product in 2018.

Keeping Plastic Out of Landfills

While efforts to scale up solution dyeing are well underway, so too is the burgeoning practice of using recycled plastic bottles as a source material for recycled polyester. In the recycling process, bottles are crushed, shredded, and turned into chips before being spun into yarn. For recycled nylon, the sources are typically industrial waste such as carpets. Gore Fabrics is increasing its use of these recycled materials together with its suppliers.

While some garment manufacturers have been using recycled materials for some time, the outdoor garment industry has been slower to embrace recycled materials; producing a waterproof jacket with recycled face or backer fabrics is a more difficult technical challenge. “The requirements, especially in mountaineering jackets, are much higher – durability, strength, color fastness –

while keeping the textile soft in the hand,” Kiebler explains. “It takes time to develop the supply chain so the industry can offer recycled products that meet the needs of the consumer.”

This year, Gore Fabrics is launching a range of laminates paired with recycled nylons and polyesters, working with brand partners including Haglöfs, Norrøna, and Patagonia. The hope, Kiebler says, is that we can significantly extend our recycling offer in the near future - and ensure that a growing share of the world’s yarns follow the principles of reduce, reuse, and recycle.



◆ GORE COVER CUTS LANDFILL POLLUTION

A stone's throw from the bustling core of midtown Manhattan, on Roosevelt Island in the East River, hundreds of tons of New York City organic garbage are undergoing a quiet and dramatic transition.

Protected by GORE® Cover for Organic Waste Treatment, the steady stream of waste from a portion of New York's 11 million residents is being recycled — and, in the process, creating a valuable soil supplement, while reducing the pollution that causes climate change.

At an experimental site under the Queensboro Bridge, with the silvery Manhattan skyline framing the view, tens of square meters of this special GORE fabric stretch over two massive compost piles composed of food waste collected from the city's homes and restaurants. [The Big Reuse NYC Compost Project](#) is the largest composting operation in the city of New York, helping New Yorkers divert over a million pounds of food waste from landfills each year through 40,000 drop-offs at 12 food scrap locations.

“GORE® Cover was the brainchild of a few maverick Associates working about 25 years ago,” explains Thomas Terpetschnig, a Product Specialist in Germany. “It’s essentially the heavy-duty version of the GORE-TEX® laminate used for clothing, applied to outdoor sites — at a much larger scale.” GORE® Cover was first used by a construction company that successfully used the laminate, plus some aeration piping, to naturally and safely remediate toxic soil at a construction site.

The Threat of Methane Emissions

Waste management systems are running out of space around the world, and reducing the amount of material that ends up going to the landfill is the best (and, in some cases, only) solution. But even at landfills with room to spare, [methane emissions from organic waste](#) are a huge problem. In the US, municipal landfills account for 20 percent of methane emissions. Methane is more than 25 times as potent a greenhouse gas as carbon dioxide. Its accumulation in the atmosphere contributes to global warming.

When effectively managed through techniques such as aeration and covering, food and solid wastes can be treated and turned into useful compost and soil amendments for farming and other land

use applications, while minimizing harmful climate pollution like methane and nitrous oxide.

Put the same material into a landfill, by comparison, and it's a far less rosy picture. The slow decomposition process that occurs in an anaerobic (oxygen-free) environment generates large quantities of greenhouse gases, as well as volatile organic compounds that waft, noxiously, into surrounding environments.

GORE's Got You Covered

At a GORE® Cover landfill installation, massive, custom-tailored GORE laminate covers, up to 50 meters long, are affixed to a prepared base using simple gasketing. Air is pumped in to keep the space pressurized, and to ensure a consistent oxygen supply. Once installed, the laminate resembles the surface of a huge, "bouncy castle," like the kind at children's birthday parties. "The standard technologies for breaking down bio-waste, like materials recycling facilities, are large, closed buildings with



"This is the next wave of trash management"

Brian Fuchs, North American representative for GORE® Cover Technology

expensive air-cleaning technologies," explains Terpetschnig. "GORE® Cover technology offers a simpler, less expensive way to achieve the same or better standards in quality output."

To date, GORE® Cover has been installed at over 300 commercial locations around the globe. The New York City pilot project in Queens has been so successful, the city plans to expand it substantially on Staten Island with a facility that will handle over 200 tons of organic waste per day. As the need to capture harmful greenhouse gas pollution grows, the market for Gore Compost Cover is growing every year.



"This is the next wave of trash management," says Brian Fuchs, North American representative for GORE® Cover Technology. "We're working to solve the urgent problem of maxed-out landfills and harmful emissions, with new solutions that generate useful products from waste — in this case, valuable compost for farming, landscaping, and replenishing the soils we rely on for our food."

◇ ENGAGING OUR COMMUNITIES

Gore Associates Bring Supplies to Chinese Students in Need

In the summer of 2017, Gore China Associates, Gore China Key Opinion Leader Song Yujiang and 20 team members from Friends of Nature, China's oldest environmental group and a long-time partner of Gore China, visited Sangyuanjian Primary School in Baoding City to deliver boxes of books, stationery, and clothing by bus from Beijing. Located in a remote, poverty-stricken area in China's Hebei Province, the school, which has 11 teaching classes, 315 pupils and 21 teachers, has seen very slow development due to difficult economic conditions in the remote, mountainous area — and the Gore support is critical.

Beginning in 2007, Gore China launched its “Experience the Difference – GORE-TEX® Outdoor Dreams Come True” event to help Chinese outdoor enthusiasts take part in outdoor activities. The platform has included delivery of sports and school supplies to children in the snow-covered highlands, as well as donations to orphanages and tent schools in the earthquake-stricken Yushu region.

“At Gore, we all recognize that our success is really built on the success of the communities where we work,” said Gore China Associate Agnes Zhang. “To us, doing this kind of service is second nature.”



Planting Trees in the EU

In 2009, Gore Associates in Europe began supporting the non-profit Bergwaldprojekt, a prominent German conservation group, in its efforts to restore forest trails and tree cover in the Bavarian Alps. Since beginning their efforts — which are a part of Gore’s Work-Life-Balance programs for Associates — nearly 100 Gore Associates have planted almost 20,000 trees and restored some five miles (8 kilometers) of forest trails in the mountains near Bayrischzell in annually recurring events.



Outfitting Big City Mountaineers

Big City Mountaineers (BCM) provides free, fully outfitted and professionally led wilderness backpacking expeditions, paddling trips, and overnight camps for under-resourced youth across the country. In 2017, BCM provided over 20,000 nights under the stars for kids that would not have had the experience without the organization investing in their lives.

To assist in their efforts this year, Gore donated a large selection of GORE-TEX® and WINDSTOPPER® garments; most of BCM's students have never hiked, backpacked, camped, or paddled before, and having the proper gear is crucial to ensuring every participant has a safe, fun, and engaging first experience in the backcountry. Gore's contributions included

a wide range of outerwear, keeping more than 300 of BCM's students comfortable and protected from the elements on their first backcountry adventure.

BCM trips included forays to legendary locales such as Yosemite, the Boundary Waters, Mt. Hood, the Eagle Cap Wilderness, the Flat Tops Wilderness, Rocky Mountain National Park, and the White Mountains.

