An article in *WSA* November-December 2012 showed that textile manufacturers and their chemical suppliers have been working hard to find alternatives to C8 technology for making outdoor clothing and footwear water- and oil-repellent. These developments appear to have arrived too late to satisfy campaign group Greenpeace, which turned its attention to the subject at the end of last year and called for a ban on all polyfluorinated chemicals (PFCs) in outdoor garments. Outdoor brands have now given their response.

Outdoor brands respond to PFC criticism

Campaign group Greenpeace published a report towards the end of 2012 on the ongoing use of oil- and water-repellent finishes based on C8 chemistry in outdoor clothing on sale in Germany.

As it often does, Greenpeace wastes no time in naming a group of prominent outdoor brands in whose products it has found "noticeable concentrations" of perfluorooctanoic acid (PFOA) or of fluorotelomer alcohols, which can break down into PFOA. The companies to feature in the report are: The North Face, Vaude, Jack Wolfskin, Patagonia, Kaikkialla, Marmot and Mammut. We made contact with all of them to ask for their reaction and this article outlines their comments.

Backdrop to the story

The official position of the US Environmental Protection Agency on PFOA is that it is "very persistent" and has been found at very low levels both in the environment and in the blood of the general US population. Studies indicate that PFOA can cause developmental and other adverse effects in laboratory animals. PFOA also appears to remain in the human body for a long time. "All of these factors, taken together, prompted the agency to investigate whether PFOA might pose a risk to human health and the environment at the levels currently being found, or at levels that might be reached in the future as PFOA continues to be released into the environment," the agency has said.

PFOA is not an ingredient that manufacturers deliberately add in the making of their water- and oil-repellency products, but a substance that appears in small quantities as a by-product of the synthesis that takes place in the making of C8 chemicals. At the start of 2006, the agency set up a stewardship programme with eight chemical companies: Arkema, Asahi, Ciba Specialty Chemicals (now BASF), Clariant, Daikin, 3M/Dyneon, DuPont and Solvay Solexis. These eight manufacturers committed voluntarily to reduce C8 content in all their products, including those aimed at textile manufacturers, by 95% by no later than 2012 and to work towards eliminating PFOA altogether by 2015. Two years from that deadline, it is no surprise that some products should still show signs of PFOA's presence.

Some of the alternatives companies have spent years and millions of dollars working to develop are members of the same family of chemicals as PFOA, the perfluorinated and polyfluorinated chemicals (PFC) family. The new alternatives are based on C6 rather than C8 chemistry and their manufacturers are confident clothing companies using them will be free from the risk of detectable levels of PFOA forming in their clothing products.

In a statement on October 29, however, the campaign group said: "Greenpeace calls on the outdoor clothing industry to ban PFCs from production and to further develop fluorine-free alternatives. The textile manufacturers need to replace these hazardous chemicals with environmental-friendly alternatives."

Retail group Marks & Spencer made a statement on October 24 to say it had reached an agreement with Greenpeace to stop using all PFCs by July 2016. On the day of its statement, Marks & Spencer acknowledged in comments it gave to *WSA* that it was taking this step despite "the absence of any compelling evidence or science", but said it wanted to minimise the risk to its business by "coming out of the [PFC] family altogether". At the time of the Marks & Spencer announcement, Greenpeace told us: "The case against certain



Mammut says its clients demand the highest levels of performance.

Mammut



PFCs has been clear for many years, especially key C8 compounds. Evidence for other PFCs, although more limited, indicates that some are likely to have hazardous properties."

Brands respond

Greenpeace's report, "Chemistry for any weather", carried the results of product testing to which it had subjected clothing belonging to the seven outdoor brands.

One brand, Jack Wolfskin, simply said it preferred to make no comment on the Greenpeace report at this time, although it recently said it was ending its use C8 in 2014, a year before the deadline and that it has been working towards offering weather protection products manufactured without the use of C8 since 2009.

Another German brand, Vaude, told us it agrees with the Greenpeace position. It said: "We are happy that Greenpeace has taken up the issue. For us as a medium-sized family company that has long been seriously committed to environmental protection, this campaign is a great opportunity. The market is finally headed in the right direction. Working alone, we have very limited options to change the supplier industry. We agree with Greenpeace and are totally convinced that PFCs must be strictly avoided in all production processes. We made this very clear in a joint press release with the German Association of Sporting Goods Industry BSI and its professional association Fachgruppe Outdoor at the end of September 2012."

The response from the other brands will have come as a disappointment to Greenpeace. Swiss alpine clothing brand Mammut is another of the companies to feature in the report. A Mammut jacket Greenpeace included in the test contained fluorotelomer alcohols. The company has told *WSA* it is aware of the issues and is working on finding alternatives for these chemicals. It believes consumers wearing its clothes are at no risk and that the most important part of the discussion is about what happens at manufacturing facilities where the clothes are made.

Nevertheless, Mammut pointed out that it has concerns about the ability of alternative finishes to work at the level it requires. It said: "As an absolute alpine sports brand our clients demand highest performance of our garments. At the moment there is simply no way around some of these PFCs at equal product quality. This is an issue of the whole outdoor industry and everyone is working on new solutions."

A product from Kaikkialla, a brand based in South Tyrol in Italy, also featured in the report, with Greenpeace saying it contained concentrations of PFOA. In its reaction, Kaikialla said: "Greenpeace is calling for the immediate and complete banishment of PFCs. We also see the use of these substances as problematic. Unfortunately, conversion to new supply materials is not possible in the short term. For highly technical protective clothing, there is no equivalent in the market in terms of durability and functionality."

Forthright comments

In response to criticism from the campaign group for its use of PFCs, outdoor brand Marmot has been very forthright in its response, explaining why it believes repellency finishes that use these chemicals can be effective, safe and environmentally friendly and why it will continue to use technology that contains PFCs in its durable water repellency (DWR) finishes.

In a statement released after Greenpeace announced its "Chemistry for Any Weather" report, Marmot emphasised its commitment to high standards of consumer, environmental, and worker safety and said it welcomes the

Vaude agrees with the Greenpeace position and says that, as a medium-sized family company that has long been seriously committed to environmental protection, this campaign is a great opportunity and a sign that the market is "finally headed in the right direction".

Vaude

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'Detox' campaign that Greenpeace launched in 2011 to stimulate increased effort on the part of sports and outdoor brands to eradicate hazardous chemicals from their upstream supply chains by 2020.

"We support this initiative as, together with other partners in the outdoor industry, we have been working on this topic for many years," Marmot said. "However, PFCs, with their water-, dirt- and oil-repellent effects guarantee the high performance of outdoor products. The substances applied to the surface of the exterior fabrics pose no health risk to consumers when they use the products. Marmot's aim is to guarantee the functionality and performance of its products, which need to ensure safety and protection in the most extreme regions and conditions. Based on current research results, the PFC-free alternatives for DWR currently available do not offer the same functionality with regard to repelling water, oil or dirt."

Marmot is currently replacing its range of water-repellent products by using C6 fluorocarbon instead of C8 fluorocarbon, which is why it's not such a surprise that PFOA showed up in a Marmot product in the testing the campaign group carried out for its new report. "C6 does not breakdown into PFOA and is the safest alternative for the environment," Marmot continued. "Until new technology is developed, C6 is the best, most environmentally friendly DWR available without PFOA."

For spring 2013, Marmot is using a C6 DWR finish in more than 65% of styles in its collection that need DWR treatment. "Our goal is to increase this percentage significantly until 2014," the brand concluded. "At the same time, we are aware that this can only be a first step. Therefore, Marmot together with other partners from the outdoor industry supports the research on completely new, environmental water-repellent technologies."

Report is "misleading"

Sixth of the seven brands named in Greenpeace's report, The North Face (TNF) arguably went even further in its comments. It said: "While we respect Greenpeace's steadfast efforts to look after the planet and its people, their report is misleading regarding our product." It said it stands by everything it sells and insisted regulatory agencies around the world have indicated that consumers are not at risk from the normal use of any TNF products.

The statement went on to highlight work that TNF has done and continues to do on its restricted substances list and on its "industry-leading partnership" with environmental, health and safety standard body bluesign technologies. To achieve bluesign certification for their products brands are required to use bluesign-approved raw materials and fabrics from suppliers and textile mills that are certified partners.

TNF has included a section on PFCs in its corporate statement on chemical responsibility, saying that PFCs are a class of chemical substances that belong to the larger family known as fluorinated chemicals, which range widely in their composition and environmental profiles. TNF currently uses fluorinated chemistry to deliver "high-performance characteristics in our products", including water-, stain- and oil-repellency as well as durability, it says. "Our use of these chemicals is conducted responsibly and exceeds or is compliant with all federal and international regulations governing chemical use."

In conclusion, the brand said it is committed to developing solutions to reduce environmental impact through open collaboration and innovative design that allow it to "continue to make high-quality products that meet our strict performance requirements".

Finally, Patagonia posted a link to an entry on its Footprint Chronicles blog as its response, spelling out clearly the company's position on PFCs.

It says it has worked with chemical companies to suggest and test improvements in the repellency and durability of both C6 and fluorocarbon-free finishes, arranging application trials with textile manufacturers and testing fabrics in its own lab against standard formulations. "Over time we have seen significant improvements in performance," the brand says. "Some of these new finishes now meet the Patagonia standard, and we will be using them in more new products every season. The majority of our current products still use C8 fluorocarbon-based water repellents for our Deluge DWR (durable water repellent) [finish]. PFOA is detectable on the treated fabric at around 100 parts per billion; it's a very small amount."



Marmot will use a C6 DWR finish in more than 65% of the styles in its collection from spring 2013.

Marmot

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