SUSTAINABILITY: LAUNDRY

The presence of unpleasant odours lingering on laundered sports clothes calls into question the catchy claims of commercial detergents. Upon closer look, the issue is more complicated than many might expect.

The laundry quandary

Is it normal that a freshly laundered batch of sports clothing remains smelly? This situation is far from anecdotal as research by detergent maker Procter & Gamble (P&G) indicates that over 70% of people have had problems with odours lingering in their active wear after it has been washed [1].

The Cincinnati, Ohio-based company says that these odours can reoccur when clothes are not fully cleaned, which can be an "especially challenging feat when it comes to active wear, which is made with synthetic fabrics that tend to trap dirt and odours deep down at fibre level".

The combination of technical microfibres and tight fabric constructions is what makes sports clothing more difficult to wash than other types of garments, says Paul Yung, founder and CEO of Sports Suds, a company specialising in sports clothing detergents based in Milton, Canada. "These types of garments are more prone to keep contaminants in the textile. Sports clothing is subjected to demanding use. A sports bra, for instance, is worn very tight and placed on body zones that sweat a lot."

When asked why some exercise garments keep their unpleasant smells after washing while others come out fresh and odour-free, Dr Neil Lant, a research fellow within P&G's Fabric &



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Home Care unit, says this is an ongoing subject of research. "We are investigating the root causes of malodour at fibre level to determine how much is due to sweat, to bacteria or to sebum. It is a complex equation because different types of bacteria colonise different types of fibres, and bacteria adhere strongly to hydrophobic fibres."

Data collected by P&G indicates that, every day, an average adult produces 40 grammes of sebum (skin grease), one litre of water (sweat) and one billion skin flakes shed from the outer layer of skin (epidermis). These numbers will be higher when engaging in physical activity, but the varied substances are mostly invisible in clothing.

Invisible unpleasantness

Among the different strategies to remove odours, one is to kill bacteria, or inhibit bacterial growth by applying a special finish. Another is to encapsulate odour or mask it with a fragrance, says Mr Yung. Sports Suds claims to have developed a detergent that removes the "offending party" without any toxic chemistry and without leaving any residue or fragrance. It says that a fabric free of contaminants will also be odour-free, as its detergent removes not only smells but also food sources for bacteria. "Reattachment and growth by bacteria is delayed until redisposition of both takes place," it promises. Without going into the details of how Sports Suds achieves this, Mr Yung does point out that its detergents do not contain the "heavy duty surfactants that remove oils" used in most detergents.

Sports Suds markets three different products: a laundry detergent, a washing machine cleanser and a body wash. Its product array denotes that contaminants are not only located on an item of clothing but can also "colonise" the washing machine itself. This is why the company recommends cleaning the machine before cleaning the clothing.

Tricky polymers

The materials used and finishes applied to functional clothing further complicate the task of laundry detergents. Clothing made with fabrics containing spandex or elastane pose specific issues, the polyurethane-based yarn being sensitive to corrosive agents such as chlorine or bleach. "Chlorine-scavenging molecules in detergents degrade the integrity of spandex," says Dr Lant, at P&G, adding that "low-end detergents can lead to incrustation on elastane filaments". A gentle washing powder or liquid will maintain the shape recovery characteristics of the stretch fibre. Sports Suds also believes its solution preserves the elasticity of sports clothes containing elastane and that compression wear will "compress better, feel more comfortable and last longer" as a result of using its products.

Durable water repellent (DWR) finishes are yet another textile technology that may be impacted by laundering. Both P&G and Sports Suds assert that their detergents preserve DWR finishes. Nikwax has made preserving repellency one of the key claims of its specialised laundry products. The UK company has recently updated its range with version 16.1 (no less) of its Nikwax Tech

The newly released Nikwax Tech Wash version 16.1 will maintain a waterproof item's water repellent finish for longer the company claims, pointing out that this will save energy and is achieved without any PFC chemistry.

Nikwax



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P&G research fellow Dr Neil Lant speaking at the company's Future Fabrics conference, in Barcelona in December 2015, one of many presentations designed to raise awareness within the fashion industry.

Procter & Gamble

Wash. The previous iteration was said to clean and revive the water repellency of a waterproof jacket for two to five launderings before needing to re-apply a finish on it. "The new Tech Wash will restore a jacket's water repellency for up to ten washes," says Nikwax CEO, Nick Brown.

It has recently introduced a new version of its down care product, Nikwax Hydrophobic Down, designed specifically for water-resistant down clothing. In addition to this specific feature, the company says it "reduces the water absorption of regular down and maintains or improves the water repellency of a down item's outer fabric."

Other areas in this market are being investigated. Dr Lant says P&G may develop a product targeting men, a novel niche in a category that has historically focused on women, and wearables. "We are working with Sensoria, Numetrex and Hexoskin to develop detergents for smart clothing. In this case, it is important that it does not corrode the metallic fibres and does not lead to incrustation," he says. Sports Suds has four new products in development that Mr Yung plans to launch in during 2017. He has hinted that they will address more extreme laundry situations for sports that involve oily substances.

As sales of performance apparel outpace sales of general apparel, Joshna Raghwani, Home Care Analyst for market research company Euromonitor, believes that demand for specialty laundry products will follow that of athleisure clothing. She cites the success of P&G's Tide Sport with Febreze, launched in 2010, as a positive sign: "The product reported a very respectable $114 million worth of sales in 2014, almost one sixth of the $1.1 billion that the original Tide brought in that year."

"Ten years ago only a few sports-specific detergents were available. Now, if you check on Amazon, there are more than a dozen," says Mr Yung at Sports Suds. It is a sign that consumers are looking for more effective ways to keep their sports clothes clean and odour-free, which will in turn give garments a longer life and make them more sustainable, providing a solution to this laundry quandary.

(1) Online survey of 1,017 adults aged between 18-50yrs globally in five key markets: United Kingdom, United States, South Africa, India and Egypt.



Paul Yung, founder and CEO of Sports Suds, whose detergent is said to remove all contaminants, bacteria and residue that, in addition to smelling, may also impede the wicking and ventilation properties of technical fabrics.

Sports Suds

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