SUSTAINABILITY: CHEMICAL COMPANIES

With tightening legislation and increasing consumer demands, what can chemical companies do to relieve some of the burden on the textile industry?



Finding the right formula

Greenpeace's latest reports have hit another raw nerve. In January it published a statement on hazardous chemicals found in children's clothes and its mid-February attack on luxury apparel brands has brought textile chemicals to the public's attention again as mainstream media take up its baton. While some of the findings and methodologies of the reports have been criticised, they are another headache for brands and manufacturers trying to clean up their supply chains, and their reputations.

"Consumers are craving products that bring more aesthetics and technology into their lives, but they are also starting to look at what the goods they buy are made of," says Alexander Wessels, CEO of Switzerland-based Archroma, which bought the textile chemicals division of Clariant at the end of 2013. "Brands and retailers, being under increasing pressure from consumers, are asking their supply chain to comply with stricter eco-requirements."

The textile dyeing and finishing industry is one of heaviest global consumers of water and energy. The World Bank estimates that 20% of industrial fresh-water pollution comes from textile production and has identified 72 toxic chemicals in water that have textile dyes as their source.

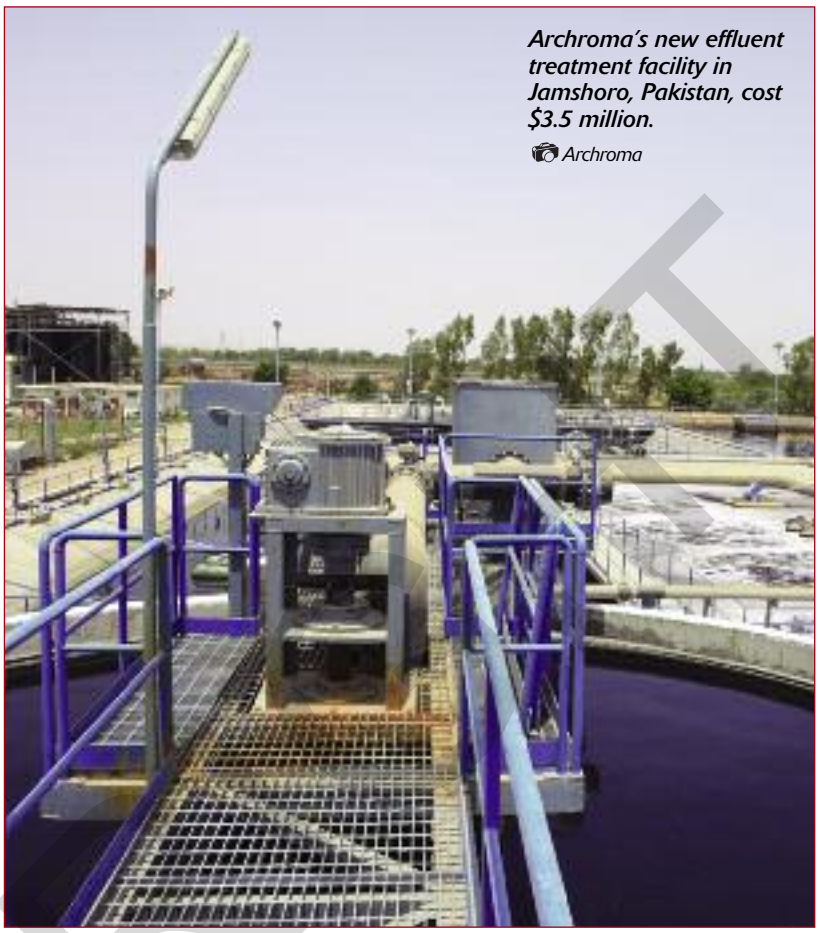
BASF's product portfolio includes the intermediate PolyTHF, an important component of elastane fibres that are used to manufacture swimwear.

BASF

Long deemed the enemy in the eyes of the public, many chemical companies are now focused on creating solutions that enable manufacturers to dye and finish their products in a more sustainable way, with fewer 'harmful' chemicals. "If you don't put it in, it won't appear on the end article," says Steve Grey, global vice-president of strategic marketing and planning at Huntsman Textile Effects in Singapore.

Governments are also clamping down. At the start of last year, China, home to more than 50,000 textile factories, introduced strict new regulations. Discharge limit values for pollutant indicators such as COD (chemical oxygen demand) and BOD (biological oxygen demand), as well as special pollutants such as aniline, were substantially tightened and, for the first time, standards were introduced for pollutants such as total phosphorus, total nitrogen and AOX (absorbable organic halogens).

"This intense scrutiny is not likely to abate anytime soon – in fact, the industry will likely see tighter regulation as governments step up efforts through new legislation to improve oversight and reduce water pollution," adds Mr Grey. "This presents the textile industry with a serious challenge: how to continue to provide high-performing products in a sustainable way that still makes business sense for the industry?"



Archroma's new effluent treatment facility in Jamshoro, Pakistan, cost $3.5 million.

Archroma



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Proactive & products

Product development is central to addressing this challenge. Archroma's Advanced Denim dyeing solution based on sulfur reportedly allows up to 90% water savings compared with conventional denim dyeing methods and its One Way system, launched at the end of 2012, "was born to demonstrate to textile mills and brand owners that solutions exist that are both more ecologically and economically sustainable," says Mr Wessel.

Archroma is an active member the Textile Exchange and the Sustainable Apparel Coalition, lobbying at events and activities, and participated in the Sustainable Textiles Conference in Hong Kong in October 2012. Huntsman also uses conferences as a way to get its voice heard: Mr Grey presented at the Shanghai-based Planet Textiles conference last October and organises supplier conferences for mills, manufacturers, brands and retailers to inform them of developments and discuss best practice.

Similarly, BASF Textile Chemicals has been focusing on increasing sustainability down the value chain through engagement at conferences and workshops, and working with partners to support sustainable practices.

"The motivation to do more for sustainability has changed over the years," says James Carnahan, senior manager of global marketing for textile chemicals at BASF South East Asia. "From the 1960s until the 1980s, stricter regulations were the main reason for companies to become more sustainable. In the 1990s, sustainability was driven by efforts to cut costs: Lower energy consumption in production saves hard cash. In the future, sustainability itself will be one of the main growth drivers."

BASF is one of the key players in the Together for Sustainability (TfS) initiative – alongside peers Bayer, Evonik Industries, Henkel, LANXESS, AkzoNobel and Solvay – a supplier engagement programme that aims to improve sustainability sourcing practices, and includes ecological and social aspects.

"Awareness for sustainability is also increasing among our stakeholders," says Mr Carnahan. "Customers want sustainable products, industry wants sustainable solutions. Employees want to work for a company that takes sustainability seriously. Our reputation in society depends on how we perform in this regard."

Zero discharge

Spurred by an earlier Greenpeace report, a group of brands including Nike, adidas, Puma, New Balance and Li Ning in 2012 established the Zero Discharge of Hazardous Chemicals roadmap to eliminate any toxic chemicals being discharged in suppliers' wastewaters by 2020, and is supported by BASF, Archroma and Huntsman.



Steve Grey, vice-president of strategic marketing and planning at Huntsman, says the industry must work together to achieve sustainability goals.

Huntsman

Huntsman has produced a list of chemicals that do not contain any banned substances, and which is being adopted by several brands. "This is a step in the right direction," says Mr Grey. "Our belief is to take a precautionary approach and by that we mean to control the output by first controlling the input."

One of the criticisms levelled at the brands in Greenpeace's 'Chemistry for any weather' report was that long-chain fluorocarbons associated with water repellency were finding their way into the water supplies and could affect heath. Brands and chemical companies had been working towards moving to alternatives or shorter-chained fluorocarbons before the report, but it spurred some to commit to a time frame for phasing them out.

At the end of 2013 Huntsman launched a range of fluorine-free hydro polymers, Phobotex, complementary to its Phobol CP short-chain C6 fluorocarbons, which meet environmental standards such as Oeko-Tex and bluesign. The range offers water-based repellency and stain management effects for up to 30 washes at 40°C. "Textile chemical companies can help brands and mills meet legislative, and ZDHC, commitments by providing less environmentally impactful alternatives," says Mr Grey.

In 2002, Archroma partnered the US Environmental Protection Agency and four other companies to develop the 2010/2015 PFOA Stewardship Program aimed at removing PFOA even as an impurity. This commitment led in 2006 to the development of Nuva N, a C6-based fluorochemical for water, stain and soil

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repellency that is PFOA and PFOS free (below limits of detection) and allows similar performance to the C8 chemistry being phased out, according to the company.

Saving water

Aside from water pollution, the sheer volume consumed by the textile industry – estimated at between 100 and 150 litres per one kg of textiles – puts the industry under the spotlight. "In countries like China, India or Pakistan, resources such as water and energy may be limited, and so our customers are asking for products and solutions that are less resource-consuming," says Mr Wessel. "We are trying to act on three levels in parallel: firstly, in our own production processes, secondly, in our approach to product innovation, and thirdly, in the way we encourage our customers to explore more sustainable options that are available to them."

In Pakistan, Archroma recently launched a $3.5 million sustainable effluent treatment (SET) facility at its site at Jamshoro, which produces dyes, chemicals, emulsions and pigment dispersions for the textile industry. The facility supports the recovery of 80% of water and allows effluent treatment based on zero liquid discharge. The plant is spread over 25 acres consisting of flocculation, equalisation, surface aeration, clarification, ultra filtration and reverse osmosis to yield colourless water with a COD and TDS (total dissolvable solids) of less than 75 ppm. "We are committed to developing products that are lighter on resources," adds Mr Wessel, "for the immediate benefit of our customers, and with future generations in mind."

To address water scarcity, Netherlands-based DyeCoo Textile Systems in 2010 launched a waterless dyeing process which is being developed and tested by adidas and Nike suppliers in Thailand and Taiwan. (See the next edition of *WSA* for a look at waterless processes.) By using recycled carbon dioxide as the application medium, the technology eliminates the use of water but requires new dyes and chemicals to obtain the level of colour fastness and performance, with Huntsman signing as a partner to develop these new products, starting with finishing products and fluorescent brighteners. "This innovation provides environmental benefits while enhancing garment quality and has the potential to revolutionise the way textiles are produced," says Mr Grey.

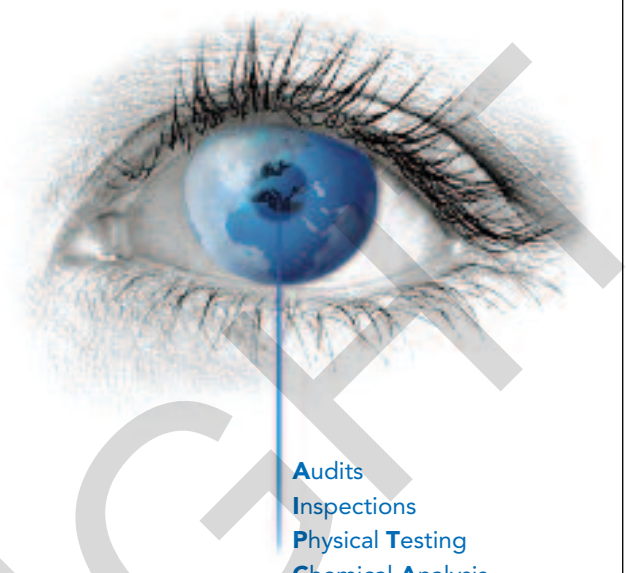
BASF's latest future finishing system, Fixapret Resin WFF, reduces the processing time by more than 50% in a one-step process compared to classic processes, according to the company, which translates to a reduction in energy consumption and improved carbon footprint.

But where does the responsibility lie when it comes to cleaning up the planet? We must all share the burden, say the groups. "We already consume more than the Earth can regenerate, 1.5 times the capacity of our planet," says Mr Carnahan. "Every part of the supply chain is responsible."

As we went to press, some brands are reacting to the most recent Greenpeace criticism: Armani said its products were "absolutely safe for consumers" while Louis Vuitton said all its products comply fully with international environment and safety standards.

"The issues are complex and no one party can resolve all the challenges on its own," concludes Mr Grey. "However, the industry still needs to do more – and to do it in a united fashion – if it is to effectively address the public's demand for greener products, cleaner supply chains and increased transparency."

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