

# Living in a material world

By Chris Richardson

In the chemicals and materials sector – as in every other industry – sustainability has become a market imperative.

Although some may claim that a 'green wave' swept the industry only a decade ago, and with very little result, this time it's different. End users are now happier to pay a premium for more sustainable products. At the same time, rising petrochemical costs and increased environmental regulation is forcing a re-evaluation of existing manufacturing strategies. Companies able to develop high quality, environmentally sound products can simultaneously tap into lucrative new markets, meet new legislation, and reduce their energy bills.

To date, the high price of sustainable raw materials has always undermined the cost-effectiveness of subsequent product production. Using relatively immature production methods, sustainable raw materials could not, until now, compete with the slick efficiency of the petrochemical supply chain. Recent spikes in energy prices, together with fears of increased conflict in oil producing regions, have changed the landscape. Now, sustainable material

production is achieving an economy of scale on a par with 'traditional' alternatives. For example, PLA (polylactic acid – used to create biodegradable packaging) is now cheap enough for even the largest companies to use it for their products.

We help chemicals and materials companies make the shift towards more sustainable product lines. This often starts with more proactive recycling, especially of the reactive or hazardous wastes which legislation has made more expensive to dispose of. We employ functionality-based analyses to reveal opportunities to use these materials in secondary (often new) markets, thereby reducing recycling costs while opening up new income streams.

Other strategies include energy reduction, reduced volatile organic compounds (VOCs), or use of bio-renewable feedstock. Whatever the market driver, companies should resist the temptation to 'force fit' a renewable substitute, especially at the risk of poorer performance.

Using a functional analysis methodology, we help clients find sustainable alternatives that match, and even exceed, current performance, leading to new products capable of capturing greater market share. For example, we helped a major toy manufacturer switch to natural plastics for injection moulding, and found an alternative delivery system for an FMCG aerosol product.

Reviewing the value chain is also essential. Environmental legislation increasingly covers lifetime impacts, making those products which are harder to dispose of less attractive to buy. Using lifecycle analysis, we can identify embedded energy and carbon footprints, and highlight ways to reduce these (perhaps by using 'greener' adhesives or fuels), thereby further enhancing the 'green premium'. Success, however, will again depend on performance.

The development of innovative material solutions – which speciality materials manufacturers are also well placed to develop and supply – remains a fundamental goal.

'Green' opportunities can generate significant new income streams, but identifying such opportunities can be difficult, especially if they lie in unfamiliar markets. Working with a partner such as Sagentia, with broad-based scientific, technological and business expertise, the process can be easier and faster, and the end result even more profitable.

**Chris Richardson is Head of Chemicals, Materials & Energy at Sagentia and is based at our headquarters in Cambridge, UK.**  
[Chris.Richardson@sagentia.com](mailto:Chris.Richardson@sagentia.com)

