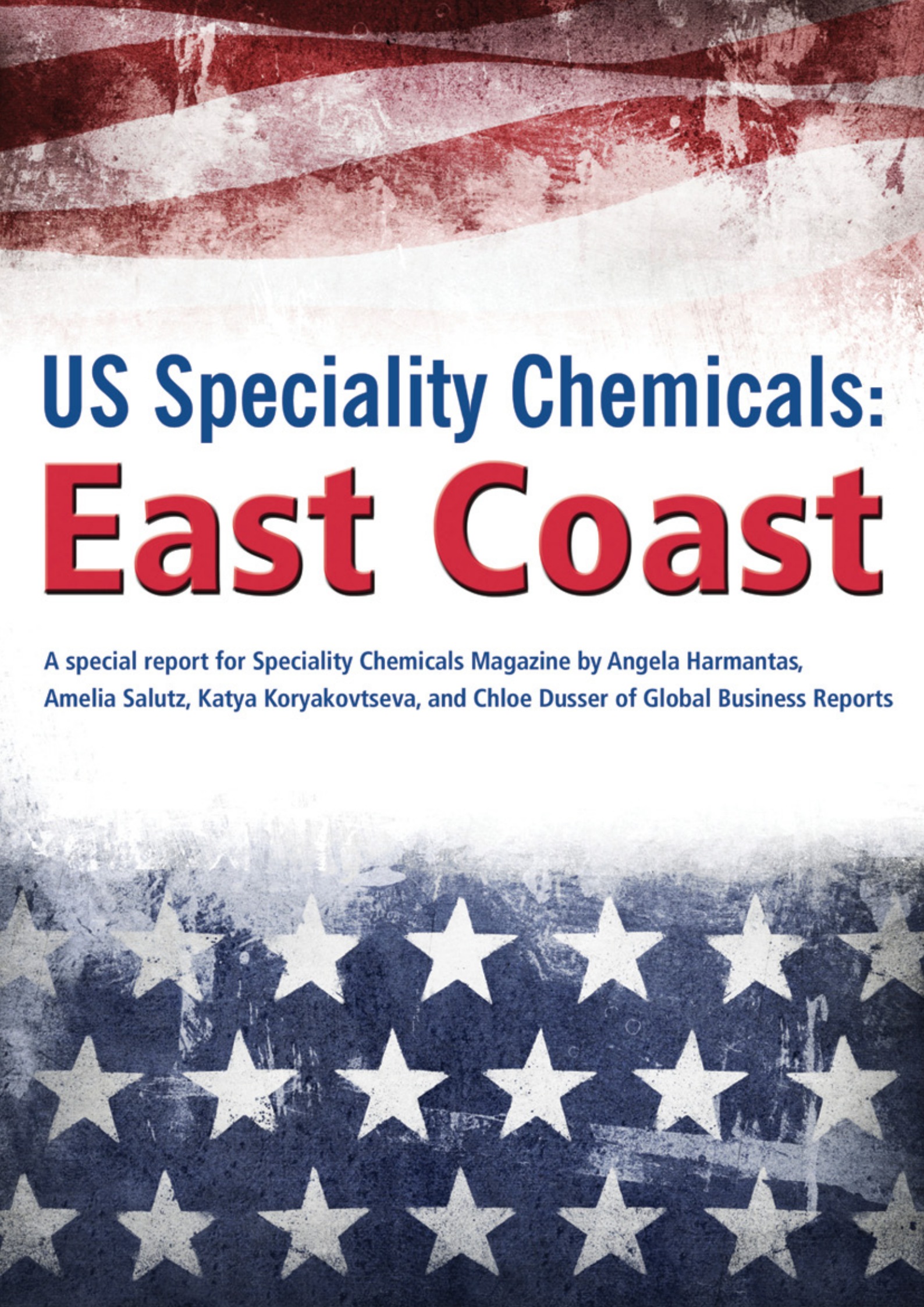


The background of the entire page is a stylized, textured American flag. The top half features the red and white stripes, while the bottom half features a field of white stars on a dark blue background. The texture is grainy and distressed, giving it a vintage or industrial feel.

US Speciality Chemicals: **East Coast**

A special report for Speciality Chemicals Magazine by Angela Harmantas,
Amelia Salutz, Katya Koryakovtseva, and Chloe Dusser of Global Business Reports



US Speciality Chemicals: East Coast

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The pervasive nature of the chemicals industry has usually ensured its reliability as an indicator of the wider economy. True to form, the US chemicals industry has closely mirrored the turbulence and uncertainty of both the US economy and, given that it produces a fifth of the globe's chemicals, that of the wider world.

Recent economic troubles have had a severe adverse effect on the US chemicals industry. The number of bankruptcy filings among chemicals companies reached 55 in 2009, up from 27 in 2007 and just 12 in 2006; employment waned and chemicals shipments fell dramatically. For an industry that touches nearly 97% of the American economy, the impact was severe.

While the worst of the global recession may possibly be over, continued uncertainty in the Eurozone, plus tenuous recovery at home, are putting immense pressure on the US chemicals industry. To add insult to injury, China recently overtook the US as the world's largest chemicals producer. As Asian countries transform their economies to become more sophisticated manufacturers, the US market is being flooded with cheaper product equivalents from China and India; the value of inorganic imports in Q3 2011 was \$4.8 billion, the highest in three years.

Yet, just as the beloved American writer Mark Twain once famously quipped, "Reports of my death are greatly exaggerated", the same could be said for his country's chemicals sector. Geological developments at home and global economic circumstances have combined to create

a new business environment, one that is in equal parts turbulent and dynamic.

Speciality chemicals companies especially are being forced to rethink their business models drastically. Underpinning this all is a slow but steady growth over the past few years and a cautious optimism that pervades among the sector's insiders.

"The chemicals industry in the US has an interesting future that will be full of growth. Companies are starting to focus more on innovation and technology as opposed to low cost," says Alexander Wessels, president and CEO of DSM Pharmaceuticals Products and chairman of **DSM North America**.

Much of the optimism surrounding the US chemicals industry's recovery is due to the excitement over the Marcellus Basin shale, a geological outcrop containing untapped natural gas reserves that blankets the sediment beneath the Eastern US.

"Given the relative inexpensiveness of natural gas and the closeness of the Marcellus shale field in Pennsylvania, there is a very good chance investment will come back to the region," says Hal Bozarth, executive director of the **Chemistry Council of New Jersey**.

"Natural gas is the lifeblood of the chemicals industry, whether it is used to heat or run the facilities or its wet stream materials are used as raw materials for speciality chemicals manufacturing."

This is especially true in the speciality chemicals sector, which has historically been the bastion of

North American and Western European countries. According to the **American Chemistry Council (ACC)**, speciality chemicals production in the US is expected to grow by 5.1% in 2012 and by 3% in 2013, thanks to increased demand from end-use markets such as agrochemicals and consumer products.

The demand, however, is not driven entirely by the domestic market. The US housing and construction industries are only beginning to recover from the 2008 crash and, while the automotive industry is regaining its footing, the US economic outlook as a whole remains weak. In light of these domestic challenges, new growth markets become ever more important for chemicals companies to survive and thrive.

This shift towards outward growth represents a significant change in business models and strategies. Chemicals companies are taking heed; the value of US chemicals exports reached a record \$86.9 billion in 2011, according to census data.

The US speciality chemicals industry is at a critical juncture as markets become increasingly globalised. In order to provide a more focused analysis, *Speciality Chemicals Magazine* and GBR have elected to focus on regional markets, starting with the East Coast, which has historically been the centre of the manufacturing industry in the US.

The region is strategically placed in order to benefit from declining European chemicals production, which fell by 2.4% in the first seven months of 2012, thanks to lower transportation



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Hampford Research's facility in Stratford, Connecticut, and (inset) Kate Donahue, company president

costs than their Asian and West Coast counterparts. This report will examine the Northeast, which here is defined as including the states of New Jersey, New York, Connecticut, Massachusetts, Pennsylvania, Delaware, Maryland and North Carolina.

Market recovery: Lessons learned

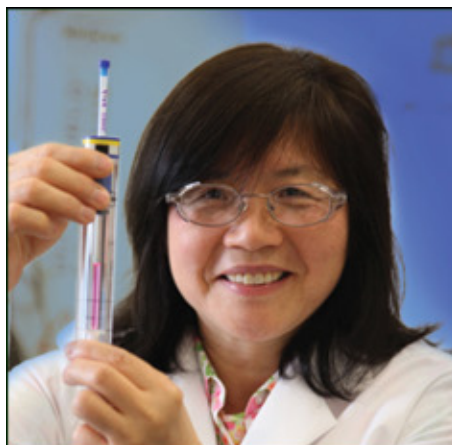
Emerging from the most widespread downturn to hit the US since the Great Depression in the 1930s, chemicals companies have learned difficult but important lessons on how to navigate through the waters of a volatile marketplace.

"The global financial crisis affected every business," says Wessels. "DSM has been more affected in performance materials than in pharmaceuticals or nutrition, although the company is resilient and our financial stability has provided the company with many opportunities."

In order to maintain this financial stability, US chemicals companies were forced to examine their cost structure in a more innovative manner.

"During the recovery, we invested our resources in a way that has allowed us to manage our products, which has given us more of an insight into how our costs really work," says Kate Donahue, president of **Hampford Research**, a custom chemicals manufacturer in Stratford, Connecticut. The company put systems and infrastructure in place for data management that enabled it to react quicker to other market opportunities, such as dental and cosmetic product manufacturing.

The financial crisis certainly forced companies to tighten their cost structure, but some companies, such as **Croda**, a subsidiary of Croda International, remained focused on long-term objectives. "During the crisis, we were careful about costs, but we were also sure not to do anything we would regret later when the economy improved. We did not change our



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US Special Report

long-term investment in R&D, marketing or promotional work," says Kevin Gallagher, president of Croda North America.

As demand from end-user markets has now begun to increase, so too have the fortunes of US chemicals companies; various indices, such as the Dow Jones, are showing a sustained trend of strong and increasing growth.



Manufacturing

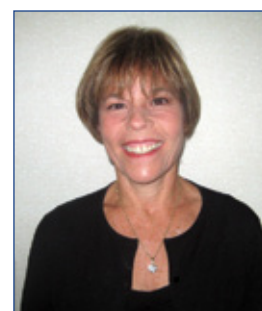
Shale gas: The miracle cure?

Estimates of the amount of recoverable shale gas in the Marcellus basin vary but, according to a 2011 report by the US Geological Survey, the total recoverable amount is close to 2.4 trillion m³ of natural gas. For American chemicals manufacturers who rely on ethane, a natural gas liquid that is derived from shale gas, this gives them significant cost advantages over their foreign competitors using oil-based feedstock.

Dow Chemical and **Royal Dutch-Shell** recently solidified the enthusiasm surrounding low-cost feedstock in the US. In March 2012, Shell announced plans to build a \$2 billion ethylene cracker near Pittsburgh; the following month, Dow followed suit by investing \$4 billion into a similar facility near Texas. CEO Andrew Liveris directly attributed Dow's investment to low natural gas prices, putting the company "on the threshold of an American natural gas resurgence".

Though companies operating in the less energy-intensive speciality chemicals sector may not experience the direct benefits of lower energy costs, the implications for the US chemicals industry as a whole can be viewed as positive.

"In addition to the downstream connections of extracting ethane, propane and butane, the chemicals industry has a whole range of involvement, from developing environmentally benign additives to fracking water to providing chemicals for water treatment," says Jeffrey



Kureha America's West PGA plant (left) and (above) Elizabeth Gershon, EVP of Kureha America

Peters, president of the **Pennsylvania Chemical Industry Council**.

Boosted by these anticipated downstream effects of the shale boom, chemicals companies are going forward with their investment plans. The ACC estimates that chemicals companies across the country have allocated over \$25 billion to the construction and expansion of their facilities. The East Coast in particular has become used to seeing decreasing investments as major manufacturers have exited the region. Now, with the Marcellus shale play, this trend is reversing.

BASF, the world's largest chemicals company, built a new methylamines plant in Geismar, Louisiana, and will be putting a new formic acid plant there as well. "We have started battery activities here, with the building of a plant in Elyria, Ohio. We would not do these things if we were not convinced we could be cost-competitive, because we would not be able to survive in the market," says Beate Ehle, EVP of BASF, based in Florham Park, New Jersey.

"Of course, we have activities in Asia, and there is no doubt we will increase our presence in emerging markets; however, North America enjoys very attractive energy prices right now due to the shale gas effect, as well as excellent raw material prices in certain value chains," she adds.

Other global chemicals companies are investing significant resources in the US. DSM's manufacturing base in the US has expanded during the last two years to increase the capacity of its performance materials, material science and life science businesses.

"Chemicals manufacturing in the US has become more competitive because of low energy prices and the cost of labour, the regulatory environment and IP protection, which make the US an attractive destination for investors," says Wessels of DSM.

Manufacturing locally also fits within the strategy of global chemicals companies with a US presence, such as **Kureha America**, the New York City-based subsidiary of a Japanese raw materials supplier, which has three manufacturing sites in the US.

"In 2009, we decided to build a plant in West Virginia that will make a brand new polymer called polyglycolic acid under the brand name Kuredux, using very unique technology. Part of our strategy is to diversify, not only in sales and marketing but also in our manufacturing sites," explains Elizabeth Gershon, EVP of Kureha America.

Bluestar Silicones, a silicone manufacturer with a US base in East Brunswick, New Jersey, recently consolidated all of its North American manufacturing and R&D operations in a 21,000



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m² facility in York, South Carolina. "Today's environment creates the opportunity for manufacturers to regionalise production," says J. Christopher York, North American president of Bluestar Silicones.

Domestic advantages

The resurgence in domestic manufacturing capacity has implications beyond low-cost feedstocks. Chemicals companies can now offer their domestic US clients a surety of supply that they would otherwise have to source from abroad, which leaves customers open to increased tariffs and other cost pressures outside their control.

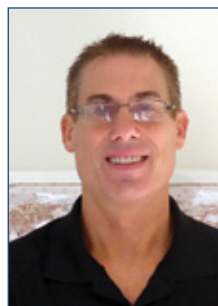
"Croda has learned that customers want supply chain surety and part of that surety comes from being able to source near where you are going to use the product. We have a large manufacturing footprint in North America because this is what our customers want from us," says Gallagher.

York echoes this. "For silicones, the cost is in capital equipment and raw materials such as methanol, silicon, copper and platinum. Our strategy is to be close to our customer base in order to be responsive to the evolving needs of our markets."

In addition, manufacturers are able to relieve some of the uncertainty surrounding IP security in emerging chemicals manufacturing destinations. Donahue of Hamford Research explains: "In the US, customers are guaranteed IP protection and American manufacturers can ensure that their customers will not be out of production, which limits any negative impacts on the supply chain."

Wessels likewise agrees that, while DSM does have a significant Chinese manufacturing presence, "our more IP-sensitive manufacturing is carried out in the US, as a lot of the company's sales are driven by our rich IP portfolio."

According to Dave Mazzairell, president of **Lab Express International**, a manufacturer of



(left) John Gaither, chairman, president and CEO, Reichhold; (centre) Alexander Wessels, chairman, DSM North America, and (right) Charlie Lewis, president, AcceleDev Chemical

niche materials for the pharmaceuticals and speciality chemicals industries, many customers have had "nightmare experiences" with Chinese and Indian manufacturers.

"Pricing has gone up in these countries, but quality has not. It is approaching the point where it just no longer pays to source from them. Regulations are tightening in overseas manufacturing; the FDA has a bigger presence, and will shut down those who are not complying with US regulatory measures."

For all this, the advantages of overseas manufacturing are declining for another reason

entirely: labour costs. Wages in the Pearl River delta alone have increased 10% this year and, coupled with rising land prices and tightening environmental and safety regulations, China's cost advantages are not what they used to be.

"China used to offer savings of five to ten times over suppliers from other countries competing on the same material. Labour costs in China are increasing quickly, partly because of the high demand for chemists generally, and also for more highly trained chemists with an American or

European background," says Charlie Lewis, president of **AcceleDev Chemicals**, a custom synthesis organisation with R&D and manufacturing sites in both the US and China

The Chinese education system, Lewis adds, has been opened up to allow a lot more students in each classroom, while the number of expert teachers has not increased at the same rate. So the level of training is not quite as good as it once was.

"Over time, it made sense for AcceleDev to also integrate R&D back into the US as the reduction of real estate prices and the cost of hiring chemists became much more cost-



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Global competition, global solutions

While chemicals manufacturers are optimistic about their North American production footprints, the lure of emerging markets remains strong. Faced with flat demand from a mature home market, globalisation has been the key to growth for the domestic chemicals industry as the demand dynamic has shifted from mature to emerging markets. Though having a global presence has traditionally been the mandate of chemicals manufacturers, US companies are looking for creative ways in which to penetrate competitive emerging markets, whether through greenfield investments or acquisitions.

Reichhold, a North Carolina-based supplier of resins for coatings and composites, recognised the importance of global integration and made significant investments in building greenfield plants in India and China, which came online in 2009 and 2011 respectively. Formely owned by Japanese company Dainippon Ink & Chemicals, Reichhold saw a need to develop its own presence in Asia after it became independent.

"At that time, the US and European economies had started to flat line, so it was very important to grow through our Indian and Chinese business," says John Gaither, chairman, president and CEO. "Our overall growth in recent

years has been through our global customers who have needed the same Reichhold products in other parts of the world."

Boston-based **Cabot**, a global speciality chemicals manufacturer with expertise in carbon black, has concentrated most of its efforts and investments on emerging markets in the last few years. "We have continued to grow in China, South-East Asia, South America and the Middle East, perhaps at the expense of Europe where we significantly restructured through the financial crisis," says Patrick Prevost, president and CEO. "China is now worth 17% of Cabot's revenues and assets; we are currently building our fourth plant there and have just expanded one of our silica facilities."

For **AkzoNobel**, the largest global paints and coatings company, development in Asia has been a mixture of organic growth and acquisition. "Historically, AkzoNobel has had very good organic growth in mature markets, but to outgrow them we needed to improve our positions in emerging countries," says Bob Margevich, global business unit leader for the AkzoNobel Surface Chemistry business.

"A major part of our Asian strategy was the investment of more than €300 million in a grassroots chemicals facility in Ningbo, China, and we gained a leading position in speciality surfactants across Asia from our acquisition of Boxing. Elsewhere, we are building a new industrial coatings plant in Bangalore and have expanded capacity in Brazil."

Last year, Swiss chemicals manufacturer **Lonza** acquired Connecticut-based Arch Chemicals, a major producer of biocides, in a \$1.4 billion deal designed not only to diversify its product portfolio but also to strengthen the company's presence in Asia and South America, according to Jeanne Thoma, COO of the Microbial Control business.

"Our diverse portfolio allows us to leverage our strength in traditional markets to access new or developing markets. Some of our largest revenue drivers in the microbial control sector are in the recreational water, personal care and wood protection markets," Thoma says.

Similarly, Philadelphia-based **FMC** is looking outside of US borders to drive its strategic growth plan. "We have made tremendous amounts of investments in rapidly expanding economies," says Andrew Sandifer, VP of strategy and development and investor relations. "Many of our businesses, in agriculture, food and pharmaceuticals are strongly driven by the rise in middle class wealth in rapidly developing economies and the insatiable need for more calories and protein."

International expansion is not just the strategy of the multinational companies. **Polysciences, Inc.**, a manufacturer of custom fine and speciality chemicals materials headquartered in Warrington, Pennsylvania, has had a global presence for over two decades.

"We have had a warehouse and sales organisation in Germany for over 25 years. Now



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Helsinn Therapeutics' US site in Bridgewater, New Jersey

we are trying to duplicate this in Taiwan with the Asia-Pacific office that we opened last year," says Michael Ott, president, CEO and owner. "We have several projects under way in Asia and we are certain it is going to be a growth area for us. The place where we are looking to expand next is Brazil, where there is a large medical device market."

Other companies have taken an entirely different step in their global expansion strategies, such as Stamford, Connecticut-based **Tronox**, a global producer of titanium ore and titanium dioxide used in the paper industry. In June 2005, the company purchased the mineral sands business of Exxaro, making it the third largest titanium feedstock producer in the world.

"Tronox has shifted a lot of the demand for feedstock at our pigment plants towards our own mineral sands business; we are therefore much more self-sufficient in feedstock than before. Now that we own 100% of our feedstock and pigment suppliers, we can absorb the variations in profit margins across the supply chain," says Tom Casey, chairman and CEO.

While chemicals companies are experiencing growth in emerging markets, particularly China and parts of South America, the US continues to be a very important market. To solidify its

presence, in 1992, Kureha established a joint venture with Ticona, the engineering polymer division of Celanese in polyphenylene sulphide resins for use in the aerospace and automotive industries.

"We are the first overseas manufacturer of short carbon fibres in China, but it is important to maintain our American manufacturing base in this sector; US customers will always require short delivery times and support from local suppliers," says Jeff Zhang, EVP at Kureha America.



Pharmaceuticals

The growth potential

Any report on the US East Coast chemicals industry would not be complete without an examination of pharmaceuticals companies, the majority of which are centered in the North-East, attracted by hordes of graduates from top-tier universities and a high concentration of scientific professionals. New Jersey alone is home to 15 of the world's top 25 pharmaceuticals companies.

Although the sector has experienced similar challenges to their chemicals counterparts, such as outsourced manufacturing, for smaller pharmaceuticals companies who rely heavily on

innovation, the depth of talent available ensures that the East Coast will remain the centre of the pharmaceuticals industry.

Aceto is a Long Island-based virtual manufacturer which shifted its business model from industrial chemicals to focus on pharmaceuticals manufacturing. "We found that many of our industrial chemicals also had pharmaceuticals applications, which offered more attractive margins and less cyclical dependence," says Albert Eilender, chairman and CEO.

In 2010, the company penetrated the market by acquiring Rising Pharmaceuticals in order to focus on finished dosage forms. "With the introduction of generic drugs into the market a number of years ago, the need for pharmaceuticals involvement became much greater. Our pharmaceuticals business has grown at greater rates than our other businesses and we have become involved in intermediates and APIs," Eilender says.

Having an East Coast footprint is also attractive to European companies looking to expand their presence in the US. Swiss-based **Helsinn Therapeutics** has been focused primarily on supportive care and has a niche focus on supportive cancer care. In 2009, the



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company acquired Sapphire Therapeutics, a New Jersey-based biopharmaceuticals company, in order to acquire a cancer supportive care agent and a GI supportive care molecule that was in development. The acquisition also allowed Helsinn to have a direct commercialisation presence in the US.

Aloxi, the main revenue generator for Helsinn Therapeutics, is the market leader in the US and Japan for the treatment of chemotherapy-induced nausea and vomiting. The company is also developing Anamorelin, which is used for the treatment of cancer-associated cachexia. The drug is currently in Phase III and will be launched in the US under the Helsinn brand.

According to William Mann, president and CEO of Helsinn Therapeutics, "there is a huge opportunity to bring innovation to increase patients' quality of life while they undergo chemotherapy; the market is ready for new agents that will help patients deal with their disease."

For **Novacap**, a French diversified chemicals company, market entry into the US came with the November 2011 acquisition of Rhodia's salicylic and acetaminophen businesses, which was renamed Novacyl. "Before this, the company was focused predominantly on Western Europe with assets mainly in France; the acquisition increased our international presence and asset base, particularly in North America," says Gilles Grenier, Novacyl's general manager.

Many of the same issues facing speciality chemicals companies are prevalent in the pharmaceuticals industry but they must also cope with unique challenges. With some of their blockbuster products coming off patent soon, major pharmaceuticals companies are facing a prospect of tens of billions of dollars of lost revenue over the next several years. This segment of the industry is facing the so-called 'patent cliff' in different ways says William Wofford, partner at **Hutchison Law Group** a North Carolina-based firm that specialises in the life sciences industry.

Photo Courtesy of SkyscraperSunset.com/Matthew Johnson



Chemtura's headquarters in Philadelphia (www.skyscrapersunset.com) and (inset) Craig A. Rogerson, chairman, president and CEO



"What we have seen in response to this situation is considerable competition among these players when it comes to the right kinds of technologies, opportunities, and developmental products," Wofford says.

"Some of these organisations have a lower appetite for risk now, and are hesitant to take on products that are going to require a considerable amount of additional investment to move along. Factors in the larger financial market have made less venture capital and private equity available, so there are many companies looking for partnerships and acquisition opportunities."



Innovation

The competitive edge

The US chemicals industry invests \$56 billion/year in R&D and 20% of all US patents are chemistry-

related. The US has long been a clear market leader when it comes to innovation and, with a strong emphasis on new products going forward, that is not likely to change.

"There are predictions every year that the rate of innovation in the US will start to decline.

Although China now holds more patents than we do, US innovation has not declined. This is

because we are good at it. The US has an inventive and entrepreneurial spirit," says Thomas Tritton, president of the **Chemical Heritage Foundation**, a Philadelphia-based library, museum and research organisation that promotes chemistry's impact on society.

Newark, New Jersey-based formulator of adhesives and coatings **Innovative Resin Systems** attributes its

achievements to a strong focus on innovation.

"Currently, our 2012 sales are showing an increase of 33% year-on-year on our 2011 record year," says company president Pina Patel. "The key to the driver of this increased business is our R&D; in 2011 we invested \$250,000 alone on new manufacturing equipment."

Faced with the inevitable commoditisation of their products and flatter US and European markets, many speciality companies are placing increased focus on bringing cutting-edge products to market. Yet R&D funds are drying up and companies are finding they need to be as lean and efficient as possible to maximise their innovation budgets.

The need for fuller pipelines at lower costs has created a significant appetite for partnerships.

"So much of what happens in new development today does involve partnerships. Nobody has all the pieces of the puzzle by themselves and we can do it a lot faster and more cost-efficiently by forming alliances," says Gaither of Reichhold.

In a 2012 survey of chemicals industry executives conducted by KPMG, the number of US companies expecting to invest over 5% of their revenue in R&D dropped from 23% to 17%. While this remaining percentage is by no

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means negligible, it is nonetheless reflective of companies looking to right-size their programmes.

Coming out of a 2010 restructuring, global speciality manufacturer **Chemtura** re-examined its approach to R&D in order to maximise resources and speed up time to market. "We now have a much more disciplined stage-gate approach, so the hit rate on projects is much higher and the time frame is much shorter to commercialisation. Innovation is a large part of why we have seen improved earnings, even though volume has been soft," says Craig Rogerson, chairman, president and CEO.

According to John Cech, president of **CVC Thermoset Specialties**, a manufacturer of speciality epoxy resins, companies must increase their R&D spending in order to compete with lower cost products. "We make heavy investments in supporting the technological know-how of our products; over 18% of our payroll is R&D," he says.

For CVC, which was acquired by Emerald Performance Materials in 2008 and now operates as a subsidiary, the integration of Emerald's reactive liquid polymers business has led to four significant new materials in the product line that contribute to more than 5% of sales.

Furthermore, companies are realising that their approach to R&D needs to be as global as possible. "Reichhold has three major R&D labs, one in North Carolina, Brazil and Norway. In the past, there was very little coordination between these laboratories. They handled their own projects for customers and we were finding that they were often working on very similar things. We now have regular global technology meetings and we share information across all these groups. We prioritise the projects on which we are working on a global basis," says Gaither.

Arkema, a global chemicals manufacturer, is focusing on innovation and high value-added specialities to achieve growth goals of €8 billion and an EBITDA margin of 16% by 2016. Two thirds of the €150 million/year that the company



Cardolite's plant in Newark, New Jersey

spends on R&D is devoted to sustainability and megatrends, which present a golden opportunity for a company with experience in bio-based materials.

"One billion people in the world have no access to drinking water today, and we have products which help to supply it. We are also present in the field of environmental sustainability," says Bernard Roche, CEO of Arkema in the US.

Lord Corporation, a North Carolina-based global manufacturer of speciality adhesives, coatings and electronic materials, invests 8-10% of turnover on R&D in any given year. A large portion is devoted to the area of green chemistry. "Bringing green chemicals to the industry is an objective of Lord. We have been working on products for several years, but the interest is developing slowly," says chairman, president and CEO Richard McNeel.

McNeel anticipates that Lord will be ready with green solutions when the market has evolved to make the switch. "After years of improvements, our aqueous adhesive is now close to the performance of our solvent adhesive," he says.

"One of the challenges to convincing customers to switch to more sustainable solutions lies in the initial capital investment required to make this switch. As long as they do not have to switch, they do not want to, unless they are very dedicated to sustainability."

According to Tony Stonis, president of **Cardolite**, a coatings manufacturer which uses cashew nut shell liquid (CNSL) technology, the R&D business is a gamble. "It is easier to wait for opportunities to reverse engineer and then sell on price, although maybe not as profitable in the longer term," he says.

"This is especially the case in the coatings and friction industry, where we are selling an engineered product rather than a specific molecule. Unless customers are ready to take a risk, or they want to second-source, they will stick with the maker of a new product for years, as liabilities are very high in both of our end markets."

However, Stonis adds that Cardolite would rather invest in R&D than acquisitions. CNSL is useful for resistance and adhesion. The liquid is Cardolite's raw material, which is distilled in order to condense cardanol, the raw material for coatings products; anything left over is used in friction products.

Friction material end users are used to make brake linings; for the coatings area, it is the people who make paints. The aliphatic portion of CNSL, which provides flexibility and mobility, "has good water resistance, which is needed for marine coatings. In over 80 years of CNSL technology, there have only been two huge breakthrough areas, so finding applications is clearly not easy," says Stonis.



Outsourcing

Contract and toll manufacturing has been an effective strategy for companies with excess capacity to weather the recent economic storm. For Chemtura, contract and toll manufacturing is not core to any business units, but it was a timely solution to the impact of market dynamics.

"Chemtura was put together by mergers and acquisitions, so with that we have a broad footprint and many assets. Many of our plants



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Robert K. Maddox,
president, Pharmacore

are very specific in their capability so it is difficult to consolidate them," explains Rogerson.

"In the down part of the cycle that we are in now, we have excess capacity. While we have a product development pipeline that should put new products into the plants, there is a gap

in time, and our plan is to use those assets more fully by offering to contract and toll manufacture. The timing for this addition of services is good because there is a lot of consolidation in the industry and there is an increased need."

While contract and toll manufacturing is a stopgap measure for some, it is the bread and butter of a booming services sector. Not only are more contract services companies cropping up, but companies offering third party project management have also found a niche in the market. The business model of **Richman Chemical** of Lower Gwynedd, Pennsylvania, for example, revolves around developing partnerships between clients and contract manufacturers.

"Historically, many companies approached custom manufacturing as a surplus business or fill-in. In the last 25 years, more companies have started to actually specialise in it," says Edward Richman, president of Richman Chemical. "Innovations in chemistry and life sciences are accelerating and we are seeing increased demand for high-tech, high-value projects for these markets."

Innovations in the life sciences are particularly accelerating as Big Pharma confronts ongoing patent expirations and biotechnology advances spawn various and sundry start-ups. In the custom research and manufacturing field, companies are ready and waiting to aid in new molecule development.

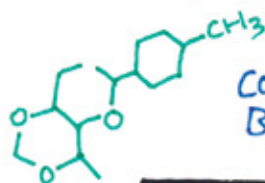
"The patent cliff means that large pharmaceuticals companies will have to reduce costs in order to recoup lost revenues. It allows companies to turn a fixed cost with underused capacity into a variable cost, and use the demand when they have a requirement for a specific capability," says Tim Tyson, president and CEO of **Aptuit**, a pharmaceuticals services company.

"We have worked with everyone from virtual companies with no lab or chemistry capability right up to the biggest pharma companies in the world," says Robert Maddox, president of the North Carolina-based chemistry services company **PharmaCore**. "However, it seems the biotech and mid-sized companies have tremendous pipelines right now."

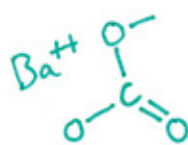
While activity spurred by the patent cliff is likely to have a significant impact on the service industry, not all contract services companies have high hopes for business from Big Pharma. "You would expect the opposite, but many larger companies do not seem to have a lot of compounds moving forward," says Maddox.

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"Almost everyone we talk to has had their budget cut. The legal framework plays into it, but things also tend to grind to a halt when there are reorganisations, which we are seeing a lot of right now. There can be a slowdown for a couple of years before everyone gets back into the mode of discovering drugs."

Yet in spite of budget constraints, molecule development opportunities coming from Big Pharma cannot be discounted. Many companies look offshore to outsource their contract research and manufacturing needs, which has put pressure on Western-based CROs and CMOs to deliver more services at lower prices.

The Chemistry Research Solution

(TCRS), a Bristol, Pennsylvania-based CRO that entered the market in 2009, has based its strategy on recognition of these outsourcing trends. "The type of work that companies have outsourced to China and India is, for the most part, routine chemistry," says Michael Kirkup, president and CEO.

"A small biotech company is much more interested in complex, highly technical chemistry since it cannot afford to lose its limited IP to an outsourced company. These companies are also not as well-equipped financially to keep tabs on an overseas company."

For pharmaceutical CMOs looking to work with big clients, the market is very competitive, according to Michael Staff, president of the US branch of fine chemicals firm **Minakem**, which has been approached by large pharmaceuticals companies at Phase III with projects that have failed in low-cost countries. "It is important that

we source some of our starting materials out of China and India, where we employ full time staff and carry out audits in order to ensure quality control (QC)," he says.

There is a perception that large pharmaceuticals companies are no longer searching for the blockbuster billion dollar products but introducing more niche therapies, according to Thomas D'Ambra, president and CEO of **AMRI Global**, a contract research and manufacturing company for the pharmaceuticals industry. "In general, there is a redefinition of the industry's discovery and development strategy in which outsourcing will play a big part," he says.



Distribution & supply

The supply chain

The globalisation of chemicals production has not only impacted manufacturers but also, unsurprisingly, distributors. The large volumes of production shifting to Asia and the worldwide consolidation of suppliers mean that manufacturers' representatives and regional distributors have fewer small companies to represent and face increased competition from national and multinational players.

"The manufacturing base in the US has eroded and the distributors serving these industries no longer have demand for their products," says Mike Travers, director of new product research and development at **Morre-Tec Industries**, a New Jersey-based distributor of bromine

compounds and speciality chemicals.

For **Thornley Company**, a distributor in Newark, Delaware, industry consolidation has eroded their traditional supplier base. "As a small, independent manufacturer's representative, we feasted on small, entrepreneurial business. New companies needed representation and we presented a great opportunity for low cost entry into the marketplace. Over the years, however, we saw a tremendous evolution in the marketplace that caused us to reevaluate our business model," says company president H. Douglas Thornley.

The company's response was to move into marketing products under their brand. "We source materials from supply partners and use the expertise that we have gained over the years to add value to the supply chain," explains Thornley. "While our sales dollars have gone down, our profitability has improved and we have greater control and ownership of our market."



Photo Courtesy of Aptuit

Aptuit focuses on the pharma industry



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While a shift into this business model incurs greater risk, many companies are finding it is well worth it to have greater control over their customers and the speciality products that they have helped a supplier to develop. Just as some distributors are readjusting their business models to play a more strategic role in the supply chain, others are seeing the start-up culture propelled by biotechnology and new molecule development as an attractive new frontier.

"We look at the ever-expanding group of newer start-ups that need distributors. There is a renaissance going on in the market right now and smaller companies will continue to pop up," says Vince D'Andrea, president of **E.M. Sullivan Associates**, a speciality distributor serving the Mid-Atlantic and Southeast.

The globalisation of the chemicals industry has created unique challenges for the distribution industry. At the same time, access to low-cost raw materials from emerging markets has also been advantageous to the industry.

"Years ago, it was a challenge to market products sourced abroad, but many of the chemicals we sell are not even made in the US any more," says Ben Gutmann, managing director of **BassTech International**, a New Jersey-based supplier of speciality raw materials. "If a company can buy something from China that is half the price and it can be assured it is of good quality, it will want to use it. Companies cannot ignore what is going on outside the US."



Laboratory at Helsinn's site

Customer acceptance of international procurement has grown as distributors strengthen their quality control systems with on-the-ground agents, plant audits and quality assurance (QA) and QC testing. "In this global economy, we would be doing ourselves and our customers a disservice if we did not keep an open mind with respect to technologies offered by Asia or South America," says Sam Morell, president of **S.P. Morell**, a speciality distributor and manufacturer's representative based in Armonk, New York.

"With many customers, we supply some strategic raw materials that have actually kept

them competitive against the global market. It can continue to stay in manufacturing because we can give them alternative sources of raw materials at workable prices," added BassTech's COO, Alan Chalup.

Value in specialties

Global distributors of industrial and speciality chemicals have been actively pursuing opportunities in the speciality chemicals sector to take advantage of the high-value nature of the sector; a characteristic that enables it to be more resilient against global downturns.

"The speciality sector is critically important to Univar. It represents about half of our sales, and offers high growth opportunities in many areas," says J. Erik Fyrwald, president and CEO of **Univar**. The US market represents nearly 60% of Univar's global sales revenue.

Brenntag has been active in the speciality chemicals segment directly since September 2007, when it formed Brenntag Specialties. According to William Fidler, president and CEO of Brenntag North America, "Many speciality chemicals firms are not currently in the distribution channel because producers believe that they have the skill sets and equipment to penetrate the market. Smaller customers do not necessarily have access to some of the technical support capabilities that producers offer and so we have started to fill this gap as a distributor."

Distributors in particular are in the fortunate position of being able to look inward at the



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domestic market for their growth; currently, only about one in ten chemicals manufacturers use distributors, making the potential to increase market share exponential. "The distribution industry, and particularly speciality distribution, is not even close to being mature and it is quite exciting for us," says Fidler.

With larger distribution companies refocusing their strategies to incorporate specialties, the market is becoming highly competitive, forcing smaller, family-owned companies such as New York-based **Biddle Sawyer** to adapt.

"There are greater profit margins in the speciality chemicals industry, which causes even the big distributors to make inroads into the industry. Biddle Sawyer competes in a different area; we see ourselves as a smaller subset of speciality chemicals," says the company's president, Neil Chavkin.

"The market is consolidating and large distribution companies are acquiring smaller, regional operations. A distributor must have the products in stock by having an inventory large enough to cover orders. The speciality chemicals industry is rapidly evolving and the product mix is always changing, which creates new opportunities. There will never be a substitute, though, for a relationship-based business, both with customers and suppliers," says Len Glass, president of Morre-Tec.



Support services

Facilitating success

Built up around the mammoth US chemicals industry is a healthy sector of supporting players that perform crucial services, from optimising supply chains to filling the industry's talent pool. For logistics providers, the chemicals industry is an attractive but challenging market.

Given the nature of their products, the chemicals industry faces high logistics costs, technological challenges and complex regulations. For third-party logistics providers (3PLs) with the supply chain and transportation expertise, it is an industry where the opportunity is ripe, if complicated.

Carrier capacity was whittled down over the course of the financial crisis as shipment volumes dropped. As volumes improve in the recovering climate, there is a need for creative solutions to lingering capacity problems that have been further constrained by the dramatic increase in shale play.

"The shale gas boom has caused us to think outside the box," says Stephen Hamilton, president and CEO of **ChemLogix**, a 3PL based in Blue Bell, Pennsylvania. "A lot of capacity, especially for tank trucks, has been consumed by shale gas and oil. This increased demand has exacerbated an already existing shortage of drivers and equipment."

With carrier capacity tight and their clients downsizing, 3PLs have stepped up and taken more active roles in managing supply chains. "Companies are smartly evolving in how they



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Interview with Cal Dooley, ACC president

Can you provide us with a brief introduction to ACC and an overview of the range of services that you offer to your member companies?

ACC's mission is to deliver business value through exceptional advocacy. Our priority is to advocate for sound government policies that preserve and promote competition and innovation. We are America's oldest trade association of its kind, representing more than 160 companies engaged in the business of chemistry, an innovative, \$760 billion enterprise that is helping solve the biggest challenges facing our nation and the world.

Our members are the leading companies engaged in all aspects of the business of chemistry, from the largest corporations to the smallest, and everything in between. For more than 140 years, companies have joined ACC because we provide access, expertise, information and opportunities.

Our offerings include everything from advocacy to business opportunities and networking, economic and industry intelligence, research and benchmarking, specific product and market sector support, professional and technical conferences and Chemtrec, the industry's foremost emergency response initiative.

How has ACC's membership evolved in recent years?

Representing more than 85% of US chemicals manufacturing capacity, ACC has three categories of membership: regular, affiliate, and associate. We also continue to grow our base of small- and medium-sized enterprises.

In these uncertain times, companies of all sizes want to know that membership delivers results and value. Our continued growth is proof of our effectiveness when it comes to strategic advocacy, product and market sector defence, compliance assistance and business networking opportunities.

It is critical that today's policymakers understand the scale and scope of the economic and societal contributions our industry makes, both directly and indirectly, so the addition of our value chain partners to our membership continues to strengthen our ability to provide exceptional advocacy at all levels of government.

ACC's mid-year 2012 Market Situation & Outlook reported slow growth and softer demand for US exports in 2012. What expectations do you have for 2013?

We are anticipating sub-par economic growth into 2013 as the economy continues to face

strong headwinds and concerns around the fiscal cliff crystallise. We are also seeing this year's economy repeat the pattern of 2010 and 2011. Just as the Q1 discussion about economic recovery is finally gaining traction, the recovery disappears; if this trend continues, it is likely that job creation and growth in income, sales and production will continue, but at a very slow rate.

Given ACC's high prioritisation of regulatory reform, please elaborate on your efforts to represent the industry's interests regarding the Toxic Substances Control Act (TSCA) reform on Capitol Hill. Can we expect regulatory reform in 2013?

ACC strongly supports legislation and regulatory action on TSCA that further enhances the safety and health of people and the environment. However, new approaches must be based on reliable scientific data without creating burdens that stifle innovation and reduce global competitiveness.

Although the partisan divide in Congress this year prevented a sound bi-partisan bill for TSCA modernisation from advancing, we will continue to work with Congress to craft a new proposal that will attract bipartisan support and create a world-class regulatory system that provides for the safe use of chemicals, protects American jobs and maintains US global leadership in innovation. A strong foundation has been laid for bi-partisan chemicals management reform in 2013.

Moving forward, we will continue to build upon these successes by working with federal agencies, Congress, our coalition partners and other stakeholders to pursue additional regulatory reform initiatives that improve economic models used in regulatory impact analyses, assess the cumulative and competitive impacts of regulations, create consistent standards for considering scientific data used in rulemakings and ensure greater transparency in the rulemaking process.

The boom in US shale gas development has spurred renewed investment in the chemicals sector. What activities has ACC undertaken to foster this growth and ensure positive downstream effects for the industry?

Energy demand continues to increase and regulatory policies are creating uncertainty about future supplies. Yet after years of debate, America lacks a national energy strategy. In order for our economy to grow, US industries to innovate and compete globally,

and businesses to create new jobs, our nation must have a truly comprehensive energy policy.

In early 2012, ACC launched a campaign to promote and advance specific policy outcomes

that support, among other things, the production and use of shale gas. With the heightened awareness of shale gas production came increased scrutiny of hydraulic fracturing. Lawmakers in 19 states introduced bills to regulate fracking.

ACC was active in promoting reasonable approaches to addressing these issues. A bill promoting the right to know while protecting confidential business information regarding fracking fluid disclosure was passed in Texas with industry support. We also supported the efforts of the governors of West Virginia and Ohio, as well as policymakers in Michigan, Pennsylvania and Texas, to shine a spotlight on the role of energy in economic development and job growth.

With a focus on the Marcellus and Utica shales, we advanced the understanding and appreciation of how appropriate regulation and new infrastructure can return economic growth and competitiveness to US manufacturing, including petrochemicals producers, helping to create a supportive climate for increased access, supply and production of natural gas.

How do you expect the US chemicals industry to perform in comparison to its Chinese and Indian counterparts in the medium-term?

Output of chemicals in emerging markets will continue to outpace production in developed countries. China, with the world's largest chemicals sector, will continue to grow strongly, but at a slower pace than in the previous decade. India and other emerging markets in the Asia-Pacific region will continue to expand. Over the next several years, chemicals output in the dynamic economies of China and India are expected to grow by 9-10%/year.

By comparison, US chemistry is expected to grow by 2% to 3%, slightly ahead of GDP growth as the renewed chemicals competitiveness boosts exports. From a product standpoint, the strongest growth will continue to be in specialities, consumer products and agricultural chemicals.





engage third party logistics companies," says Frank McGuigan, senior vice president of operations for **Transplace**, a 3PL and technology company that expanded into the chemistry market just 18 months ago.

"Some of our strongest relationships are built upon the foundation of value that is identified and created through a Transplace Consulting engagement. Our consulting group engages in benchmarking, network analysis and optimisation as well as procurement for customers, creating an early understanding of the value that a third party relationship delivers, and the problems it solves downstream," says McGuigan.

BDP International, a leading logistics provider for the industry, is another example of a 3PL constantly looking to bring more value to the supply chain. Global COO Michael Andalaro says: "BDP has become more extensively involved in product classification and determining on the import side which government agencies need to be involved. Increased focus on safety has also led to intense focus on the whereabouts of products. We have designed our technology so that we can tell our customers where their goods are while in transit."

Faced with intense competition from lower cost marketplaces, chemicals companies need more from logistics providers to keep their supply chains globally competitive. "Now the impetus in the US chemicals sector is staying competitive without building up inventory globally. BDP has evolved to offer clients an array of value-added supply chain services focused on shortening transit time, shortening inventory cycle time and reducing costs to help our customers meet their end customers' required delivery dates," says Andalaro.

Staffing the industry

Another key to staying globally competitive, a challenge that cannot be met with a smart outsourcing decision like logistics, is finding the right people. Many outside sources are offering advances to staffing problems.



Ronald Thompson,
principal consultant,
Chemical Search



Mike Andalaro,
global COO,
BDP International

Access to a highly educated workforce and globally-leading research centres is part and parcel to the US chemicals industry's continued success. While on one hand industry consolidation has freed up a rich talent pool of experienced executives, companies have also voiced concern that new talent is not as profuse as it once was.

"We have heard from companies that they cannot find the scientists that they need. The paradox is that if you look at the manpower that is produced by the government or independent agencies, there is no shortage," says Tritton of the Chemical Heritage Foundation.

"There is a lot of uncertainty in the marketplace but one thing that is consistent is that the supply and demand for mid- to senior-level executive talent is increasingly becoming more

misaligned," says Jason Hersh, managing partner at **Klein Hersh International**, an executive search firm dedicated to the life sciences.

Chemical Search International, an executive search firm solely dedicated to the chemicals industry, has opened offices in Philadelphia, London, Singapore and Mumbai. "Companies are coming to us because they can no longer find people using their own resources," says Ronald Thompson, principal consultant.

"Prior to the great recession, you could count on picking up the phone and finding people from colleagues in the industry. This is drying up because the well of university feedstock is drying up. We plan to grow our business through academic partnerships, in essence filling the pipeline of talent for years down the road."

The future of the industry's talent pool is also looking stronger thanks to the shale gas boom. The optimism surrounding the US natural gas reserves is not only bringing new investment into chemicals plants, but many industry leaders are foreseeing renewed interest in chemicals industry careers.



Photo Courtesy of Transplace

Chemical transportation from 3PL company Transplace

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Interview with Wendy Cleland-Hamnett, Director of the Office of Pollution Prevention & Toxics, EPA

Industry lobbyists and associations feel that TSCA needs to be reformed, not overhauled. What are some of the reasons for the stalemate?

The EPA implements a range of key environmental statutes. Operating under TSCA, EPA's Office of Pollution Prevention & Toxics has the authority to assure chemical safety. TSCA provides authority to require reporting, record keeping and testing, and to reduce risks from chemicals. The agency remains committed to working with Congress, industry and the environmental community to reform or reauthorise TSCA, in addition to positioning chemicals safety as a key agency priority.

On 29 September 2009, EPA administrator Lisa Jackson announced the release of a set of 'Essential Principles for Reform of Chemicals Management Legislation'. These principles were provided to help guide efforts underway in Congress to reauthorise and strengthen the effectiveness of TSCA. There are certainly different views among stakeholders and important details to be worked out, but there is significant common ground that reform of TSCA is necessary.

What is the EPA currently doing to balance the needs of the industry with that of the wider public towards a smooth outcome?

One example is EPA's policy toward

confidential business information (CBI): balancing the public's right to know about important health and safety data on chemicals used in consumer products and proprietary business information essential for companies to maintain a competitive edge in the marketplace. A key hurdle in the agency's ability to assess and potentially regulate chemicals is the availability of health and safety data.

Much of data submitted to EPA is claimed as CBI, restricting rigorous scientific review by the EPA and the public's ability to obtain information on chemicals that they and their families are exposed to every day. EPA has initiated numerous efforts to voluntarily encourage and formally require the release of CBI claims on health and safety studies.

EPA maintains rigorous and transparent policies to ensure the protection of legitimate, substantiated confidential business information. As a result of these efforts, hundreds of documents covering hundreds of chemicals have now been made publicly available while valid confidential business information remains protected.

What are some of the near-term goals of the EPA with regards to the chemicals sector?

The EPA remains optimistic that TSCA reform can be achieved. In the interim, the agency endeavors to strengthen existing chemicals

management using authorities under TSCA to protect human health and the environment. In March, EPA posted its existing chemicals strategy and a work plan identifying 83 chemicals for risk assessment and an initial group of seven from this list for risk assessment under TSCA in 2012.

On 1 June, EPA identified an additional 18 from the work plan for assessment in 2013 and 2014. These efforts are part of EPA's comprehensive approach to enhance its current chemicals management programme. The agency also intends to expand use of advanced scientific tools, such as computational toxicology, to predict develop a cost-effective approach for prioritising the thousands of chemicals that need safety assessment.

EPA hopes that the industry will continue to support TSCA reform as well as the need to prioritise and assess the safety of chemicals, and to provide EPA with the data needed to carry out assessment. Pending TSCA reform, industry will likely be required to comply with a variety of state chemicals laws.

Industry is also likely to receive increasing demand from customers to provide them with safer chemicals. Ensuring the safe use of chemicals in this country is a priority for the agency. While we continue to support TSCA reform, the agency is using the tools available under TSCA to the fullest extent possible.

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"It will be a boost for the right kind of high-skill, high-value jobs in the US that we need more of," says Sandifer of FMC. "The US chemicals industry has a maturing workforce and there are tremendous long-term career opportunities for young people."



The regulatory climate

Not only does the US chemicals industry face heightened competition from emerging markets, but the lack of regulatory modernisation places the sector in the uncomfortable position of uncertainty. Regulatory restrictions are growing tighter worldwide, most notably in the wake of Europe's REACH regulations, and the US is struggling to follow suit with a reformed regulatory policy that clears political divisions in government, industry approval and public concern.

The law at the centre of the debate is the Toxic Substances Control Act (TSCA). Enacted in 1976, the law empowers the Environmental Protection Agency (EPA) with the authority to require reporting, record-keeping and testing requirements for new and existing chemicals substances and mixtures.

Since TSCA was passed, it has not been significantly amended. As such, it has been criticised by industry stakeholders and policymakers alike as inefficient and unable to provide the EPA with the necessary resources and authority to adequately impose controls.

The piece of legislation to advance furthest in the way of TSCA reform, Senator Frank Lautenberg's Safe Chemicals Act, was moved to mark-up in July 2012 by the Senate Environment & Public Works Committee. The committee's approval of the proposed reform was the first vote of its kind in 35 years. Historic though it may be, the question of whether Lautenberg's bill is the way forward is still a matter of debate.



Lawrence Sloan, president, SOCMA

chemicals companies themselves and increasing EPA's authority to evaluate this safety on the basis of sound science.

Industry stakeholders have voiced concerns that the bill would deal a severe blow to the industry, imposing costly data requirements for existing chemicals and impacting their ability to bring new products to market. Lawrence Sloan, president of the Society of Chemical Manufacturers and Affiliates (SOCMA), the trade association representing the batch, custom, and

The Safe Chemicals Act argues that EPA is overburdened, citing the fact that it has only been able to require testing for 200 out of the over 80,000 chemicals in TSCA's inventory. The bill proposes shifting the burden of proof of a chemical's safety to the

speciality chemicals industry, described the draft bills promulgated by the Democrats as non-starters.

"What they mandate is an inconceivably high bar in terms of the definition of risk," says Sloan. "You have to calculate permissible risk from the context of the hazardous nature of the chemicals, plus the exposure potential of the chemicals."

While industry opposition is strong, stakeholders have been brought to the table in hopes that reform can be achieved in the near future. "It is a possibility that we will see reform in 2013, but it will be an uphill battle to see any legislation pass. There is still no consensus, but progress has been made through dialogue between legislators, NGOs and industry representatives," says Mark Duvall, principal at the environmental law firm **Beveridge & Diamond**.

One thing is clear: the government's failure to reach consensus with regards to chemicals regulation modernisation is doing nothing to improve the confidence of the post-crisis industry. Understandably, many chemicals industry players are unwilling to invest in the capital necessary for growth.



Toll milling at Custom Milling & Consulting

Photo Courtesy of Custom Milling & Consulting, Inc.



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"Because this is a presidential election year in the US, nothing that should get passed to stimulate the US economy is getting passed in Congress," explains Madeleine Jacobs, executive director and CEO of the **American Chemical Society**. "Companies are understandably not sure about what is going to happen, and when they are not sure, they do not take action. They do not invest, they do not build new plants and they do not hire more people and that's what is going on right now."

Another key regulatory issue for the chemicals industry is the Department of Homeland Security's (DHS) Chemicals Facility Anti-Terrorism Standards (CFATS). The programme has yet to be reauthorised for the long-term, causing concern for many companies who have invested millions of dollars in meeting these security requirements.

"The CFATS programme has been extraordinarily successful, even though the implementation of CFATS has been controversial because of how DHS has carried out its responsibilities in evaluating information submitted by companies," says Duvall. "Overall, the industry itself has done a good job of looking at its own vulnerabilities and it is better at making the safety-related decisions than the government is."

"Chemicals security is a huge issue for our members," says Chris Jahn, president of the National Association of Chemicals Distributors (**NACD**). "Although CFATS got off to a rocky start, DHS has done its best to identify issues with the programme that need to be fixed. NACD believes that CFATS as a whole is fundamentally solid and the law itself needs to be extended for the long-term and fully implemented. We do not think it is necessary to start over and waste all of the work that has already been done."



Outlook

Mergers & acquisitions

Large chemicals companies are acquiring speciality companies to enable them to move further downstream and get closer to the customer. According to Telly Zachariades, partner at the **Valence Group**, agrochemicals and fertilisers will have to feed more people with limited resources and there is a strong trend towards foods that are more functional.

"Firms acquire companies that have synergies with their current portfolio or are focused within certain sub-sectors that have good long-term fundamentals. Personal care chemicals is a major area of focus as it relates to an ageing population and the increasing purchasing power of emerging markets for products with higher profit margins, which include high end skin creams and moisturisers," says Zachariades, who predicts the same level of billion-dollar deals in 2013.

In July 2012, Eastman Chemicals acquired Missouri-based Solutia, a global manufacturer of performance materials and speciality chemicals, for \$4.8 billion, and Arkema has also made two



Photo Courtesy of Lonza

Lonza's cell biology facility at Walkersville

big acquisitions in the last two years, one third of it in the US: Dow Chemicals' US acrylics business, then the coatings activity of its former parent Total. The acquisition market has extended to the distribution sector as well.

"We have an active acquisition candidate pipeline and a successful track record of acquisitions supporting our organic growth that puts us in a leadership position in the distributor mergers and acquisitions field," says Brenntag's Fidler. "We look to fill voids in geography, industries, skillsets and product lines. The company plans to spend an average of €250 million/year out of our free cash flow on acquisitions."

For pharmaceuticals companies facing the patent cliff, groups are highly motivated to fill their pipelines, but the financial crisis has created a shortage of new investment funds. This shortage has created a bottleneck in M&A activity.

"We see a backlog of companies that should have been bought in 2010 or 2011. Until this backlog is worked through and those dollars are freed up, we have an environment that is keeping some capital from being invested in this sector," says Wofford of Hutchison Law.

While chemicals companies indeed have cash in the bank, uncertainties in the current US political environment and tax policies plus the US and European economic climate are all holding back the deployment of resources to go ahead with acquisitions, according to Mike Shannon, global and US leader, chemicals and performance technologies at **KPMG**. "There have been very few closed deals but once the catalyst of M&A is realised there will be a plethora," he says.

Towards green chemistry

One of the key trends to emerge in the chemicals industry over the last few years is sustainability, and the US has pioneered the shift in direction towards green chemistry. According to Ehle, of BASF, chemistry and sustainability will play key roles in solving the demands for food, transportation and energy that currently exist.

"We need to do things differently, which drives us to look into niches. Big-volume, classical chemicals do not solve key issues, such as water and heat management, but more sophisticated high-tech chemistry combined with interdisciplinary activities can help to address these concerns."

The importance placed on these issues is becoming increasingly evident not only in traditional sourcing and manufacturing strategies but also, as with DSM, in their business models. "DSM is one of the only listed companies that have a substantial component of our business model dedicated to our sustainability performance indicators," says Wessels.

"A lot of products need to be converted from traditional chemicals processes to bio-chemicals or pure biotechnology processes. We make a life cycle analysis of every development product that we manufacture; each product must have a life cycle that is at least 20% more efficient than the driver in that category."

Companies are also striving to develop new and more efficient manufacturing processes. Croda has a 305 kW solar array system that provides roughly half of the electricity needs for the office and labs at its New Jersey site. Gallagher describes solar panels as "a major part of our effort to lower our carbon footprint and make us more sustainable".

"We have initiated another sustainability project that is much bigger in size and scope, which is a landfill gas project at our Atlas Point plant in Delaware. The project will provide more than half of the electricity and steam generation needs for the manufacturing site from landfill gas. Our US initiatives are part of a global goal to supply 25% of our energy needs from non-fossil sources by 2015."

The future of the US speciality chemicals industry rests heavily on its ability to react to the changing global market dynamics while retaining a strict focus on leadership in R&D. By virtue of their targeted business model, speciality chemicals companies are well positioned to capitalise on the evolving demand cycles that are proving challenging to their commodity-focused counterparts.

Mathias Greger, local business unit manager of performance materials at **DKSH**, a Swiss company specialising in market expansion services, comments: "While US growth rates are relatively stagnant in comparison to Asia, it is still possible to achieve double-digit growth here in niche and speciality areas. The growth and innovation coming from the US will always make it attractive, even key for a company's survival."