SOURCING AND REGULATORY ISSUES DRIVE R&D EFFORTS IN 2011

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In an industry that relies heavily on innovation for success, paint and coating manufacturers realize the importance of investing in new product development efforts. Those efforts have been frustrated for both coating and resins producers as high raw material prices and shortages of key ingredients have companies focused on finding alternatives. Where new product development activities remain strong, they generally are driven by anticipation of the passage of regulations that will affect current formulations. Meanwhile, the recovery appears to be slowing somewhat, and 2012 does not look to be a year of strong growth for the industry.

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RAW MATERIALS MATTER

Market analysts agree that the predominant issue in 2011 has been raw materials. Costs of key ingredients for resin, pigment, and additives suppliers have risen dramatically, and these suppliers have been passing those increases on to the paint manufacturers. Coatings companies have been able to pass some of these higher costs on to their customers. "Coating prices are definitely up compared to where they were five years ago, but paint companies have not been able to pass on all of the increased costs, so profitability is down somewhat," notes Steven Nerlfi, a principle consultant with Kusumgar, Nerlfi & Growney (KNG).

However, since the industry is still operating from a position of historic high prices for paints and coatings, manufacturers are still doing fairly well, according to Michael D. Brown, a managing partner with TZ Chemicals. The higher prices and tightness for certain raw materials have continued late into the third quarter despite a softening of the market for chemicals overall, which includes paints and coatings. "Pricing power remains fairly strong even though we have seen a slowdown in demand in most sectors of the paint and coatings market over the summer," Brown observes. "The softening has, however, blunted somewhat the ability of raw material suppliers to continue to pass through price increases. It appears that we are experiencing a plateau of sorts, and likely only minimal growth will be observed from now through 2012," he adds.

Raw materials of particular note include the acrylics, titanium dioxide (TiO_2), and some isocyanates. The high prices and shortness of supply of these and other ingredients have been a real challenge for many in the coating supply chain. Most companies have been forced to invest much of their R&D resources into cutting costs or finding alternative materials. "With few exceptions, most manufacturers are focusing their technical efforts on trying to make marginal improvements in existing formulations and processes to make products less expensive, and as a consequence, minimal development of new technology has been occurring this year," remarks George R. Pilcher, a vice president with The ChemQuest Group. He goes on to add that when they are not optimizing products or processes, they are working to approve alternative sources for raw materials or to identify substitutes for some ingredients in order to get around allocations.

"In my opinion," Pilcher asserts, "2010/2011 probably has been the period that has seen more approvals of alternative materials than at any other time." Brown agrees. "There has been a lot of reformulation going on and a very high number of new product introductions this year. It is not novel technology that has led to these product launches, but the need to lower the cost or get around allocations in order to keep producing."

TiO_2 still has many people concerned. The cost of titanium ore continues to rise, and with the softening in the coatings market, pigment producers may begin to experience difficulty passing those higher costs on to paint producers. The high prices are also encouraging many new entrants into the market, particularly suppliers and distributors in emerging regions like China, according to Nerlfi. In fact, Pilcher believes that titanium dioxide will be a problem through the coming three to four years. "It is an extremely expensive proposition to open a new mine, so ore producers don't want to make such a large investment without knowing that there is adequate refining capacity available. Meanwhile, refiners don't want to add capacity until they know that the ore will be available. So we have a real standoff." While demand for coatings is lower right now because of the slowdown in the market, and shortages have therefore eased at this moment, any pickup in demand will lead to problems with TiO_2 supply. "The situation is serious enough that some smaller companies could eventually be put out of business -or, at the very least, be forced to drop certain product lines," he says.

DuPont has announced that it will be expanding TiO_2 capacity at existing facilities in the U.S. and will be adding a production line in Mexico, with the work to be completed by 2014. AkzoNobel, meanwhile, has partnered with Guangxi CAVA Titanium Industry Co. Ltd. of China for the production and supply of TiO_2. The Chinese company is currently constructing a TiO_2 plant in Qinzhou that will come on-stream in 2014. "AkzoNobel's deal in China could be a bellwether move. The largest paint company in the world will have its own TiO_2 supply in China, which could give it a tremendous advantage for supporting this key market," Nerlfi notes.

CENSUS DATA TO DISAPPEAR

An important decision was made by the government this year that will impact the paint and coatings industry even though it was not a regulatory-related action. The Current Industrial Report (CIR) program of the U.S. Census Bureau has been providing monthly, quarterly, and annual measures of industrial activity for many years. The primary objective of the CIR program was to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision-making in the private sector. Two of those reports—the quarterly Paint, Varnish and Lacquer report and the annual Paints and Allied Products report- specifically covered U.S. sales of paints and coatings.

In its FY2012 budget submission, the Census Bureau made the decision to terminate the collection of data for the CIR program. According to the Bureau, in order to secure funding for new products, cuts in some existing programs had to be made, and it was found that the "availability of manufacturing data from the Annual Survey of Manufacturers and the 5-year Economic Census help mitigate the loss of the CIR data products."

The last reports were issued earlier this year. Further data may be collected only if industry will fund the program.

"The decision to stop producing the Current Industrial Reports is an important issue for the paint and coatings industry," states Allen Irish, director of Industry Affairs and counsel at the American Coatings Association. "Many in the coatings industry may not fully understand how much they rely on the information generated in these reports until they are no longer available. It will become increasingly difficult to gather meaningful data on the industry, and the market will become less transparent."

Basic chemical, resin, additive, and pigment suppliers may be affected the most. Paint manufacturers are closer to their customers and have a greater ability to track demand trends. Raw material suppliers, however, are further removed from the end users and are likely to find it more difficult to identify and respond to end-use demand shifts quickly, according to Irish.

REGULATORY CONSIDERATIONS

While raw material availability and pricing have had a huge impact on R&D activities, in some areas the potential for new regulations is also driving development efforts. Bisphenol A (BPA) in can coatings, Texanol in waterborne coatings, glycols in colorant systems, and phthalates in general may all need to be replaced at some point in the future if anticipated regulations come to pass.

BPA is an issue in can coatings. Even though the European Food Safety Authority (EFSA) determined that there was not convincing evidence to support the ban or further restrict its use, leading producers of can coatings—Valspar, PPG and AkzoNobel—continue to actively seek a coating solution that does not contain BPA. "BPA is present because can coatings contain epoxy resins; to get rid of BPA, therefore, means removing the epoxy resin, and that is no easy task," Pilcher comments. Acrylics will likely continue to be used, but there definitely will be opportunities for other raw materials not traditionally found in can coatings. Possible candidates according to Pilcher include nonvolatile ester or polymeric plasticizers that would function as a coalescent for acrylic-based coatings.

Many architectural paints will soon be faced with the need to remove the coalescent Texanol from their formulations. Once the ASTM finalizes its new test for VOC determination (ASTM D6886), the EPA is expected to classify Texanol (2,2,4-trimethyl 1,3 pentanediol mono(2-methylpropanoate) as a VOC. The substance is widely used in latex paints because of its performance and current non-VOC status. With the latter soon to be no longer the case, nonvolatile alternatives will be sought. Here again, according to Pilcher, ester and polymeric plasticizers might work.

Producers of colorants for use with architectural and industrial maintenance coatings will need to reformulate their products to be in compliance with California's South Coast Air Quality Management District (SCAQMD) 113 rule which takes effect in 2014. The rule requires that all VOCs from colorants be counted in determining the VOCs of the paint formulation. Most colorants, according to Pilcher, contain volatile glycols that will need to be replaced.

ACA STRIKES THE RIGHT CHORD

The American Coatings Association bases its success on how well it serves its members, increasing networking opportunities, engaging in government advocacy efforts, providing educational opportunities, and communicating about the value of the coatings industry—all such activities help ACA member companies improve their bottom line. Considering the programs, services, and accomplishments so far in 2011, this year was a successful one, according to ACA president and CEO J. Andrew Doyle. He expects 2012 to be strong as well.

"ACA was very active in 2011, offering several conferences and webinars, working to expand the PaintCare program, lobbying to limit regulatory expansion, and publishing important member tools including our *Global Market Analysis*, to name just a few activities. Throughout the year, we have received consistent, positive member feedback regarding these and many other efforts. The challenges are daunting, but the association and its members have been up to the task. We continue to focus our resources and tackle the issues of greatest concern to the industry," Doyle says.

In 2011, the PaintCare program was implemented in Oregon with well over 300,000 gallons of paint collected. California will be implementing the program in 2012, with Connecticut set to implement it in 2013. It is likely that several other states will adopt PaintCare within the next couple of years.

The CoatingsTech Conference in March attracted almost 250 participants who discussed aspects of new developments in coatings science. Specialized conferences on marine, wood, and polyurethane coatings also attracted a growing number of attendees. The Coatings Summit provided a key networking opportunity for about 150 leading executives. Throughout the year, ACA offered more than 20 webinars, covering topics of importance to the coatings industry including regulatory updates. "All of these events were very well supported by our members and met or exceeded our projections," adds Doyle. "That gives a clear indication that ACA is providing real value to its members; we are hitting the right chords in terms of the topics."

Publications from the association provide additional educational resources for members. "The *Journal of Coatings Technology and Research* is the leading science and technology journal for the industry in North America, if not the world," Doyle notes. The journal continues to grow in stature, with the number of paper submissions increasing at a very rapid rate. "We couldn't be more pleased with its performance. It is a real testament to the strength and innovative nature of the industry." The association's other magazine—*JCT CoatingsTech*—has also seen significant growth in 2011. Not only is it ACA's flagship publication, it also serves as an important source of information on coatings science and technology, according to Doyle. It is expected to continue to expand in 2012 as well. "*JCT CoatingsTech* is unique in terms of the information it offers, which includes a combination of association news, high level science and technical information, business news and recent developments, and market overviews."

In May 2012, the industry's premier science and technology conference, the American Coatings Conference, will take place alongside the American Coatings Show in Indianapolis, IN. ACA expects to receive a 30-40% increase in the number of papers submitted and anticipates both increased quality and attendance for the technical conference. For the trade show, the association has already sold 80% of the total square

In another example, the court of public opinion and vocal non-governmental organizations (NGOs) have been driving the discussion about phthalates, and many companies anticipate that these materials will come under regulatory scrutiny at some time in the not-too-distant future. While benzoates are often suitable replacements, there is concern that these compounds will also eventually be targeted. As a result, many coatings and inks producers have focused on next generation alternatives that can serve as substitutes for both phthalates and benzoates, according to Pilcher. Several possibilities include terephthalate products 168 and DPT from Eastman (conventional phthalate products are ortho-derivatives); Hexamoll® DINCH from BASF (1,2-Cyclohexane dicarboxylic acid, di-isononyl ester); *Mesamoll®* II from LANXESS (alkyl(C10-C21)sulfonic acid phenyl ester); and a large number of esters and polymeric plasticizers from the specialty producer HallStar, among others

NOTABLE DEALS

While raw material producers were raising prices, they were also making quite a few deals. In fact, the largest acquisitions took place in the raw material space and not in paints and coatings. Some of the most noteworthy deals of 2011 included the completion of BASF's acquisition of Cognis, Ashland's purchase of ISP, Solvay's deal to buy Rhodia, Lonza's acquisition of Arch Chemicals, Clariant's purchase of Sud Chemie, Berkshire Hathaway's buying of Lubrizol, Omnova's finalization of its purchase of Eliokem, and Arkema's acquisition of Total's resins businesses (Cray Valley, Sartomer, and CCP). With the addition of those assets to the UCAR business which it purchased from Dow Chemical in 2010, Arkema has become a big player in the resins market, according to Nerlfi. Meanwhile, Momentive sold off Hexion's resin business (picked up in its merger with Hexion in 2010) to European investment group PCCR. Lubrizol's purchase does not really affect the market as no consolidation occurred. The same can be said for the Clariant/Sud Chemie deal, as it is a complementary acquisition, according to Brown.

As for paint and coating manufacturers, activity seems to be largely focused in emerging markets. Valspar made two deals in Brazil, purchasing Isocoat Tintas

footage of booth space sold in 2010, which equates to about three times the amount sold at this time leading up to the 2010 show. "These numbers are very positive and are creating a lot of excitement about the ACS in 2012," Doyle states. "The American Coatings Show is very important to ACA and the industry. To see such a high level of interest is again confirmation that we are giving our members the events, programs, and opportunities they value and deem important to their success."

The ACA has also been successful in dealing with key regulatory issues in 2011. Most recently, the organization teamed up with other trade groups to educate the administration and Congress regarding the burden that new ground ozone regulations would have on the industry. Those efforts were successful and led to a White House decision to withdraw their proposal on those regulations. The EPA does, however, continue to issue regulations in the clean air area, and many states are introducing initiatives relating to green chemistry and child health issues. ACA will continue to address these activities at both the federal and state level in the coming year, as well as participate in any discussions regarding the modernization of the Toxic Substances Control Act (TSCA).

ACA is working to improve the industry's grassroots efforts and will be developing tools and guidance materials that will enable members to become more involved. In 2012, the ACA will be allocating more funding to state advocacy efforts in response to recommendations from the Board of Directors. This recommendation arose from a board level review of the ACA activities to identify key issues for the association going forward.

Sustainability was also identified as an issue, and a working group in 2011 focused on developing materials for communicating to members, member customers, policy makers, and the general public about how the paint and coatings industry contributes to sustainability. An informative brochure and interactive website were created that provided numerous examples of how coatings technologies contribute to reduced resource consumption, fuel use, and carbon dioxide emissions.

The Board of Directors also recognized the value that the International Paint and Printing Ink Council (IPPIC), to which the ACA serves as the secretariat, has provided to the industry. High priority has been placed on providing continued support of the group, which serves as a forum for the industry to engage in discussions about international regulations on the UN level. The Board also recommended formation of a new international affairs committee and working group, and those recommendations will be implemented before the end of 2011.

Finally, in 2011 ACA published its updated global market analysis and has hired The ChemQuest Group to prepare the latest *U.S. Paint & Coatings Industry Market Analysis*, which is to be issued in early 2012.

"Our goals as an association are to advance the interests of the coatings industry; serve as an advocate; offer programs and services that support the industry's commitment to environmental protection, product stewardship, health and safety, and the advancement of science and technology; and provide a forum for the exchange of ideas and information. Given the overwhelming positive feedback from members to our various activities and accomplishments in 2011 and the excitement being generated by our plans for next year, we believe that we are meeting those goals. I feel very proud to be a part of ACA and the paint and coatings industry," Doyle concludes.

e Vernizes Ltda. and forming a joint venture with Tekno SA. Akzo opened a new powder coating plant in Mexico and formed the previously mentioned joint venture in China. PPG expanded its JV with Asian paints to a 50/50 arrangement, but also purchased Danish wood stains company Dryup and expects to open 50–60 new stores by the end of 2011. The Sherwin-Williams Company acquired U.K.-based Leighs Paints, a fire protection coatings company. Many leading paint companies also made investments in R&D and testing facilities around the world, according to Nerlfi.

The global paint and coatings industry is fairly consolidated, so there are not a lot of opportunities for major acquisitions. But, according to Brown, there are smaller opportunities, with many regional firms still operating and smaller companies located in emerging markets. Most analysts expect there will be more acquisitions in 2012, both on the raw material side and in paints and coatings. Even though valuations have risen and are likely to remain higher than they were a couple of years ago, money is very cheap right now—even cheaper than a year ago—and that can make a big difference, he believes.

As for growth in the paint and coatings market in 2012, no one has high expectations. Annual rates of 1 to 1.5% are expected, with the higher end occurring in the short term as recovery efforts get underway in the many areas hit by recent natural disasters, according to Nerlfi. "I am not very bullish on 2012," Brown adds. "And I am also concerned about the slowing growth in China. If North America and Europe slip back into recession, I am not sure that demand in China can really be counted on to pull them out."

On the bright side, the present slowdown in paint and coatings demand in the U.S. has not hit all sectors. The capital equipment, durable items, and automobile markets continue to grow at the same pace as earlier in the year. The capital equipment and durable items sectors (marine, aerospace, etc.) do experience very long order cycles, which could explain their continued growth at this point, and it is possible that there simply is a lag time before the slowdown will hit them too.

The anomaly, according to Brown, is automobiles, which normally would slow down along with non-durable consumer goods. One explanation points to the fact that for the past three years only twothirds of the number of cars have been sold annually in the U.S. as were sold before the global recession. Consumers, therefore, have been postponing the purchase of new vehicles to the point where a usually discretionary purchase has become a necessity. However, Brown believes that if continued softening in demand occurs throughout other sectors of the economy, it will eventually reach the automotive market as well. CT