Chemical and Process Industries:

**Five leadership Issues Worthy of Board and Executive Attention**

Petrochemicals
Specialty Chemicals
Packaging
Paper
Other Materials Manufacturing
The chemical and process industries (CPI) (including petrochemicals, specialty chemicals, packaging, paper and other materials manufacturing) are seeing rapid changes in the face of globalization, commoditization and structural changes. The increased pressure to innovate, influx of private equity investors, ongoing mergers and acquisitions, and a host of other major risk drivers all are contributing to dialogues in boardrooms and executive offices. Most significantly, executives are asking if they have the right leadership talent in light of the challenges they face.

From our conversations with board members and CEOs in the chemical and process industries, the following five issues and their implications on leadership talent have emerged as top of mind for the executives:

- Driving and managing structural changes
- Defining and finding the next generation of CPI leaders
- Creating a diverse and engaged board
- Encouraging and commercializing innovation
- Capturing the value of volatility in feedstock prices

We hope this executive briefing document will serve as a discussion starter for thinking through how to attract and retain the right leadership talent in the face of these challenges.
Driving and Managing Structural Changes

- Over the last two decades, Chemical and Process industries (CPI) have confronted serious challenges driven by globalization and commoditization, which have put pressure on margins. Companies have responded through structural changes, including mergers and acquisitions (M&A) and spinoffs, to create scale around core competencies, reshape business portfolios and selectively enter new markets or regions.
- Consequently, there is a continually growing need for general managers at the board and executive levels who can bring change management skills and demonstrate true entrepreneurship.

### M&A Activity Continues to Be Strong

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Transactions</th>
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<tbody>
<tr>
<td>2009</td>
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<td>2010</td>
<td>42</td>
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<td>2011</td>
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<td>2013</td>
<td>45</td>
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<td>2014</td>
<td>52</td>
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### Private Equity Share of Investments Has Increased in CPI Over 2012

<table>
<thead>
<tr>
<th>Year</th>
<th>PE Investment</th>
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<tbody>
<tr>
<td>2012</td>
<td>75 $ billion</td>
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<tr>
<td>2013</td>
<td>123 $ billion</td>
</tr>
<tr>
<td>2014</td>
<td>120 $ billion</td>
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### Recent Examples of Divestitures and M&A

- Companies such as The Dow Chemical Company and Chemtura Corporation are selling assets.
- DuPont spun off its performance coating business to The Carlyle Group, which renamed the enterprise Axalta Coating Systems.
- Bayer carved out MaterialScience that has been renamed Covestro through an initial public offering in 2015.

### Competencies Required to Thrive in PE Environment

- Entrepreneurial drive
- Ownership and value creation mentality
- Ability to find balance between short term and long term outcomes
- Urgency to drive for results
- Resilience

### Our Conclusions

- Invest on assessing executives during the M&A/carve-out process to create best-of-breed organizations.
- Identify leaders early and actively nurture them as general managers with a broader set of skills (not just technical or functional).
- Acknowledge the high requirements by PE investor owners for the top talent. Executives need to be capable of operating in a highly leveraged, resource-constrained environment.
- Strategically look for external talent, also from other industries, to boost entrepreneurship.

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1. Scott-Macon, Ltd., 2014 and 2015
2. Capital IQ database for CPI investments
Defining and Finding the Next Generation of CPI Leaders

- Once the generation of baby boomers retires, there is a major risk of talent shortages at senior levels in CPI. Over the past three years, 50% of top CPI companies have appointed a new CEO.

- CPI CEOs generally are internal appointments, and the most common role prior to CEO is COO. Externally appointed CEOs previously held a CEO-level or head of business unit (BU) role in another company; 58% of externally appointed CEOs came from the CPI industry.

A Quarter of Current CPI CEOs are Approaching Retirement

CPI CEOs by Age

- Under 55: 41%
- 55 - 59: 31%
- Over 60: 25%

- 50% of CPI companies have appointed a new CEO since January 2012

OUR CONCLUSIONS

- Adopt rigorous processes for leadership assessment and succession planning.
- Develop specific, unusual career paths to ensure that future leaders have the ability to deal with multiple stakeholders in the changing environment.
- Groom talent at all levels and actively support technical and science programs in universities to build the next generation.

2. Externally appointed Chemical company CEOs rarely come from outside of the chemical industry
Creating a Diverse and Engaged Board

- An effective board is one that represents a rich variety of perspectives, allowing companies to develop (and execute) robust strategies while simultaneously managing risk.
- The work of the board of directors has never been more complex. Traditional issues like CEO succession and remuneration remain, while shareholder activism, digital transformation and cyber security present new challenges.


**KEY FACTS ON DIVERSITY IN CPI BOARD COMPOSITION**

- **19%** of CPI board seats are female
- **23%** of board members have a nationality other than that of the company HQ.

**CPI BOARD COMPOSITION BY AGE**

- **Under 50**: 10%
- **50-59**: 34%
- **60-67**: 41%
- **Over 68**: 15%

**AT LEAST 15% OF CURRENT BOARD SEATS WILL TURN OVER IN THE NEXT FIVE YEARS**

**SHAREHOLDER ACTIVISM IS INCREASINGLY IMPORTANT TO MANAGE FOR BOARDS**

Percentage of U.S. companies targeted in an activist campaign with a market cap over $1 billion

- 2009: 7%
- 2010: 14%
- 2011: 22%
- 2012: 20%
- 2013: 29%

The Dow Chemical Company and Ashland are slimming down because of pressure from activists Daniel Loeb of Third Point LLC and JANA Partners LLC, respectively.

**OUR CONCLUSIONS**

- Conduct regular director and board evaluations—this will help ensure that director performance is aligned with the company’s strategic objectives.
- Monitor all advance warning signals. Assess and address vulnerabilities and maintain an effective, ongoing shareholder outreach program.

Encouraging and Commercializing Innovation

- Innovation is an essential lever to create competitive advantage, build new revenue streams and counterbalance growing commoditization in the chemical and process industries’ (CPI) value chain.

- CPI companies need to further accelerate their innovation efforts; more leaders are needed who can pragmatically drive sustainable growth by managing innovation through complex environments involving multiple parties and functions.

**INNOVATION IS VITAL TO CHEMICAL COMPANIES, AND THE MAJORITY HAVE A WELL-DEFINED INNOVATION STRATEGY¹**

- 92% of chemical executives say innovation is vital to future success
- 63% of chemical executives say they have a well-defined innovation strategy

**INNOVATION IS VITAL TO PULP, PAPER AND PACKAGING COMPANIES, BUT ONLY A THIRD OF THEM HAVE IMPLEMENTED CHANGES TO THEIR R&D²**

- 81% of pulp, paper and packaging executives say innovation is vital to future success
- 33% of pulp, paper and packaging executives say they have programs already completed or in place to change their R&D and innovation capacity

**CPI INNOVATION LEADERS IN LARGE ORGANIZATIONS³ ARE MOST OFTEN INTERNALLY PROMOTED AND MAJORITY HAVE WORKED ONLY IN THE CHEMICALS AND PROCESS INDUSTRIES³**

- 3% Externally appointed
- 97% Internally appointed
- 23% Outside industry experience
- 77% Only CPI experience

Innovation leaders have been working for the same company, on average, close to 16 years.

**HOWEVER, SMALLER CHEMICALS COMPANIES² ARE MORE OPEN TO BRINGING INNOVATION LEADERS TO THEIR ORGANIZATIONS FROM OUTSIDE³**

- 63% Internally appointed
- 37% Externally appointed
- 23% Outside industry experience
- 77% Only CPI experience

CPI Innovation Leaders who were appointed in the last 3 years have held more commercial roles:

- 71% of CPI Innovation leaders appointed after Jan 2012 have held a commercial role as head of business unit or region head
- 35% of CPI Innovation leaders appointed before Jan 2012 have held a commercial role as head of business unit or region head

**OUR CONCLUSIONS**

- Establish a dedicated career path for future innovation leaders, grooming critical competencies from the start such as entrepreneurship, broad business acumen, strong drive for results and timely decision making.

- Strengthen collaboration between strategic marketing and innovation leaders to develop and implement a winning innovation strategy, taking into account both market and technology aspects from the beginning.

- Encourage broader innovation thinking through increased collaboration with third parties.

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1. PwC Chemicals and Paper and Packaging CEO surveys, 2014
2. ‘Large’ organizations include those with revenues >US$ 5 billion and the ‘Smaller’ companies include companies with revenues <US$ 5 billion
Capturing the Value of Volatility in Feedstock Prices

- Shale-based feedstock has given rise to new investments in petrochemicals due to its low price and availability. The United States is benefiting (the trend remains favorable despite low oil prices), but other regions have seen declining investment intensity, particularly Europe.

- There is a growing need for skilled engineering and capital management leaders to build new plants in the CPI industry. However, as solid project management experience becomes more difficult to come by in the United States, companies will need to be increasingly creative in their talent strategies.

**Total Investment in the U.S. Chemical Industry Is Expected to Rise, Creating New Jobs in the Market**

Publicly announced projects valued at $100.2 billion (February 2014). Some projects have been put on hold in 2015, but most are moving forward.

The U.S. chemical industry will add 318,000 jobs by 2025, up from 53,000 new jobs in 2012.

**Chemical Feedstock Costs in Europe Are Higher Than in North America**

Average ethylene cash cost in Europe vs. North America (US$/ton)

**Chemical Investments Have Declined in Europe But Have Risen in the United States, China and India**

Falling behind in the investment race: Capital spending intensity by region

### Challenges in Project Management and Operations Senior Leaders

- Limited availability of executives with in-depth understanding of the midstream value chain.
- Scarcity of executives with international supply chain expertise in downstream business.
- Limited pool of internal talent that can be developed to run plant operations.
- War for project management talent, especially with engineering and project construction firms.

### CPI Companies Need to Think Creatively to Overcome the Talent Challenges

- Relocate talent from other regions, especially Brazil and Europe.
- Accelerate internal training and development of high-potential talent.
- Tap back talent from engineering, procurement and construction.
- Hire from midstream (shale-based feedstock capabilities).

### Our Conclusions

- Create and follow a systematic talent development and hiring plan to overcome the shortage in project management and operations leadership skills.
- Look for creative solutions such as tapping into talent from other regions or industries.
- Ensure a strong employee proposition to retain the best project management talent.

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1. American Chemistry Council, 2013
Russell Reynolds Associates is a global leader in assessment, recruitment and succession planning for boards of directors, chief executive officers and key roles within the C-suite. With more than 370 consultants in 45 offices around the world, we work closely with public, private and nonprofit organizations across all industries and regions. We help our clients build teams of transformational leaders who can meet today’s challenges and anticipate the digital, economic, environmental and political trends that are reshaping the global business environment. Find out more at www.russellreynolds.com. Follow us on Twitter: @RRAonLeadership

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