



**Hexion Specialty Chemicals**

180 East Broad Street  
Columbus, OH 43215  
hexion.com

May 29, 2009

Dear Sirs,

I certify that the Six Sigma financials disclosed in this document are accurate and true to the best of my knowledge.

Sincerely

A handwritten signature in purple ink that reads "George F. Knight". The signature is written in a cursive, flowing style.

George F. Knight  
Sr. VP Finance & Treasurer  
Hexion Specialty Chemicals

## Best Achievement of Organizational Business Improvement: Chemicals and Pharmaceuticals

Hexion Specialty Chemicals is the world's largest producer of thermosetting resins, generating 2008 sales of \$6.1 billion through its leading position in bonding, binding and coatings applications in a multitude of industries and for virtually thousands of end-use products. Hexion was formed in 2005 through the merger of Borden Chemical, Inc., Resolution Performance Products LLC (RPP) and Resolution Specialty Materials LLC (RSM), and the acquisition of Bakelite AG. Hexion Specialty Chemicals is owned by an affiliate of the private investment firm Apollo Management, LP. Headquartered in Columbus, Ohio, we employ approximately 6,800 people globally and operate 94 manufacturing facilities in various countries in the Americas, Europe and the Asia-Pacific region.

Deployment of a Six Sigma program at Hexion has resulted in significant financial savings increasing from \$8.8 million in 2006 to \$62 million in 2008. The foundation for this growth has been strong commitment from senior management (semi-annual project reviews at the CEO level), a robust project development process (specific annual goals for each business unit, over 300 projects with \$66 million in impact identified in 1Q2009) and Six Sigma training programs tailored to an employee's functional role in the organization (including Green Belt, Advanced Green Belt, Lean, Design for Six Sigma and Profitable Growth). Each Division has Master Black Belts that lead Divisional efforts and who are a key member of the divisional president's staff. Between 2004 and 2008, 624 projects were successfully completed with a cumulative net financial contribution of \$125 million. Target savings for 2009 is \$73 million.

### CHALLENGES FACED

- *Diversity of Business Units*  
Hexion's three Global divisions are very diverse in their scope, each with several billion dollars in size. The divisions are made up of 23 Business Units (BUs) with individual P&L responsibilities. Hexion products and services span a wide range of end-use markets, from building products, automotive, oil and gas to wind energy and aerospace. This presents a complexity in business operations, improvement opportunities, business processes, systems and structure. The challenge was to design an effective Six Sigma program that was flexible enough to adapt to varying needs of the different BUs. A comprehensive Six Sigma program was developed with a number of focus areas to be able to train employees based on their functional role in the organization. This led to the development of Green Belt, Advanced Green Belt, Lean, DFSS and Six Sigma for profitable Growth programs to allow a variety of functional roles to be trained specific to their job deliverables.
- *Cultural Transformation:*  
Hexion was formed by the merger of four legacy companies and grew through additional acquisitions. Some of these members companies had continuous improvement initiatives and some did not. The deployment of a central Six Sigma program faced a considerable change management challenge in developing a common approach based on Six Sigma processes and tools across a diverse stakeholder community and company cultures.
- *Establish Credibility:*  
It was imperative to demonstrate credible Six Sigma results in the initial phase even as the system was being developed, as Hexion did not have the luxury of a long timeline in developing and implementing the program. This was accomplished by prioritizing and carefully selecting projects to gain credibility for the program in the short term even as the overall approach was still being developed.
- *Global Operations:*  
With 94 global manufacturing sites and business locations, placing a qualified BB at each location to lead local Six Sigma efforts presented a considerable challenge, including getting site management behind the Six Sigma effort.



### Strategic Objectives:

Hexion has had an active Six Sigma deployment since 2003, deriving from senior managements' commitment to use this discipline and rigor for profitable operation of the company. The focus has been on a proactive, top down approach: establish corporate Six Sigma targets that are supported by Divisional and Business Unit level targets. The CEO and direct reports review these targets and progress made on a quarterly basis. Additionally, the CEO conducts periodic project reviews with the Six Sigma organization to ensure alignment to overall organizational goals.

Short term objectives (2003 – 2005): build a Six Sigma organization and culture

Mid Term objectives (2006 – 2008): execute projects with sustainable results

Long term objectives (ongoing): make Six Sigma the way we work

A DMAIC Green Belt program was initially developed followed by an Advanced Green Belt program. This was followed by Lean in 2006, Design for Six Sigma in 2007 and Six Sigma for Profitable Growth in 2008.

### Size of the Deployment:

At this time, Six Sigma programs are deployed through all three of the company's main operating Divisions and the corporate shared services organization. While the focus so far has been on the US, Europe and Australia/New Zealand regions, we are expanding our Six Sigma efforts to the APAC region in 2009. This includes conducting Green Belt and Champions' training in Malaysia, Six Sigma for Profitable Growth training in China and the hiring of a Growth Black Belt in China. Six Sigma projects have been conducted at all levels of the organization, with projects having been conducted by associates from Division Presidents to Administrative Assistants.

### Impact of the Deployment

Contributions from Six Sigma projects are categorized into Volume-Growth, Margin Improvement (MOM), Processing Costs, Working Capital, Sales & Distribution and others. As seen in Figure 1, the continued emphasis on Six Sigma from Six Sigma projects has resulted in almost a 10 fold increase in financial benefit to the company, increasing from \$8.8 in 2006 to \$62 million in 2008. The segregation into these categories also allows us to change the focus of Six Sigma projects based on economic and market conditions. For example, as seen in Table 1, we were able to shift project focus from volume growth in 2008 to cost reduction in 2009 due to the significant impact of economic conditions on Hexion sales.

The year on year increase in Six Sigma savings is facilitated by the network of Black and Green Belts deployed through the organization. As seen in Figure 2, the average contribution per Black belt has been steadily increasing every year and is expected to be about \$2 million per Black Belt in 2009. This is due to improved training and experience of the Belts themselves, a robust project pipeline and improving project quality and coaching / mentoring of the Black Belts by Master Black Belts. We instituted a program to encourage Green Belts to continue to take on Six Sigma projects even after their certification which has resulted in steadily increasing contributions from Green Belt projects.

#### **Deployment at a Glance**

##### **Key Challenges:**

Global Operations: 94 sites in Americas, EMEA, Asia Pacific  
Corporate Structure: 3 Global Divisions, 23 Business units  
Corporate Culture: Legacy cultures unified as Hexion  
Support Ratio: 15 MBBs, 67 BBs for 6800 employees

##### **The Results**

Hard Savings Delivered 2008: \$62 MM  
Hard Savings Delivered 4yrs: \$125 MM  
Associates trained: 1500 (22% of workforce)  
Number of Projects Completed: 624



## Organizational Results:

- a) **Project development:** A high quality project pipeline is critical for a successful Six Sigma program. We have instituted a rigorous process whereby each business unit is required to develop a certain number of RTAs per month. An RTA is a "Ready to Assign" project – development of an RTA involves identification of a problem area, a clear definition of what the deliverables need to be, an assessment of the financial impact of successfully completing the project, validation of these estimates by Finance and finally prioritization by the Business Unit. This interactive process allows for ideas to be developed in such a manner that those RTAs selected to be turned into active projects have the resources necessary to be carried out and have the best chance for success. The proactive discussion required to develop an RTA has in fact resulted in the RTA approach being adopted by Associates even for non-Six Sigma projects. Table 2 shows how RTAs are tracked. RTA targets, which are owned by functional leaders within the business units, are established and communicated through the businesses. Progress is reviewed on a monthly basis with the Divisional Business Management teams.
- b) **Training:** Successful completion of a project also depends on a well trained staff. Hexion has developed an active training schedule, with over 1500 associates (22% of total employees) receiving some level of training. This training is made up of Green Belt, Advanced Green Belt, Lean, DFSS and Profitable Growth, i.e. training is tailored to an Associate's function and role in the organization. Additionally, Hexion has trained 15 Master Black Belts to date. Management support is also critical for the Belts to succeed. To ensure this support, we conduct Leadership training sessions for Managers of Green Belts who usually champion the GB projects. This training is focused on how to develop RTAs and support their Belts to ensure project success. It also ensures that the required project resources are available.
- c) **Customer satisfaction:** Our Six Sigma efforts have helped our customers in several ways. First, the cost savings allow us to be more competitive. Second, Hexion associates work at customer sites utilizing Six Sigma principles to improve the customers' profitability. Third, the systematic Voice of the Customer (VOC) process used also ensures a better fit of Hexion's products to customer needs. Our internal customers have also benefited from the Six Sigma deployment. As an organization, we tend to make more data driven decisions. Six Sigma processes and tools have helped institutionalize certain processes to pursue profitable growth, e.g. VOC, QFD, FMEA, etc. We have also used Six Sigma processes and tools (e.g. Kaizen) to analyze situations before making critical decisions to either resolve a problem or capitalize on an opportunity. Departments often reach out to the Six Sigma organization for assistance with their processes. This includes conducting a Failure Mode and Effects Analysis (FMEA) with our Industrial Hygiene and Safety department to help them develop procedures, and industry and market segmentation and analysis to help Procurement leverage their overall volumes to decrease total spend. The monthly Six Sigma Newsletter helps communicate project information to the organization and also serves as a medium for sharing best practices across the organization.
- d) **Continuous Learning:** Due to the diverse nature of Six Sigma projects conducted every year within the various Divisions, Dalchand has helped develop a comprehensive process within the organization to share best practices. Within the Six Sigma organization, monthly Black Belt and Master Black Belt calls are conducted to update the groups on YTD results and discuss project highlights. Externally, periodic project reviews are organized with Divisional management to update them on project status and seek their support to overcome obstacles. Dalchand share our CEO's commitment to recognize success helped establish an annual Search for Excellence event where the senior leadership team personally selects Master Black Belt, Black Belt and Green Belt teams for recognition. These project teams are brought to the Columbus

headquarters and given the opportunity to discuss their projects with about 250 associates to share lessons learned and their Six Sigma experiences.

Overall, Hexion's Six Sigma deployment has been very successful and met the strategic needs of the organization. It has enabled a data-driven culture, where business problems or opportunities are being pursued via a discipline data-based process. In addition, the deployment has enabled significant positive cultural and financial impacts for the organization.



Table 1 Savings by Category

Year	Growth	Improve Margin	Process Costs	Working Capital	Distribution	Total SS Savings (\$ M)
2006	21%	41%	30%	0%	8%	8.8
2007	41%	31%	15%	10%	4%	48.6
2008	31%	32%	16%	0%	6%	62.0
2009 (Est)	18%	26%	36%	11%	9%	73.0

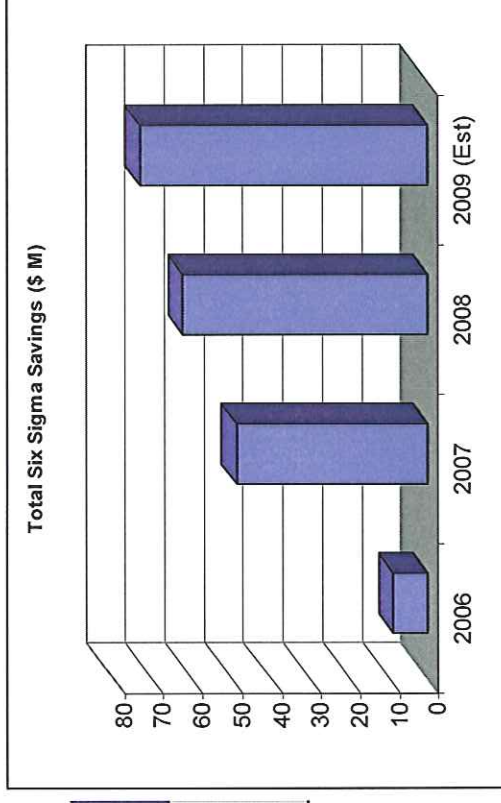


Fig. 1 Financial contribution by Black Belts and Green Belts

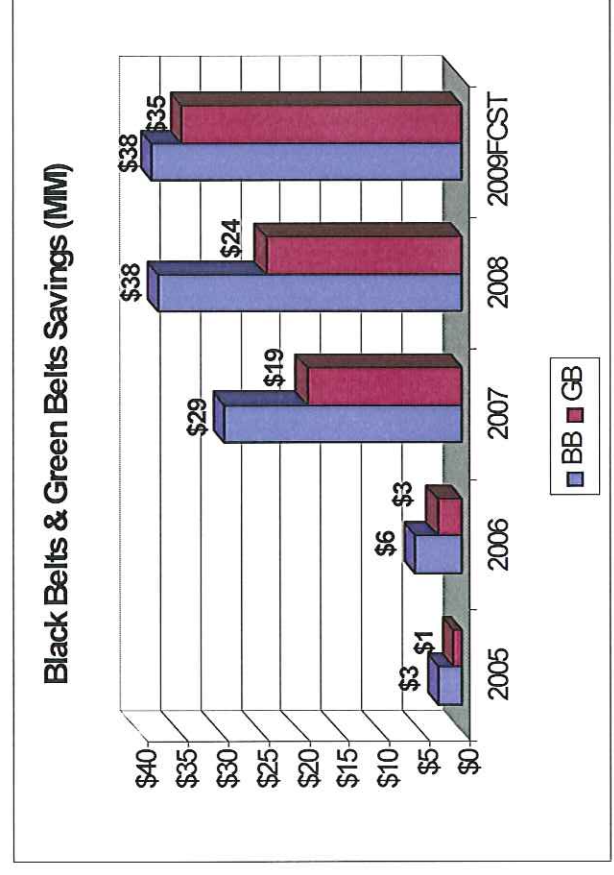
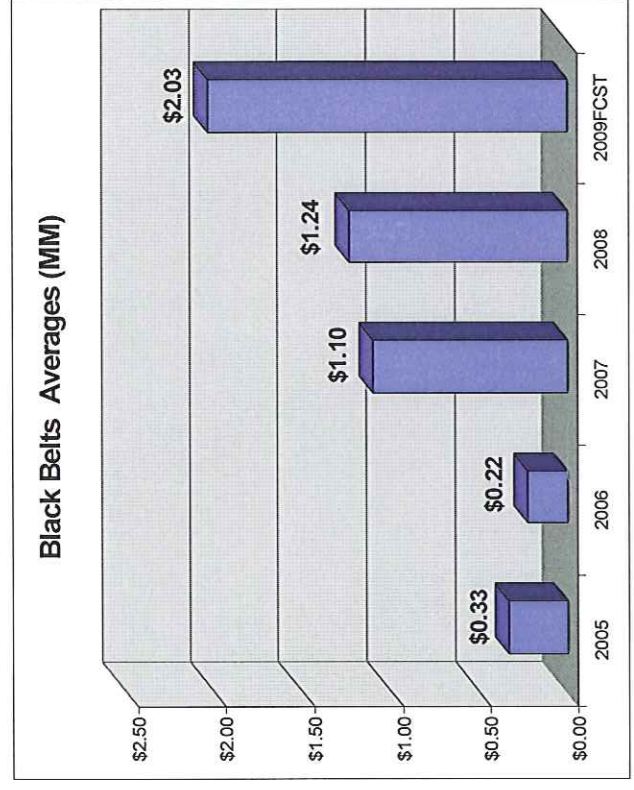


Table 2 A Robust RTA process resulting in high quality projects

Business Unit	# RTAs 2009 YTD	2009 TYD RTA Annualized Stake (\$)
A	27	\$8,406,341
B	20	\$1,782,128
C	43	\$2,960,174
D	57	\$17,451,851
E	19	\$2,010,600
F	7	\$1,709,000
G	39	\$4,927,785
H	54	\$14,675,777
I	10	\$1,084,600
J	5	\$1,949,623
K	14	\$1,497,402
L	8	\$1,038,000
M	3	
N	5	\$2,993,753
O	10	\$4,163,571
<b>TOTAL</b>	<b>321</b>	<b>\$66,650,605</b>

Category	# RTAs 2009 YTD	2009 TYD RTA Annualized Stake (\$)
Distribution Expense	18	\$1,144,428
SG & A	5	\$932,407
Processing Costs	171	\$24,467,878
Volume/Growth	61	\$23,881,180
Working Capital	27	\$11,646,497
Margin Improvement	39	\$4,578,215
<b>TOTAL</b>	<b>321</b>	<b>\$66,650,605</b>

Table 3: Training of the Belts

Tracks	Trained		
	Prior to 2009	2009 YTD	Total
Master Black Belt	15	0	15
Black Belt	67	0	67
Green Belt	967	171	1138
AGB	98	0	98
Lean	37	55	92
DFSS	20	36	56
Growth	43	22	65
<b>Total</b>	<b>1247</b>	<b>284</b>	<b>1531</b>
Awareness	474	45	519
Leadership	319	23	342
<b>Grand Total</b>	<b>2040</b>	<b>352</b>	<b>2392</b>