

# CHEMICAL STRATEGIES PARTNERSHIP

## CASE STUDY: RAYTHEON COMPANY & CSP COLLABORATIVE

Company	<b>Raytheon Company</b>	<p style="text-align: center;"><i>Summary</i></p> <p><i>Raytheon entered into a comprehensive, far-reaching partnership with their service provider, Haas TCM, in May 1999. The contract, now in its seventh year, covers the entire lifecycle of chemical management for all chemicals and gases including; procurement, inventory, delivery, waste disposal, and data management. The contract includes incentives for gain-sharing, or “shared savings”, for reductions in chemical use and purchase price and improved process efficiency.</i></p>
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Industry	Defense/Electronics/Aerospace	
Supplier	<b>Haas TCM, Inc.</b> Leigh Hayes Senior VP (512) 422-6447 lhayes@haastcm.com	
Name of Program	Chemical & Gas Management Program (CGMP)	
Program Start Date	May 1999	
Company Profile	<p>Raytheon is one of the world's leading diversified technology companies with worldwide 2004 sales of more than \$20 billion and more than 80,000 employees. Raytheon is an industry leader in defense and government electronics, space, information technology, technical services, and business aviation and special mission aircraft. With philanthropic funding, the Chemical Strategies Partnership (CSP) engaged in a collaborative effort with Raytheon's Air Force Plant #44 in Tucson, Arizona in 1996. The specific objective was to identify chemical use reduction opportunities and consider chemical management services (CMS) as a strategy to improve their chemical management system.</p> <p>Following this initial pilot project in Tucson, Raytheon recognized the potential value of a CMS program and launched a company-wide initiative. Today (FY 2005), Raytheon's CMS program includes more than 45 facilities across the U.S., representing greater than 98% of Raytheon's chemical, gas and waste spend.</p>	
Chemical Footprint	All chemicals, gases, and wastes	
Scope of Services	<ul style="list-style-type: none"><li>• Sourcing and procurement of chemicals</li><li>• Supply side management of cylinder, bulk gases, and hazardous waste</li><li>• Inspection</li><li>• Quality certification and product testing</li><li>• “Standardized” custom labeling</li><li>• Inventory management (offsite)</li><li>• Just-in-time delivery</li><li>• Delivery to point of use</li><li>• Data management and EH&amp;S reporting (MSDS, use tracking etc.)</li><li>• Technical support and process optimization</li><li>• Process efficiency improvement</li></ul>	

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### Drivers for Initiating a Program

- Reduce chemical lifecycle cost at each facility
- Outsource areas that were outside of core competencies
- Seek strategic alliances with suppliers
- Reduce purchase and inventory costs by leveraging across the company
- Reduce waste
- Improve data management for environmental reporting
- Desire to become one company despite multiple systems, cultures, and procedures that resulted from recent merger

### *PILOT PROGRAM*

#### CSP Pilot Program

CSP worked with Raytheon to:

- Establish a cross-functional site team including representatives from purchasing, environmental, warehouse and delivery, quality, finance, engineering support, and waste management Outsource areas that were outside of core competencies
- Conduct a process mapping exercise to determine how chemicals move through the facility
- Conduct a materials accounting analysis of one painting operation to determine material emissions and the cost of material loss
- Conduct a chemical management cost analysis to assess the total cost of chemical use for the facility
- Expand the chemical management cost analysis to the top 10 chemical using facilities in the company
- Develop the scope of a new chemical services (CGMP) program and issue an RFP
- Provide analysis and support for negotiations of a final agreement with Haas TCM with specific incentives for cost and chemical use reduction

#### Results of the Pilot Program

- The process map identified six different information systems and more than twenty discrete organizational functions supporting chemical management.
- The cost analysis revealed chemical management costs of \$1 for every dollar of chemicals purchased.
- Paint shop analysis provided necessary information to validate a move to powder paint and other investments in transfer efficiency technologies. In the same area, efforts are underway to eliminate redundant inks and paints that often result in needless waste generation.
- Raytheon replicated the materials analysis in the printed wiring board shop and proposed significant changes to the facility's waste treatment processes to result in reductions in energy use, treatment chemical use, and hazardous waste generation. Conservative estimates suggest annual operating savings of \$400,000. (The changes were not implemented due to the merger with Raytheon and transfer of the PWB Fab out of Tucson).

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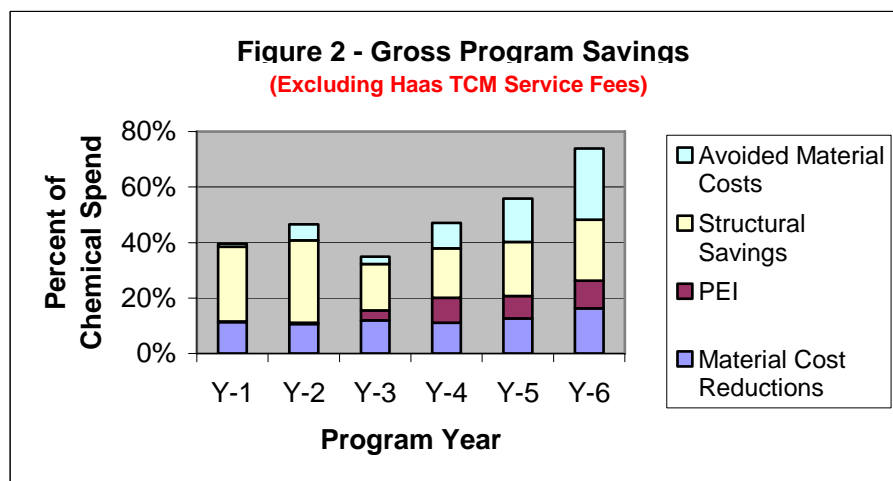
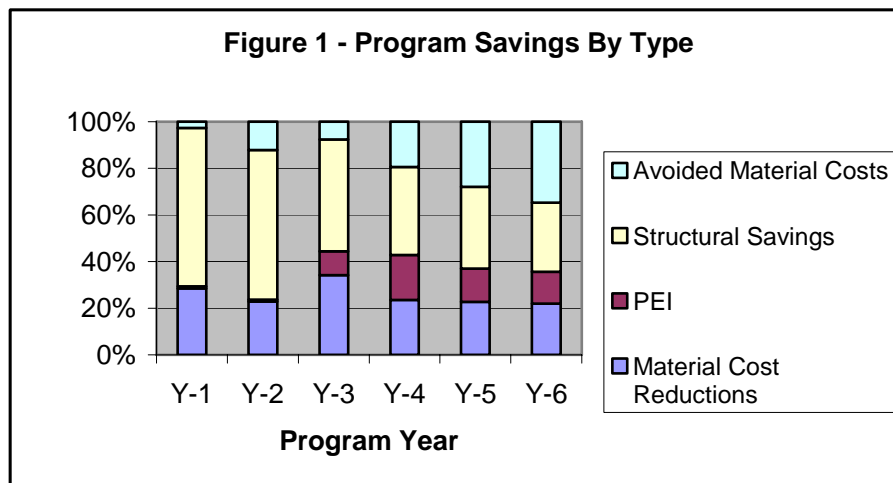
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- Contract Structure**
- 6 year contract covering over 45 facilities (renewed in FY 2005 until 2010/2011)
  - Service fee
  - Incentives for gain-sharing or “shared savings”
  - Bonus for chemical use reduction
- Program Performance**
- 6 year contract covering over 45 facilities (renewed in FY 2005 until 2010/2011)
  - Operations streamlined via automated ordering and tracking system - tcmIS : ~20,000 chemicals & gases, ~1000 waste profiles on-line
  - Improved service and quality
    - On-time delivery rose from a base of 82% to an average of 91% in the first 5 months
    - On time delivery now consistently greater than 96%
    - Inventory scrap rates reduced by >90%
  - 18% net savings in first 2 years (5 Yr. >60% gross savings)
    - Direct (commodity) and indirect (structural) costs
    - Over 75 Raytheon FTE headcount (structural costs) reprogrammed to other areas
  - Reduced waste
    - Consolidated inventories & higher inventory turns
  - Customer satisfaction continually improved
    - Supply, tech center, supply optimization, service, cost savings areas recognized
- Business Benefits**
- Based on the results of the materials accounting (MA) analysis, the facility took steps to improve its paint application efficiency in its main painting area, resulting in an estimated 71% decrease in paint waste.
  - Radian implemented an internet enabled chemical lifecycle outsourcing program with aligned incentives for cost reductions and process efficiency improvements, including chemical use reduction and cycle time reduction.
  - Some examples of specific benefits realized include:
- | <i>Before</i>                             | <i>After</i>  |
|---|---|
| ▪ Commodity cost savings: minimal         | ▪ Commodity cost savings: 15.5% (> 40% when adj. for CPI chemicals) |
| ▪ Accounts payable: 5                     | ▪ Accounts payable: 1   |
| ▪ Purchase orders/yr: 43,000              | ▪ Purchase orders/yr: 0   |
| ▪ Sites in program: 0                     | ▪ Sites in Program: 45  |
| ▪ Suppliers: 1,300                        | ▪ Suppliers: 1  |
| ▪ MSDS processed/yr: 2,000                | ▪ MSDS processed/yr: 0  |
| ▪ Inventory turn/yr: 3                    | ▪ Inventory turns/yr: 52  |
| ▪ Inventory value: \$7 MM                 | ▪ Inventory value: \$0.5 MM   |
| ▪ Warehouse floor space: >120,000 sq. ft. | ▪ Warehouse floor space: <9,000 sq. ft. (93% reduction)             |
| ▪ Inventory spoilage/yr: \$3.7 MM         | ▪ Inventory spoilage/yr: \$0.28 MM                                  |
| ▪ Acceptance rate: 96.93%                 | ▪ Acceptance rate: 99.9%  |
| ▪ Headcount: 75                           | ▪ Headcount: 35 (mostly Haas TCM)                                   |

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Figures 1 and 2 below summarize the program savings by type and gross program savings, respectively.



### Key Elements for Success

- The CSP cost analysis and the initial successes of the materials analysis justified moving ahead with a comprehensive program.
- This cost savings analysis was extrapolated to the top 10 chemical using facilities. The information provided the basis for the RFP for “enterprise-wide” CMS.
- The major goals announced by the new CEO of Raytheon were directly in line with the CMS program; reducing costs and usage, implementing an integrated, nationwide solution, and focusing on core competency.
- The Department of Defense imperative for cost reduction forced commitment from upper management to consider major changes.
- The merger created an atmosphere of change thus making it easier to propose a new program for managing chemicals.

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### Key Challenges

- This was the third attempt at implementing a CMS program, and there was much skepticism.
- Union labor was generally opposed to the idea.
- Inherent cultural bias at Raytheon that “we know best” created some resentment by the team to outsource this function.
- Once cost analysis was in hand, the Team struggled to define what their vision for chemical management should be.
- Lacked involvement and support from an upper management champion in the beginning. It was a round-up effort.
- The process-mapping exercise should have been conducted in one of the first meetings. It brought to light for the entire team the complexity and costs of chemical management.
- Continuity of program management – key personnel continued to change and depth in the site team was necessary for follow through.
- Cultural differences between legacy companies posed challenges to implementation.