



## ***Chemical Management Services in Silicon Valley: Update from the Field***

### ***Workshop Overview***

Philips Silicon Valley Center -- Sunnyvale, CA  
March 12, 2002

### ***Summary***

Chemical Strategies Partnership (CSP), the Silicon Valley Manufacturing Group (SVMG), and the Santa Clara County Pollution Prevention Program (SCCP3) hosted a CMS Workshop on March 12, 2002 at Philips Electronics' facility in Sunnyvale, CA. The workshop brought together representatives from a variety of organizations to hear presentations and engage in discussions about the chemical management services (CMS) model and, more broadly, the Silicon Valley Pilot Program. A total of 46 people from 28 different organizations attended this workshop, which featured case study presentations from the four participants in the Silicon Valley Pilot Program: Analog Devices, Seagate Technology, Stanford Linear Accelerator Center, and Nu-Metal Finishing. United Technologies Corporation also gave a presentation detailing their efforts to implement a global CMS program.

### ***Companies and Organizations in Attendance***

Aera Energy, Agilent Technologies, Air Liquide America Corporation, Air Products and Chemicals, Analog Devices, Inc., Ashland, Inc., Delta Air Lines, Dow Corning Corporation, EPA Region 9, Greene Engineers, Haas Corporation, Haas School of Business (UC Berkeley), Henkel Chemical Management, Intel Corporation, Interface LLC, Matheson Tri-Gas ESG, Palo Alto Fire Department, Pratt & Whitney, Rockwood Electronic Materials, Raytheon Company, Sandia National Laboratories, Santa Clara County Pollution Prevention Program, Seagate Technology, Silicon Valley Manufacturing Group, Stanford Linear Accelerator Center, Texas Instruments, United Technologies Corporation, URS Corporation/Radian International

### ***Chemical Management Services in Silicon Valley***

#### ***John Claussen, Program Director, CSP***

John Claussen, introduced CSP, CMS, and the Silicon Valley Pilot Program. CSP aims to reduce chemical use, waste, risks, and cost through the transformation of the chemical supply chain by redefining the way chemicals are used and sold. CSP promotes CMS, a strategic, long-term relationship in which a customer contracts with a service provider to supply and manage the customer's chemicals and related services. Aligning the financial incentives of the chemical user and supplier to reduce lifecycle chemical costs and environmental impacts is the lynchpin to success. CMS achieves environmental benefits and cost savings primarily because it focuses on lifecycle costs instead of material costs, aligning financial incentives of the customer and supplier in a system-wide arrangement.

To promote CMS, CSP conducts pilot programs to assist manufacturing companies in assessing their total chemical lifecycle costs and developing a CMS program. CSP advocates a four-step approach consisting of planning, baselining chemical costs, developing the scope of a program, and engaging a

CMS provider. CSP teamed with SVMG and SCCP3 to introduce a region-wide pilot program to promote the CMS business model to manufacturing companies and other stakeholders in Silicon Valley. The goal of the partnership is to reduce the use and release of toxic chemicals in the region through the transformation of the chemical supply chain. The project is being funded by the U.S. EPA, Region 9, the Steven and Michele Kirsch Foundation, and the San Francisco Foundation.

Companies participating in the pilot project include Seagate Technology, Analog Devices, Stanford Linear Accelerator Center (SLAC), and Nu-Metal Finishing. In order to participate in the program, these four companies agreed to work with CSP to conduct an analysis of their current chemical management system, consider initiating a CMS program at their facility(ies) in Silicon Valley, and share the results and outcomes of the process with the public. To date, CSP has assisted in designing programs for the two large electronics firms, Seagate and Analog Devices, and is currently testing the CMS business model in a small and medium-sized enterprise (Nu-Metal) and a research and development facility (SLAC). CSP continues to explore replication of CMS in other industry sectors and other regions.

### ***Silicon Valley Pilot Program: Progress to Date***

This portion of the workshop showcased case studies of CMS programs from two of the participants in the Silicon Valley Pilot Program. Brief summaries of the presentations are provided below.

#### ***Bill Kohnen, Purchasing Manager, Analog Devices, Inc.***

Analog Devices, Inc. (ADI), a \$2.5 billion semiconductor company, was turned on to CMS through a presentation given by CSP at a Semicon conference about two years ago. The ADI's primary drivers for considering CMS as an option for improving chemical management were space, safety issues, ISO14000, and improving the profitability of the company.

ADI has visited several sites to better understand how CMS is working at other facilities, and these visits have led to several conclusions: 1) CMS providers at these facilities are not providing the full scope of chemical management services, 2) existing CMS programs appear to be time and material agreements with loose cost and performance measures that are tied to a contract, and 3) customers are happy with their programs despite the fact that good performance measures are lacking. Despite these perceptions, momentum seems to be building for more comprehensive programs to be implemented in the future. From these findings, ADI has chosen to begin their CMS program with a logistics focus that includes specific cost and performance goals.

Currently ADI is in the process of negotiating a CMS program with a CMS provider. ADI worked with CSP to baseline their total chemical lifecycle costs. ADI's baseline analysis provided a snapshot of the primary cost drivers and overall level of effort for managing chemicals at each stage of the chemical lifecycle. Total management costs equaled about half of ADI's total chemical spend.

So far, the biggest challenges for ADI have been in developing the RFP, determining how cost savings and chemical reductions will be reconciled with ongoing production cycles, and developing contractual agreements that include liability and insurance arrangements and on-going performance measurements.

#### ***Q & A Highlights***

**Q - It is hard to believe that a CMS provider can guarantee process efficiency improvements without as much knowledge of the processes as the process engineers do.**

A - (from the audience) Even after three years of having a CMS program in place, it is very difficult to convince the process engineers of the return on investment. It is important to understand the profile of the chemical spend because this will allow you to make the business case to the process engineers detailing the benefits of changing out a chemical. Be sure that incentives are in place that will encourage the engineers to work with the CMS provider to make efficiency improvements.

A - (from the audience) At my company we have an R&D facility and a manufacturing facility. The key for us is to get buy-in at the R&D phase where the process is tested and proven. Once the engineers have seen it working there, they are more comfortable with incorporating the change into their processes.

### **Scott Gordon, Global Commodity Manager, Seagate Technology**

Chemicals are a unique material carrying external and internal risks and management requirements that other commodities don't. Because of the challenges associated with purchasing, owning, and managing chemicals, Seagate felt that a chemical management specialist could do a better job than they could managing their chemicals in the long run. Globally, Seagate has a total chemical spend of \$54 million, 18 chemical using sites, over 282 chemical suppliers, and a variety of chemical, mix, volumes, and processes from site to site. A chemical management solution that would work for Seagate had to be global, flexible, and fast.

A baseline exercise performed by CSP at facilities in Fremont and Milpitas, CA illuminated the potential for cost savings and efficiency improvements. Seagate decided to pursue a global CMS program, starting with a pilot at their facility in Minnesota. In order to effectively roll-out the program globally, Seagate first had to secure executive management buy-in and support. At the site level, a site focus team was formed with representation from all affected areas of the facility, and they were involved in the entire CMS program development process and the selection of the CMS provider.

Since implementation in October 2001, Seagate has already seen a number of benefits. CMS allows Seagate to focus on their core business--manufacturing disk drives while a chemical specialist focuses on managing Seagate's chemicals and chemical related functions. Already there has been a 50% reduction in onsite chemical inventory and handling meaning minimized risk and safer conditions for Seagate employees. The positive changes that have taken place at Seagate over the past 6 months "would have taken five years" had Seagate attempted to do this on their own. Most importantly, because the program is global, Seagate is able to monitor chemical usage and inventory at their facilities around the world. This could never have been achieved without a CMS program.

### **Q & A Highlights**

#### **Q - What has been your experience in setting up metrics to ensure that your goals are met?**

A - We compiled a list of performance metrics and program needs. We left our expectations somewhat open to see how the CMS providers responded to the question in our RFP.

A - (from the audience) There is some negotiation on this matter beyond the contract. Every year there are metrics and objectives that the provider must meet. With one client we have a monthly monitoring process, and if the quality for the chosen metrics gets below a certain percentage then action is taken.

#### **Q - Have you measured your scrap waste costs?**

A - We are "afraid to." Before CMS, our facilities were running at 90-95% capacity on \$9 million per year. Now they are at 100% capacity, but at \$8.3 million. Where did rest go? In one example, \$36,000

of material that would have gone to waste is instead shipped to and used in a facility in Ireland with assistance from our CMS provider. That is savings.

***Keynote Address: Selling the CMS Concept Corporate-wide  
Brian Ross, Commodity Manager, United Technologies Corporation***

United Technologies Corporation (UTC) is a \$27.9 billion company that consists of six separate organizations: Carrier, Otis, Pratt & Whitney, Hamilton Standard, UTC Fuel Cells, and Sikorsky. When UTC first began exploring alternate chemical management options, their desire was to alleviate some of the burden of chemical management including, procurement, technical problem solving, process improvements, data reporting and MSDS management, and quality control. CMS was an appealing option because a CMS provider could manage all of the chemical management functions allowing UTC to focus on its core competency.

Several years ago, UTC engaged a CMS provider and implemented a CMS program. Due to several issues with the provider and the contract structure, however, the program ultimately failed to achieve its goals. Out of this first attempt at CMS, UTC gained some valuable insight regarding what makes a CMS program successful. First of all, initiate a program with a CMS provider that has demonstrated success and experience in CMS. Second, avoid the procurement only mentality--CMS goes beyond a leveraged buy. Third, and possibly most importantly, avoid using the markup on materials method of compensation. This gives the wrong incentive to the supplier who will continue to sell chemicals on a volume basis. Consider paying a management fee with a chemical cost pass-through and employ gainsharing incentives to encourage the provider to perform. Finally, develop a consistent communication channel with agreed and achievable measurements.

UTC intends to pursue another CMS program, but this time on a global level and with a different CMS provider. In order to do so, UTC management needs to sell the concept to each facility worldwide. Selling chemical management is a two-part concept. First, it is necessary to measure the current level of effort required to manage chemicals, thus determining what each chemical management task is worth to UTC. The second part of the concept answers the question, "what can we measure?" For each potential benefit of a CMS program, such as, process improvements, waste stream reductions, and chemical reductions, UTC needs to determine if a dollar amount can be attached to the savings and thus be counted as a hard savings.

If your company is considering a CMS program be sure to get an executive sponsor; establish a point of contact at each site and department; clearly define goals, metrics, and scope of work; align program incentives with your provider; and provide flexibility so there is a perfect fit at each site.

***Q & A Highlights***

**Q - If chemicals are such a small percentage of overall operating costs, why is there corporate support at all?**

A - We had an MBA intern do a study at two facilities. He found that our chemical management costs to chemical purchase costs ration was about 3 or 4 to 1, which is significant.

***Challenges and Opportunities for CMS in the R&D and Small/Medium Enterprise Setting***

This portion of the workshop showcased case studies from the SME and R&D setting. Brief summaries of the presentations are provided below.

### ***Butch Byers, EHS, Stanford Linear Accelerator Center***

Stanford Linear Accelerator Center (SLAC) is a U.S. Department of Energy-owned facility operated by Stanford University. SLAC's primary function is the operation of large research facilities for approximately 3,000 scientists from all over the world.

Several current challenges drove SLAC to consider CMS: Title V of the Clean Air Act, lack of high quality data, the realization that other DOE facilities were managing chemicals much better, and a desire to increase the efficiency by which chemicals flow through the facility. SLAC worked with CSP to perform a baseline survey of their current chemical management system. The team discovered that SLAC's chemical management costs were more than two times greater than the cost of the chemicals themselves. The baseline survey also illuminated the complexity of SLAC's chemical management system identifying approximately 100 users, 40 departments, 250 chemical vendors, 1,000 storage/usage locations, and 2,000-4,000 unique chemicals.

Currently SLAC is in the process of drafting a Request for Information that will be sent out to both CMS and chemical information management system (CIMS) providers. SLAC is predominately interested in an information system that supports chemical users, ES&H compliance reporting, online transfers and changes, and radiological materials management. However, SLAC recognizes that a CMS program may meet its information management needs as well as provide additional support in chemical management.

All SLAC departments have been involved in the program development to date. The team has encountered a number of challenges in CMS program development. First of all, SLAC is a very decentralized operating environment, which makes the baseline data gathering and decision making difficult. Second, there are currently multiple procurement channels for chemicals and only a couple of them are tracked well. This means that it is difficult to know exactly how much SLAC spends on chemicals and difficult to reconcile inventory. Third, there is some skepticism regarding the potential for cost savings on the part of SLAC management. Finally, amongst a number of SLAC staff there is a feeling of fear of or resistance to change. To overcome these challenges it is important to work closely with your information systems staff, develop a cross-functional team, determine your mission-critical supply needs, educate, believe, and be patient.

### ***Q & A Highlights***

**Q - With such a decentralized operating environment, how did you succeed in getting buy-in?**

A - One special interest group at a time.

**Q - Why are you experiencing a degree of non-support from SLAC staff?**

A - In ES&H, for example, there was a question of what ES&H tasks to include in the scope? Why should we include this function if it is working well now? The greatest opposition was from within ES&H.

### ***Clarke Miller and Dayna Greenspan, MBA Candidates, UC Berkeley School of Business***

Clarke Miller and Dayna Greenspan worked with CSP to evaluate how the CMS model could apply to a small/medium sized enterprise (SME). Nu-Metal Finishing approached CSP for assistance and agreed to participate in the baseline analysis as part of the Silicon Valley Pilot Project. Nu-Metal's interest in the CMS model was in part due to a progressive management team and in part to a number

of drivers, including the desire to reduce costs, improve yields, improve information management systems, reduce onsite inventory, and improve relations with suppliers.

The baseline analysis at Nu-Metal revealed a chemical management cost to chemical purchase cost ratio of approximately 0.6 to 1. Their key management costs accrued in inventory, procurement, waste management, and EH&S functions. The baseline analysis also revealed a number of opportunities for Nu-Metal. A CMS program could potentially increase ordering efficiency, consolidate the supply base, utilize a JIT delivery system, capitalize on the opportunity cost of floor space, and utilize the expertise of a supplier.

Despite these drivers, there are key questions to be addressed. First, are there enough chemical purchase costs to justify engaging a CMS provider? Second, is there sufficient cost savings or value from services to justify an onsite chemical manager? Finally, would Nu-Metal see benefits as a result of the previous two opportunities? Early recommendations are to evaluate a leveraged purchasing program plus some basic services using a CMS provider. Some of the services may include, sourcing, supply, and information management. Once the program is up and running, a CMS provider could continue to add on more services to drive down chemical use. The value of a CMS program for a SME will be the long-term partnership.

### ***Closing Remarks***

#### ***Jill Kauffman Johnson, Executive Director, Chemical Strategies Partnership***

Jill Kauffman Johnson closed out the day with a discussion about the next steps for the Silicon Valley Pilot Program and CSP. CSP will continue to monitor the progress of participating companies through late 2002 at which point case studies will be developed. Evaluation of a specific SME project with the EPA will continue, with a plan to work with more SME companies and develop tools and cost models for SMEs. CSP continues to work on regional projects modeled after the Silicon Valley Pilot Program. Currently, CSP is exploring options for programs in Singapore and Korea.

### ***For More Information...***

For more information about the Silicon Valley Pilot Program, CSP, or upcoming workshops, please visit our website at [www.chemicalstrategies.org](http://www.chemicalstrategies.org) or call 415-421-3405.