



Chemical Strategies Partnership

A Project of the Trust for Conservation Innovation

# Chemical Management Services: A supply-chain approach to reducing chemical use

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## What is the Chemical Strategies Partnership?

- The Chemical Strategies Partnership (CSP) is a non-profit project funded by foundations, government, and private companies
- CSP is helping to promote the economic and environmental benefits of improved chemical management

### **The CSP Mission**

**To reduce chemical use, waste, and cost through transformation of the chemical supply chain**

# Chemical Strategies Partnership (CSP)

## Funders

- Foundations
- Government
- CMS Forum companies

CSP

## CSP Pilot companies

- Raytheon Company
- Nortel
- Seagate Technology
- Analog Devices
- SLAC-Stanford/DOE lab
- Dartmouth College
- UC Merced
- Hyundai Motor Company
- Metal-working co's
- Lansing School District
- Weyerhaeuser

## CMS Forum

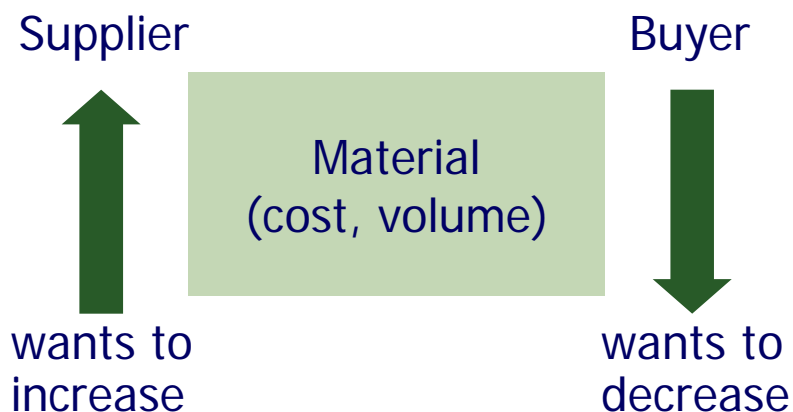
- Tier I CMS Providers
- Tier II suppliers
- Customer co's
- Other stakeholders

## What are Chemical Management Services (CMS)?

- Strategic, long-term contract for chemicals *and* associated management services
- Goes beyond invoicing and delivering product; CMS optimizes processes and continuously reduces chemical lifecycle costs, risk, and environmental impact
- High quality, low cost system for expert chemical management and continuous improvement
- Aligns incentives for business and process efficiency improvements that reduce chemical volume and costs
  - From “More is More” to “Less is More”
  - Documented cost savings

# Under the CMS model, formerly conflicting incentives are now aligned

**Traditional relationship:**  
Conflicting incentives



**CMS model:**  
Aligned incentives



**Changing the supply chain model results in potential costs savings and environmental gains**

# The chemical lifecycle's unique requirements

Unlike other purchased materials, chemicals require specialized procedures and data at every lifecycle stage.

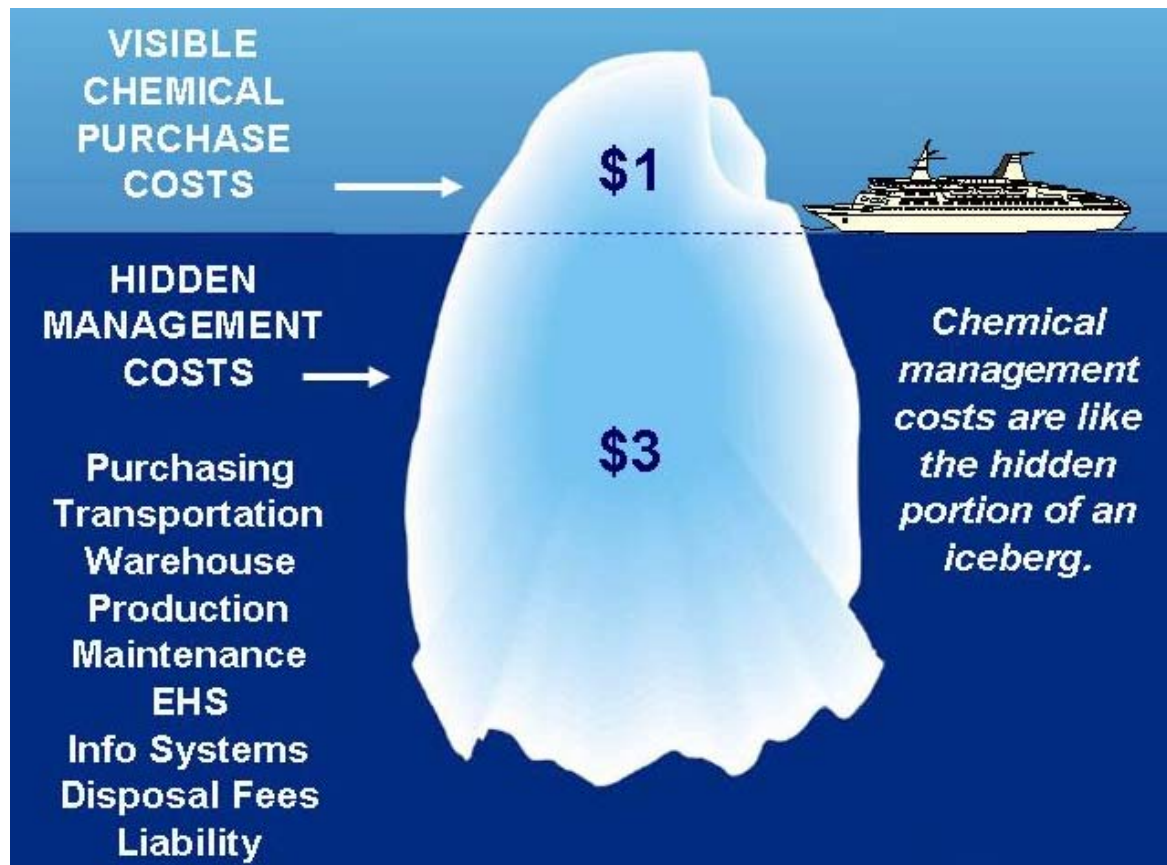
## The Chemical Lifecycle



## Hidden risks and costs offer opportunities for savings

These management costs can be large: up to \$3 for every \$1 spent on chemicals.

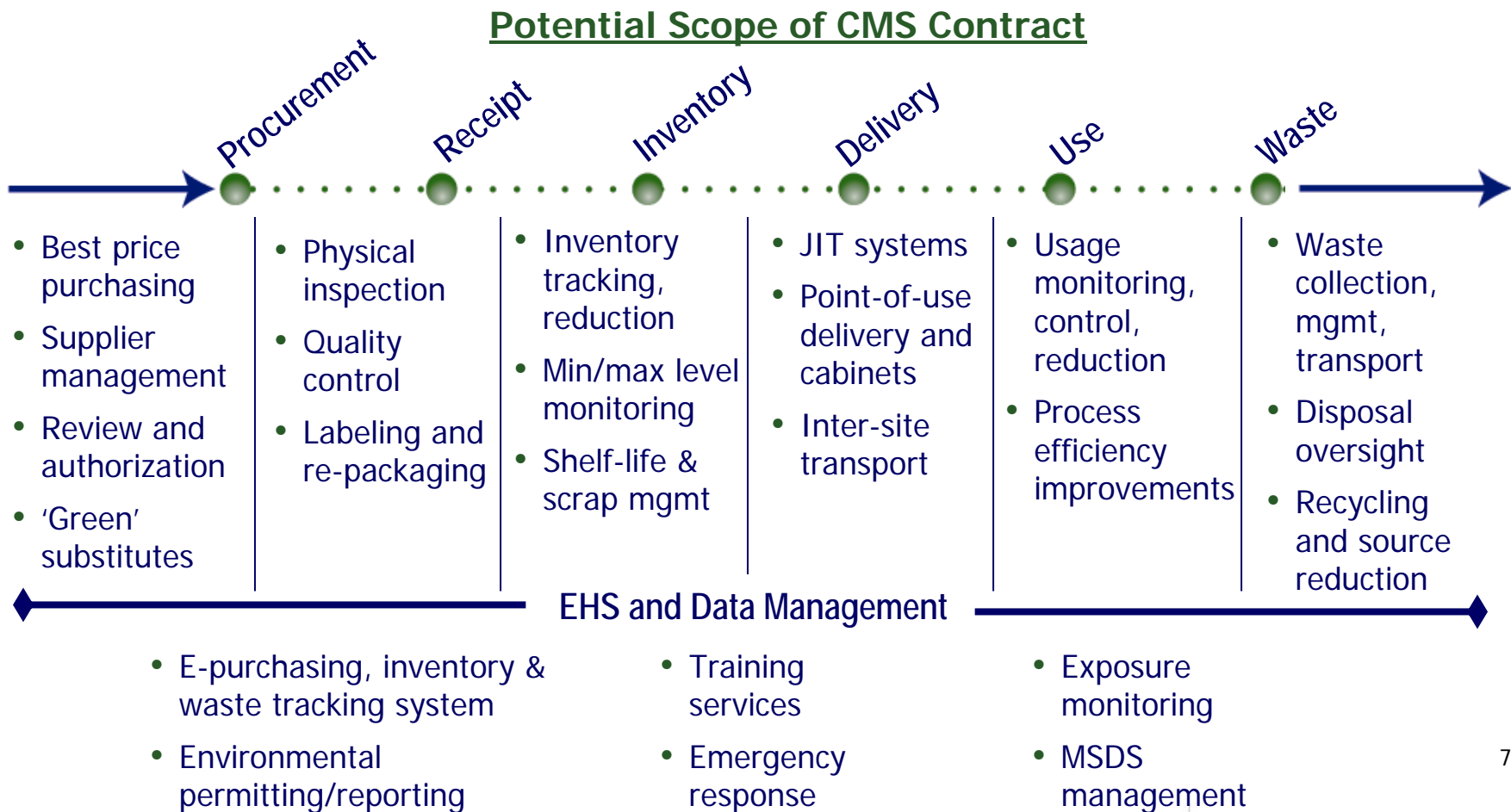
However, these are often overlooked because they are hidden among many department budgets.



T. Bierma, Illinois State University

# CMS providers improve lifecycle management

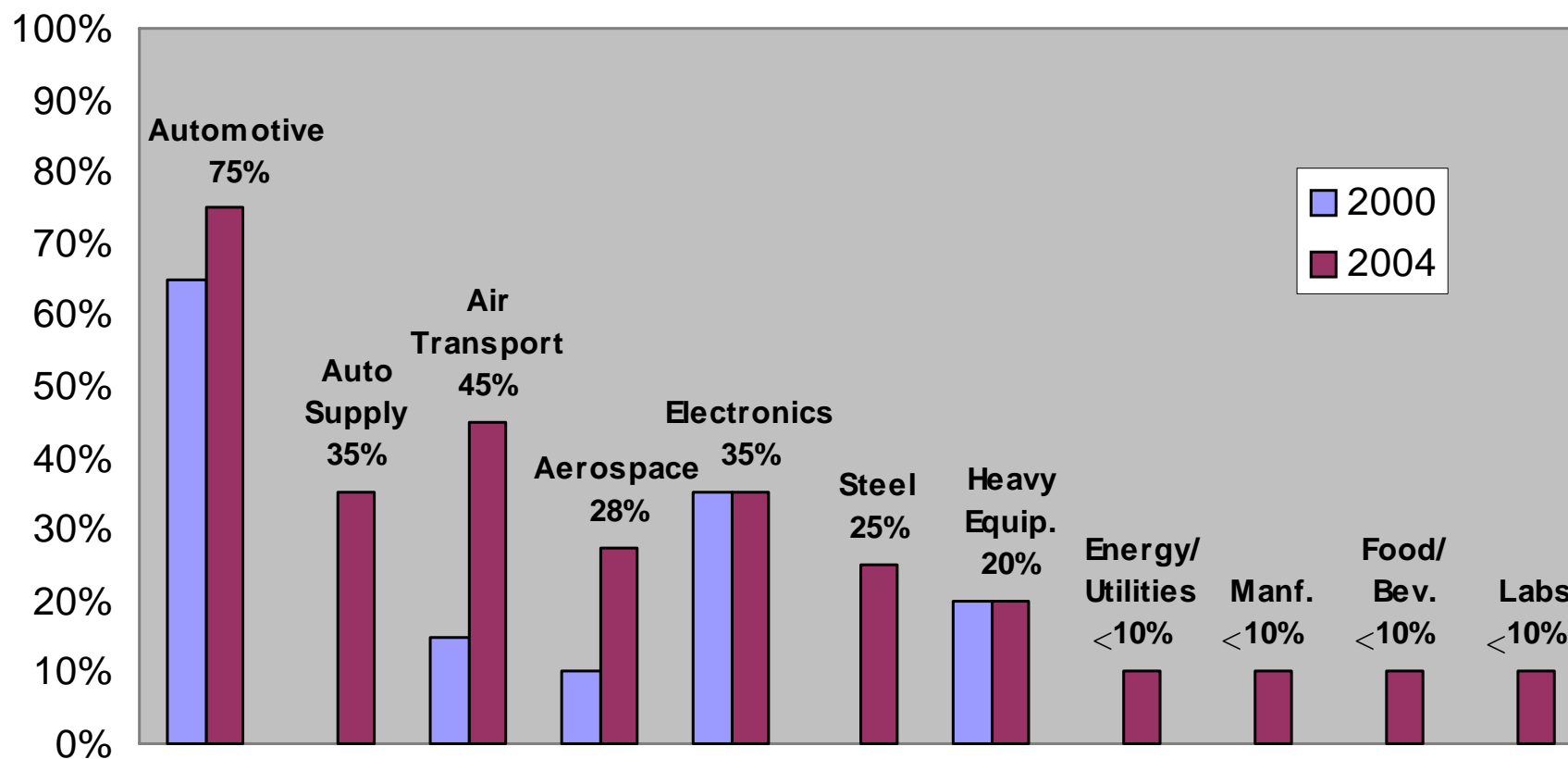
A CMS Provider not only supplies chemicals, but also delivers services and continuous improvement, often at lower total cost.





# CMS: A growing trend

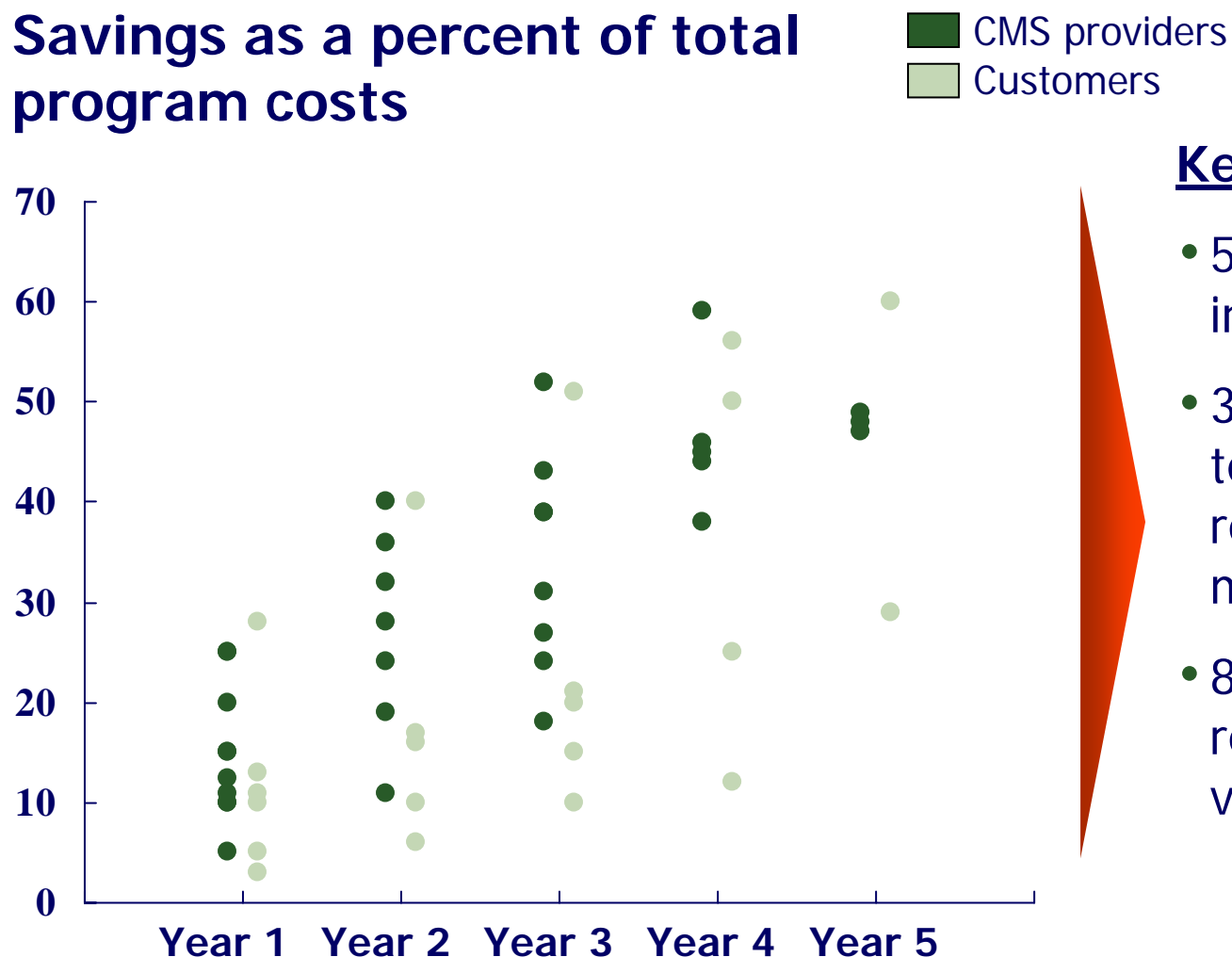
## Estimated CMS Market Penetration (North America)



Source: CMS Industry Report 2004 (Provider Estimates), CSP industry surveys and estimates.

# Overall cost savings reported by CMS customers are significant

## Savings as a percent of total program costs

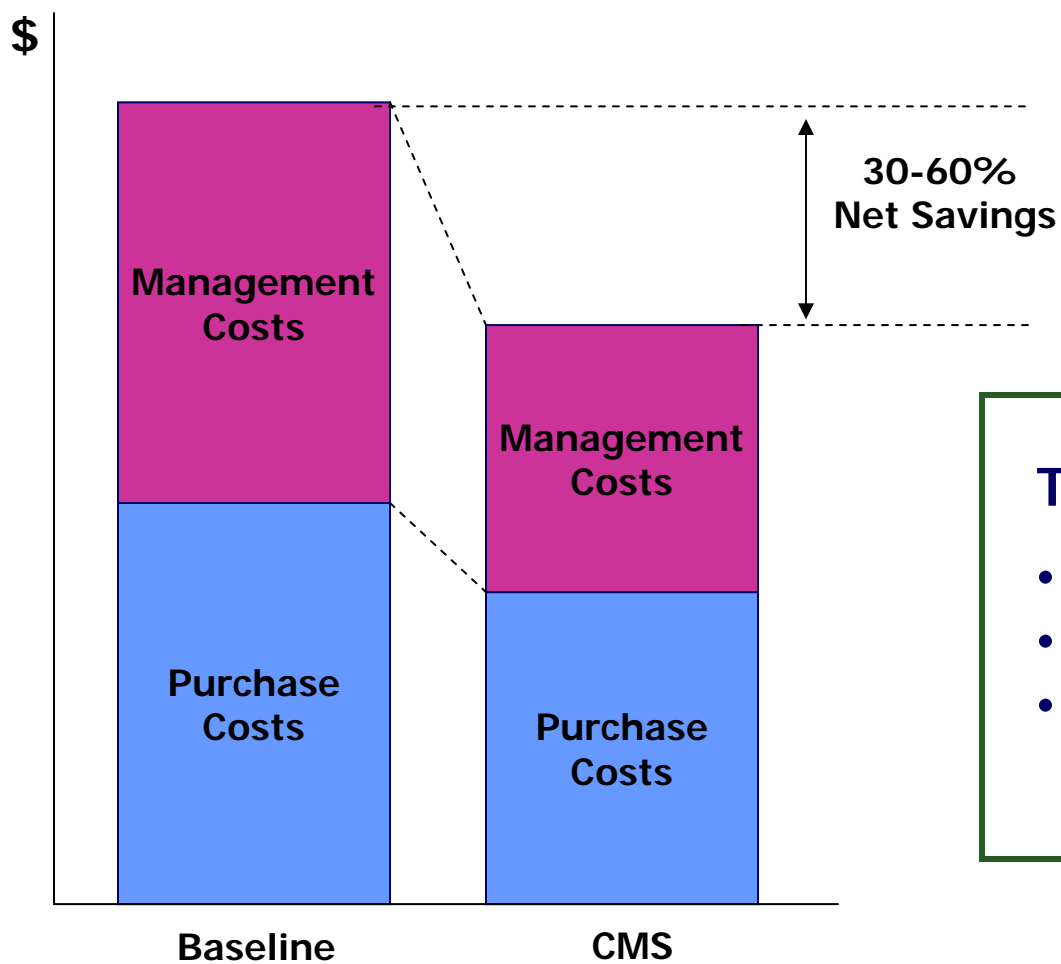


## Key results

- 5-25% total savings in first year
- 30-80% of long-term savings from reducing management costs
- 80% of customers report chemical volume reduced

Source: *CMS Industry Report 2000*, Chemical Strategies Partnership

# Source of savings

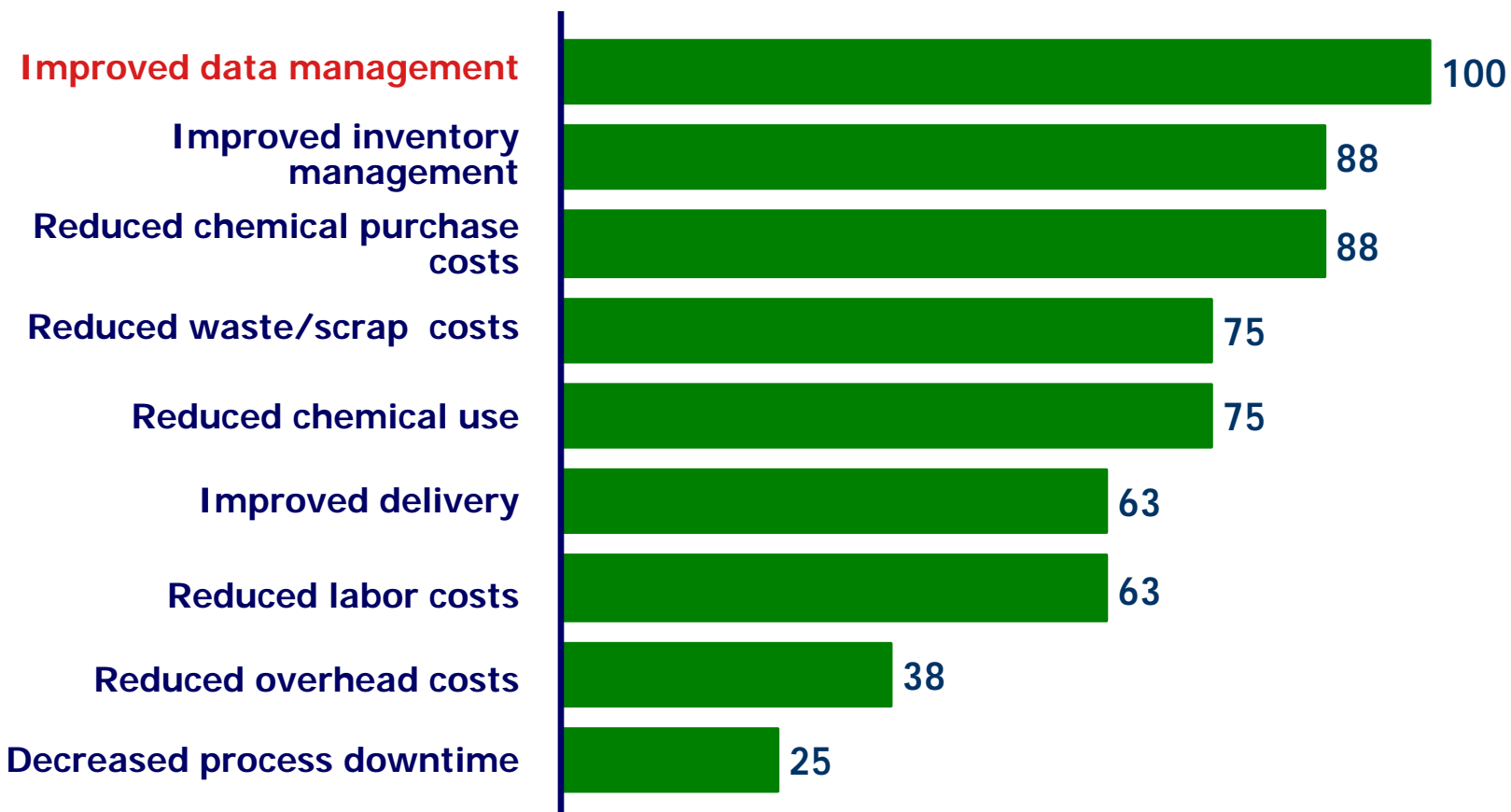


## Top sources of savings:

- Chemical use reduction
- Process efficiencies
- Improved purchasing/  
inventory management

# Improved data management is the benefit most widely cited by customers

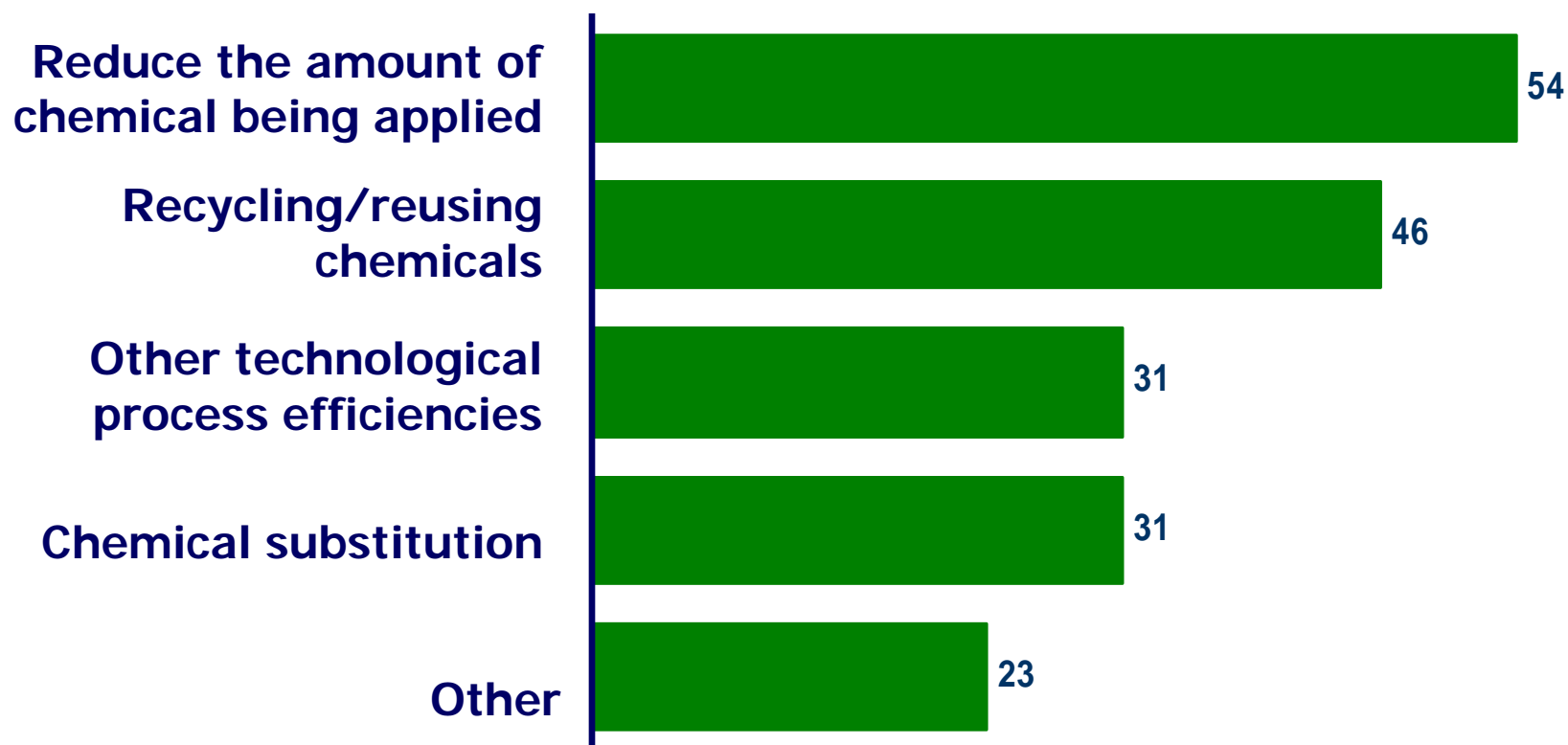
## Benefits cited; percent of customer respondents



Source: *CMS Industry Report 2004*, Chemical Strategies Partnership

# Reduced chemical use is the top source of emissions reductions

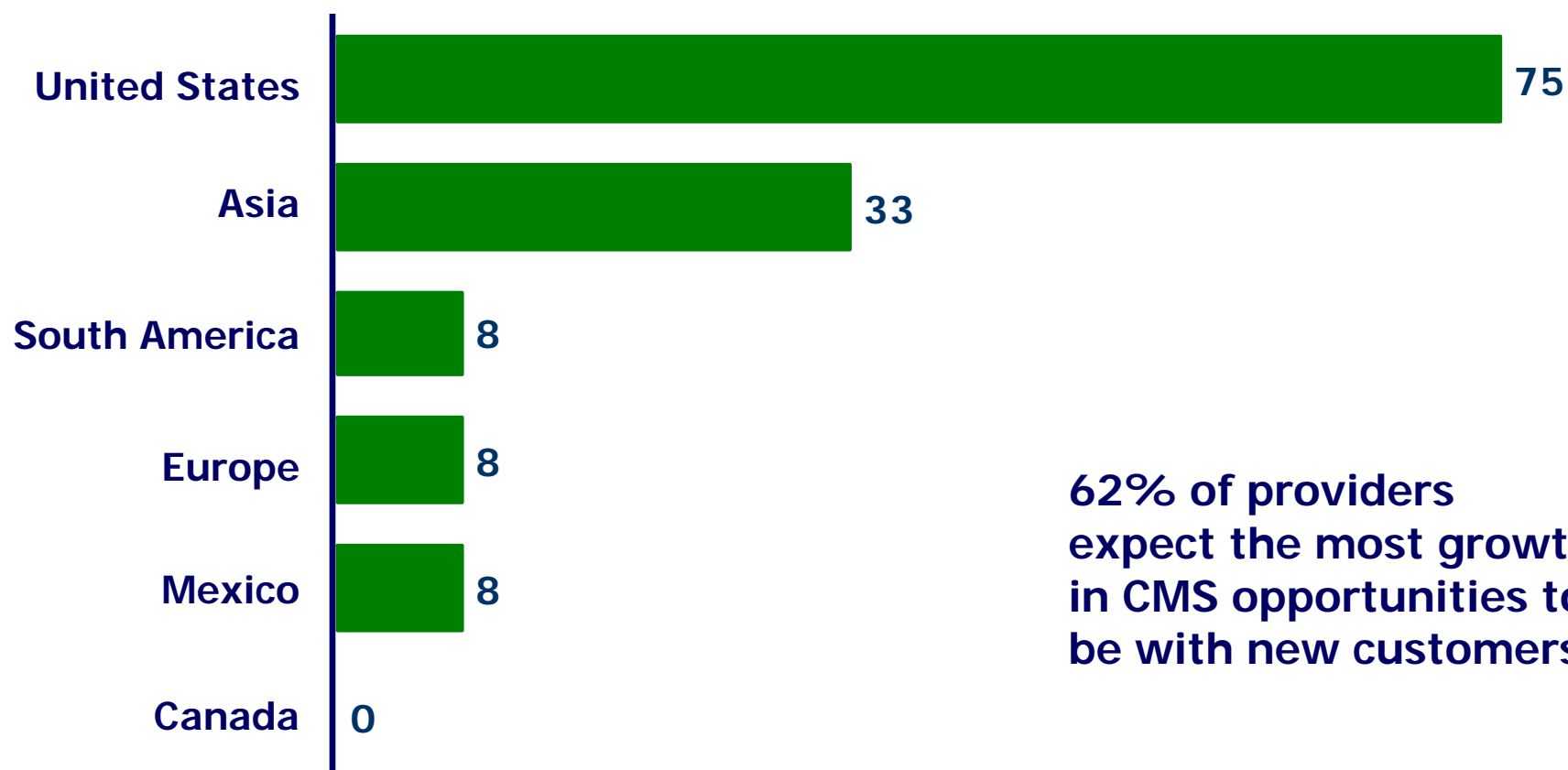
## Emissions reductions; percent of customer respondents



Source: CMS Industry Report 2004, Chemical Strategies Partnership

## Providers expect to see most growth with new customers

Growth expectations; percent of provider respondents



**62% of providers expect the most growth in CMS opportunities to be with new customers.**

Source: *CMS Industry Report 2004*, Chemical Strategies Partnership

## Case study: General Motors

### Programs in over 90% of plants worldwide

- Average total chemical use reduction of 30%
- Total cost savings above 30%
- Environmental benefits: Reductions achieved over 6 years in one CMS contract
  - 54% decrease in purge solvent
  - 77% decrease in paint stripper
  - 80% decrease in solvent masking
  - 75% decrease in VOC emissions
  - 83% reduction in detackification chemicals

# CSP pilot case study: Raytheon Company

## **Streamlined Operations** (~20,000 chemicals, 1000 waste profiles)

- Automated ordering, chemical gate-keeping, consolidated sourcing
- On-line MSDS and EHS data for reporting
- Chemical use and waste generation tracking
- Procurement and inventory management

## **Improved Service and Quality**

- On-time delivery rose from a base of 82% to an average of 91% in the first 5 months
- Scrap rate reduced by 250%

## **Reduced Costs**

- Payback of the program in the first 6 months
- 10-20% net savings in the first 2 years
- Expected savings over the 5 year contract is 30-40%



## CSP pilot case study: Seagate Technology

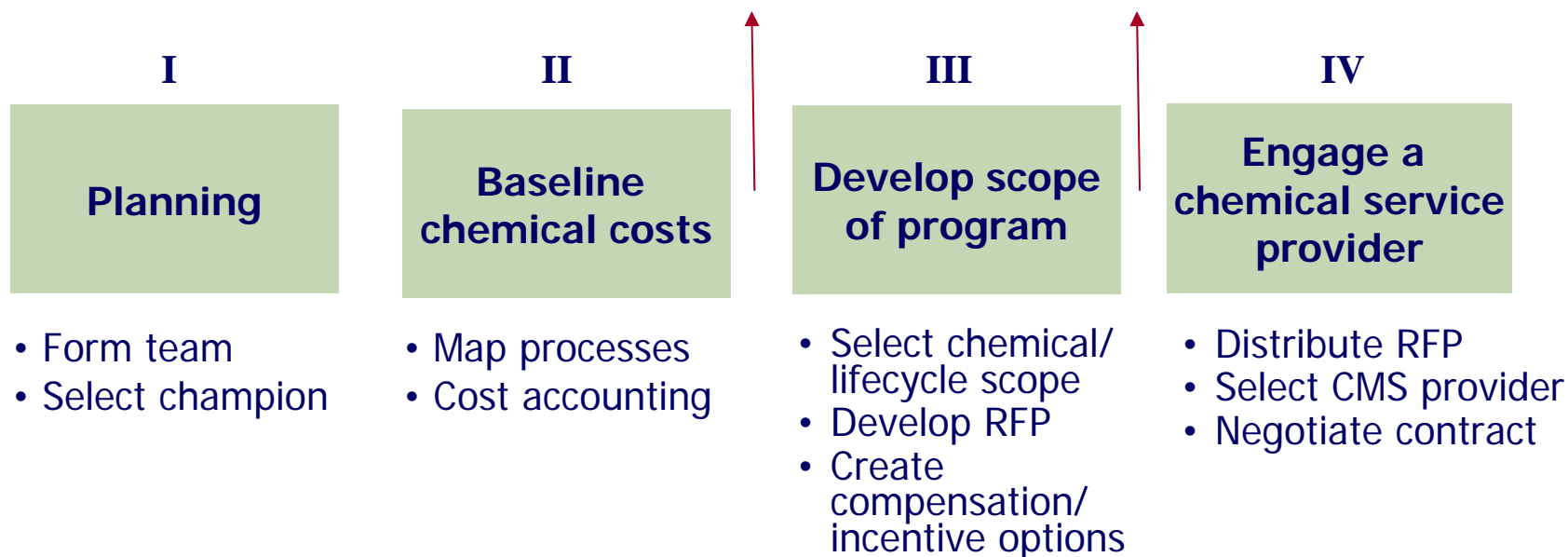
### Benefits realized in first twelve months at one facility

- Aligned incentives and guaranteed savings – supplier generates no profit from volume sales
- Reduced onsite chemical inventory/handling (JIT)
  - Reduced 10,000 sq. ft. of inventory by 50%
  - Reduced \$800,000 in carrying costs of chemicals
  - Eliminated chemical scrap – approx. 7% of inventory
- Improved chemical processes/shared best practices
  - Photo-resist process: substituted more benign product and extended bath life 3-5 times, resulting in savings of \$50,000/month
- Eliminated distributor markup on chemicals

## CSP approach...

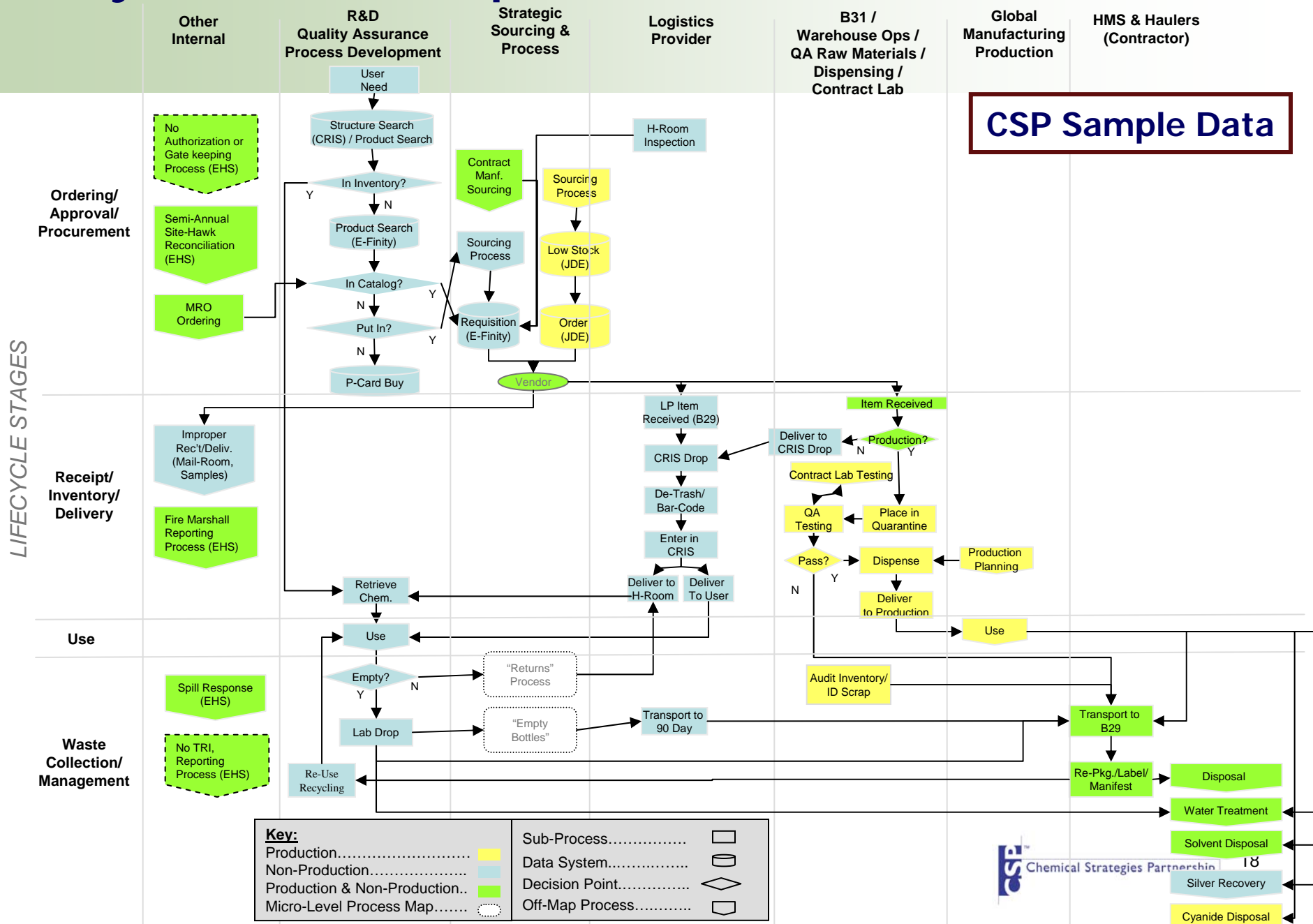
CSP's Approach: Conduct pilot programs to assist manufacturing companies in assessing their total chemical lifecycle costs and developing a CMS program

*Decision Point: Is CMS right for my company?*



# Analysis: Process Map

PROCESS OWNER

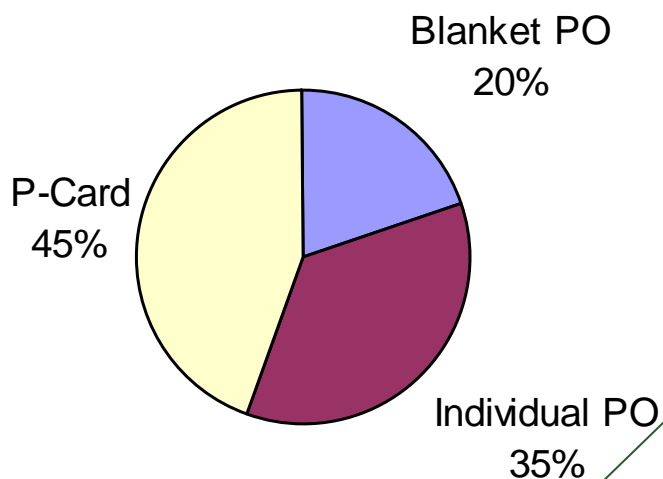


**CSP Sample Data**

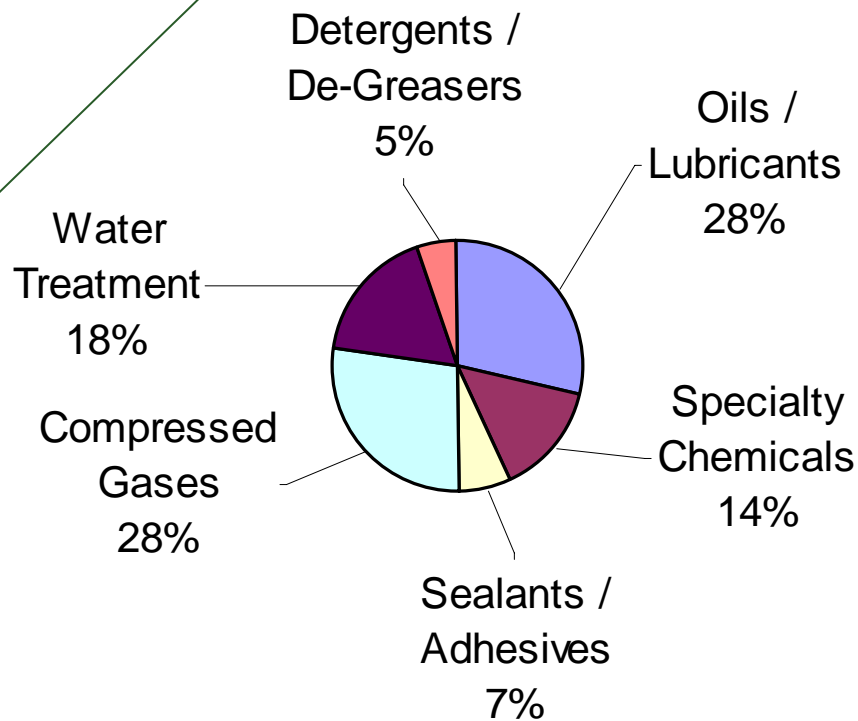
# Analysis: Purchasing source, type

CSP Sample Data

## Procurement Pathway

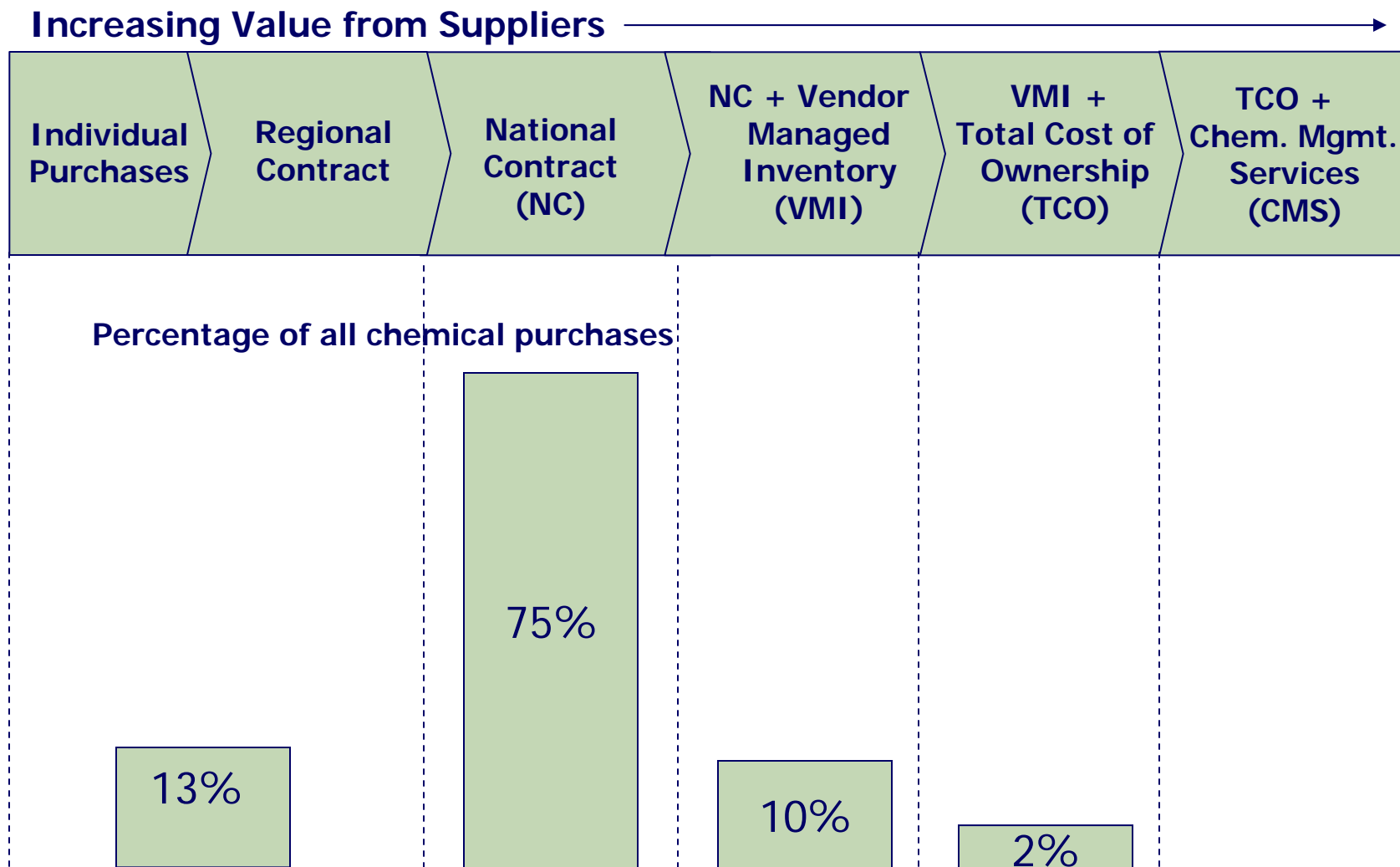


## Chemical Types



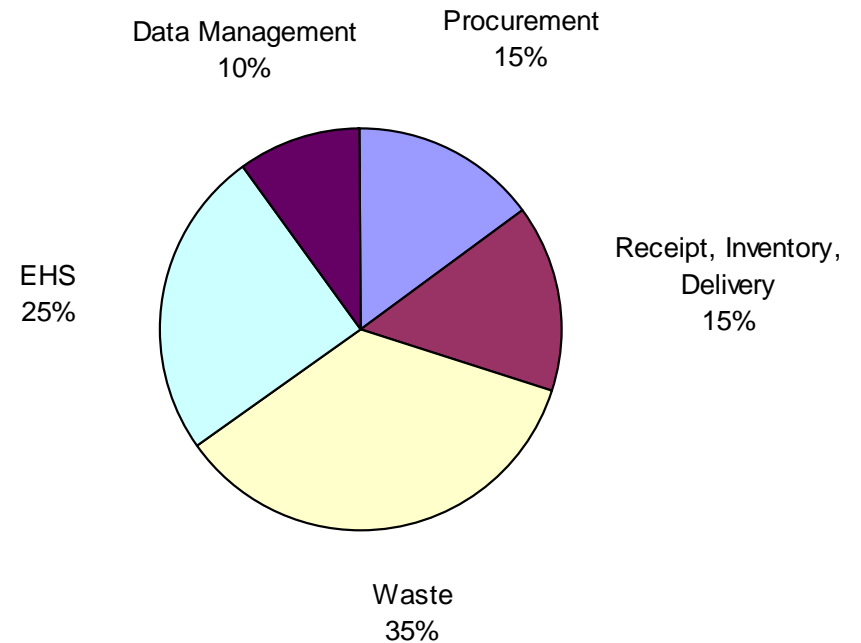
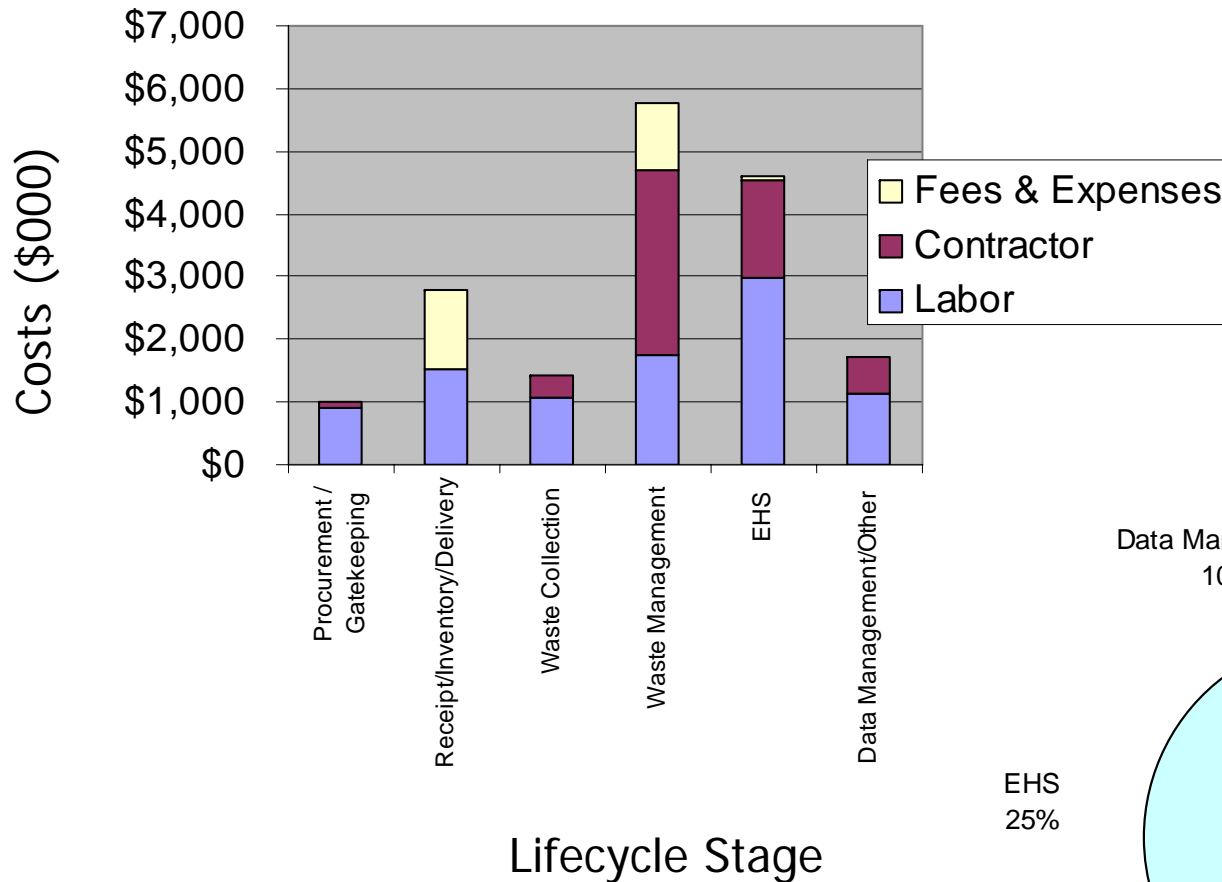
# Analysis: purchasing strategy

CSP Sample Data



# Analysis: lifecycle management costs

CSP Sample Data



# Summary baseline cost analysis

CSP Sample Data

(\$000s)	Site 1	Corp (Est.)
Purchase Costs (Direct %)	\$4,560 (87%)	\$12,370 (72%)
Management Cost	\$6,360	\$19,295
<i>Management:Purchase Cost Ratio</i>	<i>1.4:1</i>	
# Chems on-site	~1050	
# Transactions	~500	~1000
# Data Systems	~6	~8
"Old" Chemicals	~25%	
Availability Rate	~78%	
Avg. On-Time Delivery	unknown	

## CSP continues to address barriers and promote CMS

- Introduce CMS into new sectors with public/private funding (university/research labs, k-12, municipalities, pharma/biotech, defense dept.)
- Assist in developing CMS programs to accelerate adoption in sectors already using CMS (electronics, aerospace, etc.)
- Develop tools (metrics, update manual, etc.)
- Disseminate information (workshops in SF, UK)
- Promote initiatives internationally (Asia, UK, Europe)

*CSP conducts these activities with support from the US EPA, state governments, foundations, and CMS Forum members*