Chemical Strategies Partnership
11th Annual Chemical Management Services Workshop

Resource Management: Expanding Your CMS Program

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October 23-25, 2007

Resource Management: Expanding Your CMS Program

Agenda

- Why have Chemicals (CM) and Resource Management (RM) Programs?
- What is the History of CM/RM at General Motors
- What are the drivers, the economics, and the cost justification for combining or integrating the programs?
- What are the hurdles?
- What are the benefits of integration ?
- What is the next generation?

"IT'S ABOUT THE SYSTEM!!!!!"

And the System is the manufacturing plant

Resource Management: Expanding Your CMS Program

Why have Chemicals Management (CM) and Resource Management (RM) Programs?

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Chemicals Management

Quality

Process Control

Cost Reduction

Usage Reduction

Chemical Reduction

Inventory Reduction

MSDS Management

Waste Reduction

Single Point of Contact and Accountability

Supply Base Reduction

Control the Flow of Chemicals

Common Systems Approach

Resource Management

Compliance

Waste Reduction & Elimination

Cost Reduction

Contract Reduction

Common Systems Approach

Single Point of Contact and Accountability

Eliminate NOVs

Better Reporting

Source Separation

Improved Recycling

Zero Landfill Attainment

Resource Management:
Expanding Your CMS Program

What is the History of CM/RM at General Motors ?

History of Chemicals Management at GM

1987 ***<u>First Engine Plant</u> Chemicals Management Program Piloted in Romulus, Michigan***

- *Achieved Greater Environmental Compliance*
- *Significant Process Improvements Were Realized*
- *Chemical Acquisition Costs Were Significantly Reduced*
- *Program Successes Expanded to Other Platforms*

1989 ***<u>First Stamping Plant</u> Program Implemented at Grand Blanc, Michigan***

1991 ***<u>First Assembly Plant</u> Chemicals Management Program Installed at Shreveport, Louisiana***

1997 ***<u>Most GM Plants Have CM programs in Place</u>***

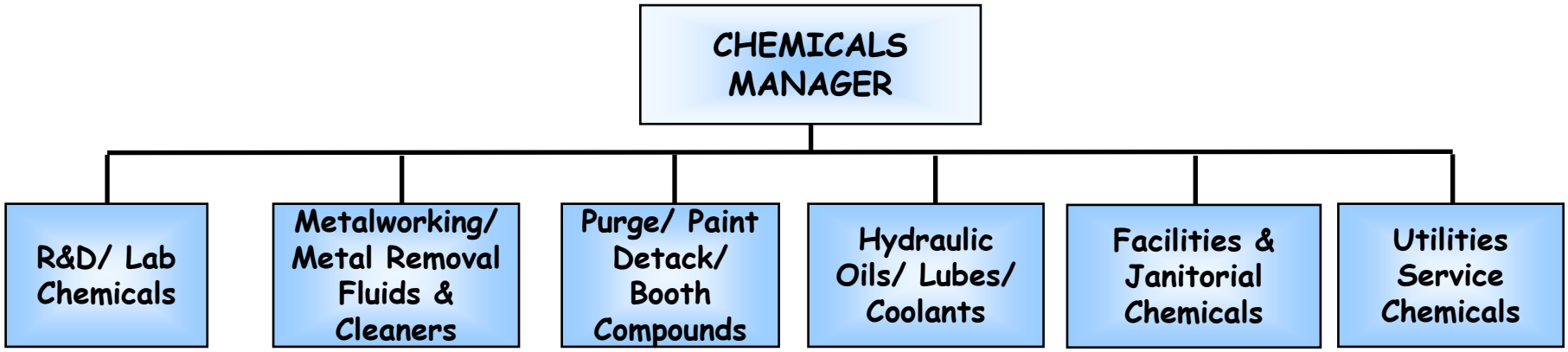
2003 ***Create Greater Efficiency by Rationalizing suppliers from 13 to 5***
Re-bid in NA to a common scope of chemicals/services

2006 ***Re-bid to a Global Template of chemicals/services***

Chemicals Management Program Scope

DEFINITION:

Under chemicals management, a single first-tier supplier provides all indirect chemicals and services and provides on-site laboratory staff to manage all chemical processes within the plant at a fixed price with CPU and indexing.



CHEMICAL SERVICES INCLUDED UNDER CHEMICAL MANAGEMENT:

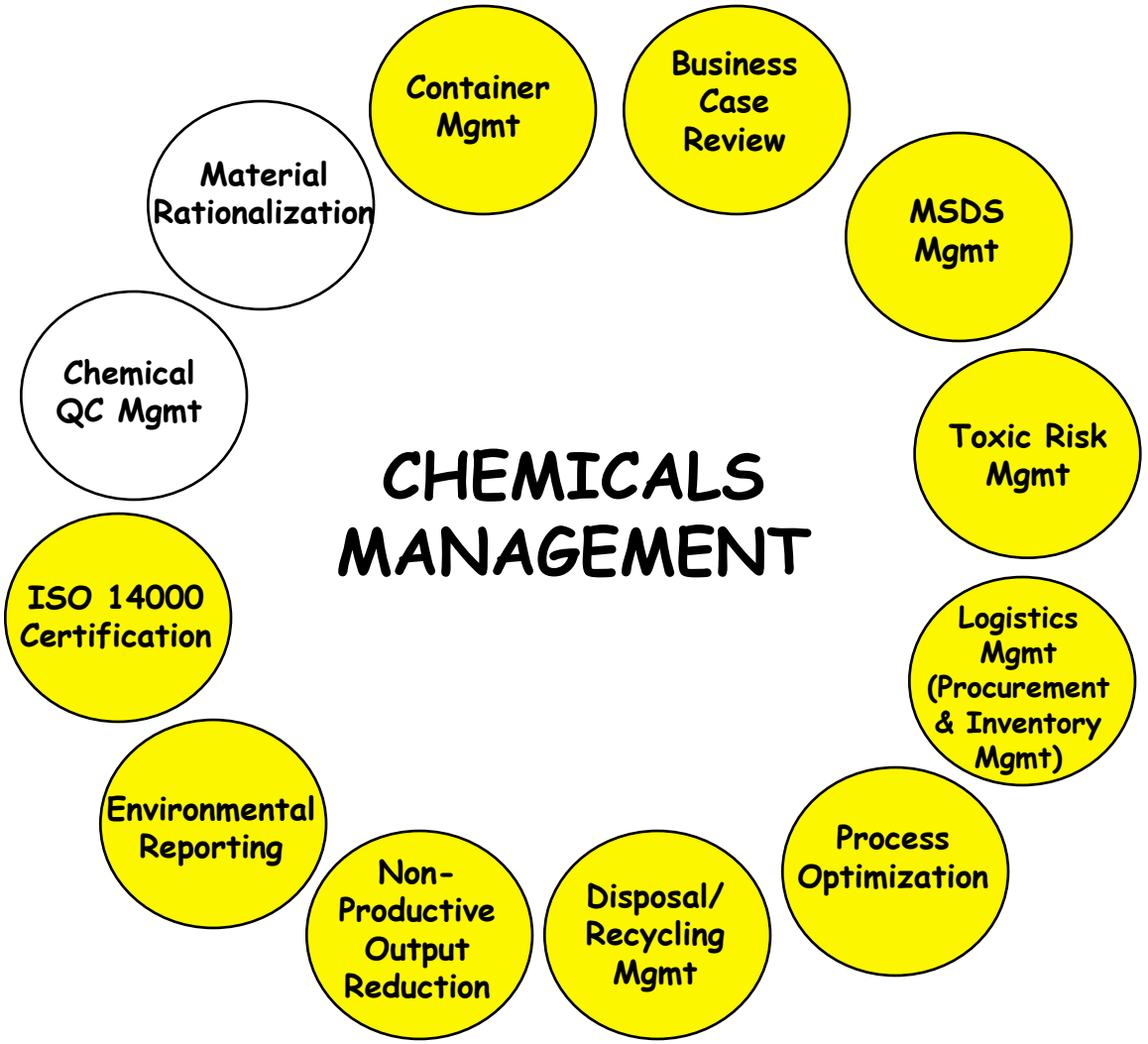
- Chemicals
- On-site Management Team
- Off-site Support
- On-site Checks
- Complete Inventory Management
- Complete Chemical Process Management
- R&D Programs
- Container Management
- Second Tier Development & Management
- Product/Process Eng. Development
- Predictive Maintenance Development
- Chemical Maintenance Scheduling
- Environmental Studies
- Safety/ Health Issues
- Assist Environmental Reporting\ Training
- Total System Analysis & Tech. Mgmt.
- Problem Solving
- Usage Tracking
- Cost Reduction Program
- Coordinate OEM'S
- Waste Treatment Involvement

INDIRECT CHEMICALS MANAGEMENT

Common Total System Process

Common to CM/RM Programs

Chemicals Management Optimizes and Commmonizes Subsystems



History - Resource Management

1994 – First GM Plant Implemented – Opel – **Kaiserslautern, Germany**

1997 – First U.S. Plant Implemented Resource Management – **Orion Assembly**

1998 – First Non-Manufacturing Facility – **Tech Center**

2006 – Implemented in every GM Manufacturing facility in the **U.S. and most Non-Manufacturing Facilities**

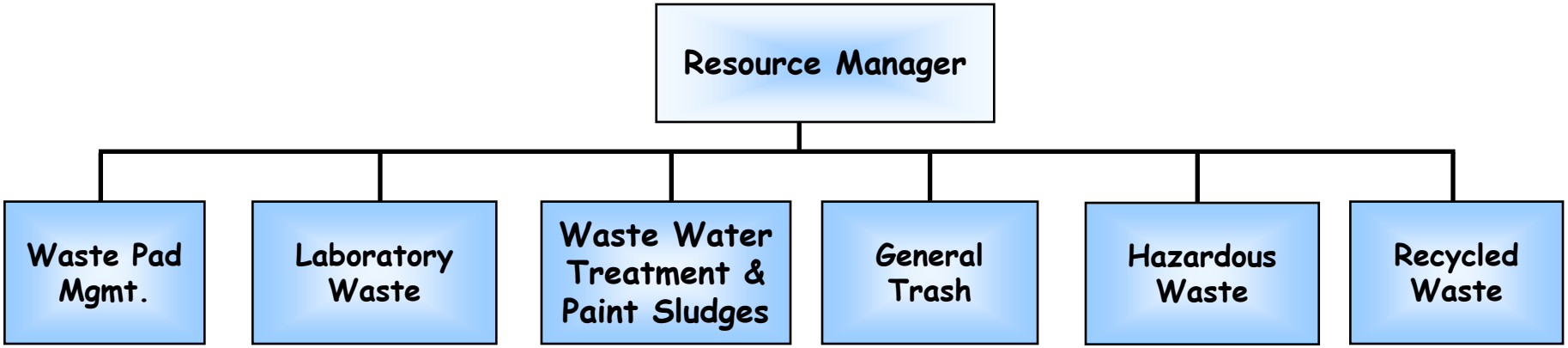
Global Implementation

- Fully implemented in Europe
- Other regions various stages of implementation

Resource Management Program

DEFINITION:

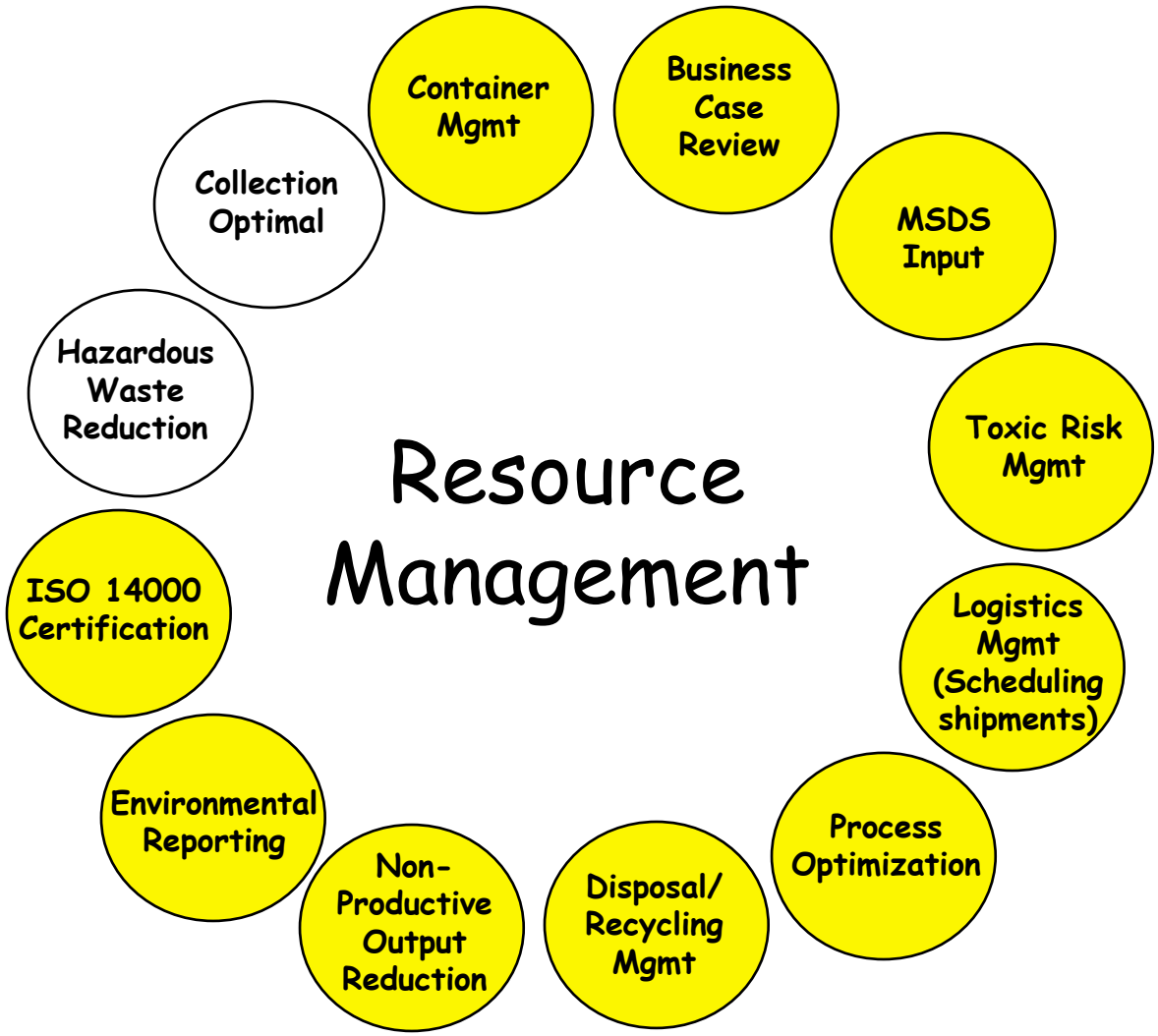
Under resource management, a single first-tier supplier manages all plant wastes. The supplier provides all Resource Management services through their on-site staff and the supplier is economically compensated to reduce waste volumes.



Services included under Resource Management:

- Consultation
- On-site management team
- Off-site support
- On-site inspections
- Hazardous waste pad management
- Container preparation & labeling
- Investigate recycling opportunities
- Second tier development & management
- Source separation studies
- Source reduction studies
- Waste disposal scheduling
- Environmental studies
- Safety/ Health issues
- Assist Environmental reporting\training
- Total system analysis & tech. mgmt.
- Problem solving
- Usage tracking
- Cost reduction program
- Coordinate OEM'S
- Waste treatment involvement
- Emergency response services

Resource Management Optimizes and Commonizes Subsystems



Common to CM and RM Programs

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Successful Integration of Resource Management into Chemicals Management will be:

- Paradigm shift in the approach to supplying Chemical and Waste Management Services
- Cultural change in the way suppliers are expected to provide integrated life-cycle services into the Manufacturing System
- Customer requirements will drive a shift in the marketplace

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What are the drivers, the economics, and the cost justification for combining or integrating the programs?

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What are the Drivers ?

Immediate drivers for the integration of Resource Management into Chemicals Management are:

- Leverage supplier headcount for all of these activities
- Leverage of your company headcount and expertise
- Reduce the number of contracts to be administered
- Synergize all activities by placing them into a common life cycle system that could provide sustainable benefits to GM

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What are the Drivers ?

At GM, we have identified inherent issues applicable to mature programs:

- Programs have matured
- Savings have plateaued
- Programs are in a maintenance phase
- Additional savings can only occur through Silo Metamorphosis or Silo Integration

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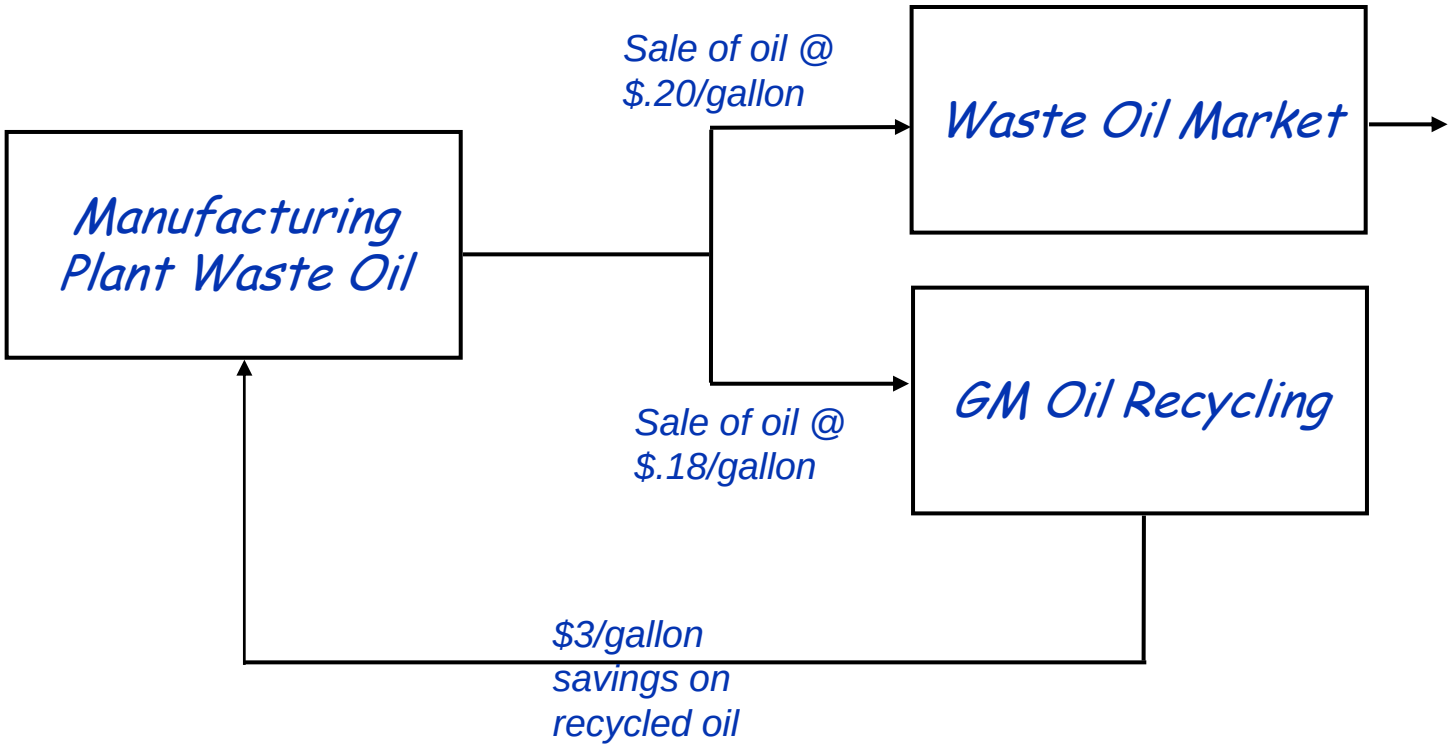
What are the Drivers ?

At General Motors:

- Chemicals, resource, oil, and waste activities have integrated significantly within their silos
- Currently Chemicals, Resource, Oil & Waste Management activities interface, but are not integrated
- All of these activities use separate but similar support services (e.g. Information Management Activities) which can be leveraged
- Because these activities are not integrated, the total system is sub-optimized. e.g. Chemicals Management and Oil Management

Example of System Sub-Optimization



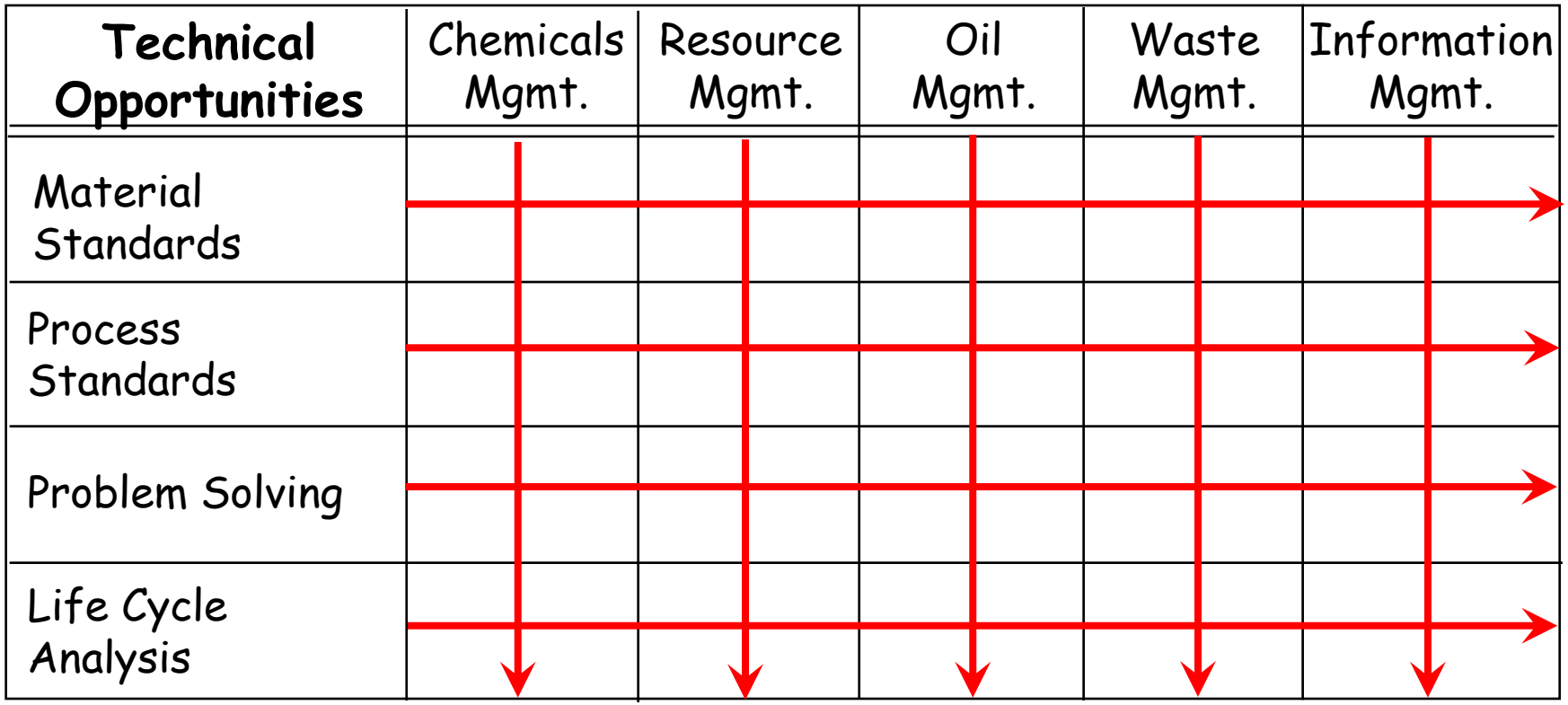
Waste oil sold to "highest bidder" for $.20/gallon rather than $.18/gallon to oil recycler

GM sacrifices $3 savings on total system to save $.02/gallon in the resale of oil

Administrative Leveraging Opportunities

Administrative Support Function	Chemicals Mgmt.	Resource Mgmt.	Oil Mgmt.	Waste Mgmt.	GMR2 Data Collection
GM Technical Staff Support	X	X	X	X	X
Supplier Off-Site Technical Support	X	X	X	X	
Supplier Off-Site Adm. Support	X	X			
Supplier On-Site Adm. Support	X	X	X		
Procurement / Commercial	X	X	X	X	
Information Mgmt. / Reporting	X	X	X	X	X

Technical Leveraging Opportunities



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What are the hurdles ?

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Customer Hurdles

Individual Programs:

- Non-manufacturing facilities with low chemical spend
- Geographic location
- Size of facility
- Small businesses
- Schools and universities
- Governmental operations

Integrated Programs:

- No single point of contact and accountability to integrate
- Too many contracts
- Increased liabilities
- No systems approach
- Limited knowledge of sourcing an integrated program tiered approach ?
- Available existing suppliers ?

Service Provider Hurdles

Integrated Programs:

- Virtual CMS programs
- Supply base expertise in Waste Management
- Regulatory knowledge
- Are Chemicals Management Companies willing to provide Waste Management Services?
- Liabilities / Indemnification
- Supplier relationships between CMs and RMs
- Create new businesses to deliver the services.
- Market will need to adjust to customer demands and expectations

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What are the benefits of integration ?

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Benefits of Integration

- Chemicals, Resource, and Oil Management all naturally support each other in a common system
- Unified GM staff support is used to manage a total system rather than separate silos
- Chemicals, Resource, and Oil Management can leverage use of common support, resources wherever possible
- Those few plants not able to cost justify Resource Management or Chemicals Management Program as Silos may likely be able to cost justify an integrated program

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Benefits of Integration (continued)

- GM staff support including travel is better utilized by servicing a single integrated system
- On-site supplier staff support more efficient and effective
- Consolidation of team meetings for CM, RM, and Oil Management
- Multi-plant projects can be assessed and implemented quicker for cost reductions
- Implementation of BOB's (Best of the Best)

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Comparison of Integrated versus/ Non-Integrated Approaches

Non-Integrated	Integrated
Multiple focal points	System focus
Sub-system optimization	Total system optimization
Accountability within silo	Accountability for total system
People are "specialists" within silos	People become multi-functional specialists
Limited potential for organizational optimization	Significant opportunity for organizational optimization
Redundant support functions	Shared support systems
Compliance attained	Responsible compliance attained

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What is the next generation?

- Consortium of companies providing lifecycle management services
- A new industry
- Potential for corporate spin-offs that would generate revenues