



# Chemicals Management Systems Past, Present, and Future

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**CMS Forum**

**San Francisco, California**

**October 24, 2007**



## Definition of CMS

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- A strategic plan under which a customer contracts with a provider to supply and manage the customer's chemical needs and related services. The provider's remuneration is based on the quality of services delivered in support of the customer's production system and not on the volume of chemicals used. The ultimate goal is to "**MINIMIZE**" the amount of chemicals used.



## Why CMS ?

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- Lower the rate of increase of ENTROPY
- Minimize the use of chemicals
- Conservation of natural resources
- Lower production system costs
- **“TOTAL SYSTEM”** Optimization



## Early History of CMS

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- Concept --- 1982
- First Experiment --- 1983-1984
- Refine Concept --- 1985
- Plan to Implement --- 1986
- Large Scale Implementation 1987
- Growth & Expansion --- 1988 on



## CMS Drivers

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- Reduced Chemical Usage
- Reduced Emissions
- REDUCED COSTS
- Competitive Demands
- *Resource Conservation*
- *Global Population Growth*
- *Government & Public pressure to go "GREEN"*



## CMS Constraints

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- Resistance to Change
- Existing Market Systems
- Existing Organizational Systems
- Internal Focus vs. **TOTAL SYSTEM** Focus
- Government Regulations
- Global Cultural Issues



# CMS Growth & Expansion

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- CMS started in the Auto sector and has expanded into areas such as ----

Aerospace

Utilities

Defense

General Manufacturing

Semiconductors

Tanneries

Dry-Cleaning

Others



# CMS Scope Expansion

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- Resource/Waste Services
- Janitorial Services
- Solvent Services
- Fuel/Energy Services
- Paint Services
- Scrap Services
- Tooling Services
- Environmental Services
- **“WATER”** Services





# CMS Global Activities

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- United Nations Industrial Development Program has established several “**CLEAN PRODUCTION CENTERS**” around the globe.
- Several national, and multi-national, agencies are pursuing CMS type activities.
- CMS activities are taking place in developed and developing countries simultaneously.
- Research Programs at Universities and Institutes
- Ph.D. programs related to CMS – Finland, Sweden
- College Programs – Ithaca College



# CMS Global Activities

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Some countries where CMS has grown roots:

Egypt

Austria

Mexico

Germany

Russia

South Africa

USA

Israel

Sweden

Finland

India

China

Singapore

Argentina

Canada

Italy



# CMS Business Models

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- Fixed Fees Model --- most prevalent --- includes chemicals and services
- Cost per production unit --- often used --- includes chemicals and services
- Chemical Leasing --- provider retains ownership of chemicals and gets a fee for use of chemicals --- some examples in solvents --- may have difficulty with regulations



## CMS and the Future

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- **CMS, as originally envisioned, has had significant growth**
- **CMS, as originally envisioned, has significant room for additional growth**
- New and Enhanced vision of CMS needs to be defined
- Change of the CMS paradigm is necessary
- New CMS is in its infancy



# CMS and the Future

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## Expanded Vision of CMS

1. View of chemicals and services needs expansion
2. Broad focus on resource conservation
3. Plan for new regulations --- e.g. REACH
4. Carbon Emissions management
5. WATER & ENERGY management
6. Focus of CMS in the public sector
7. Transformation of CMS Providers
8. Transformation of CMS customers
9. New CMS Customers



# CMS and the Future

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## Expanded View of Chemicals

1. Chemicals need to be viewed not only by themselves but from all items that they contact. For example -- chemicals and tools; chemicals and production scrap.
2. Chemicals need to be viewed not only as how they are used but also how they are produced. For example -- raw material substitution; energy usage in production of chemicals.



# CMS and the Future

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## Expanded View of Services

1. CMS should include WATER management services.
2. CMS should include ENERGY management services.
3. CMS will be based on a TEAM of providers aligned together to meet customer needs.
4. CMS customers will form TEAMS to gain competitive advantage.
5. CMS providers and customers will have a GLOBAL view.



# CMS and the Future

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## CMS in the Public Sector

1. CMS role will grow rapidly.
2. CMS will play a role in **“GREEN”**.
3. CMS will play a role in resource conservation.
4. CMS will play a global role in Agriculture, Food, ENERGY and WATER issues.
5. CMS will play a role in global health issues.





# CMS and the Future

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## Attributes of the CMS Provider of the Future

1. Organized as a CMS company.
2. Possesses prowess in technology.
3. Agility and Flexibility.
4. TEAM player with customer and others.
5. Environment & Energy Cost Accountant.
6. Applies TOTAL SYSTEM principles.



## Concluding Remarks

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1. CMS will grow ten-fold in the next ten years, around the globe.
2. CMS services will increase in scope to include ENERGY and WATER.
3. CMS will play an increasing role in the public sector.
4. CMS will continue to expand into additional business sectors.
5. **CMS needs a GLOBAL CHAMPION organization.**