

Environmental Management Systems -- Real Benefits or Just a Pain in the ISO

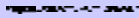
- ◆ **Author:** James Haried
- ◆ **Key Words:** environment, management, system, EMS, ISO 14001, Integration, metrics, performance, real, benefits, culture



◆ **Abstract:** Environmental Management Systems -- Real Benefits or Just a Pain in the ISO? Since 1996, over 21,000 manufacturing organizations, mostly in Japan, Germany, the United Kingdom, and the United States, have sought certification to environmental management system (EMS) standards (including ISO 14001 and EMAS). With the signing of Presidential Executive Order 13148 in April 2000, there is an increased interest in EMSs among U.S. Federal government agencies as well as with manufacturing companies nationwide. Leaders in these organizations are asking 'How does an EMS benefit my organization?' and 'How do we go about implementing an EMS?'

Earth Tech's presentation will discuss leading and lagging metrics for environmental performance in the context of the evolution of organizational environmental management from a reactive position, to compliant, to proactive, culminating at a point where environmental performance is integrated into the organization's culture in much the same way as financial performance has been ingrained into our culture.

Our presentation will focus on the details of actual EMS implementations at three large organizations: Mercedes-Benz U.S. International, DaimlerChrysler Corporation, and Robins AFB. The presentation will summarize approaches adopted during each of these implementations, objectives established and results realized, and critical success factors implementing an effective EMS. ■



Environmental Management Systems -- Real Benefits or Just a Pain in the ISO

Jim Haried
Earth Tech Inc., Oak Brook, IL

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ACHMM Conference



Environmental Management Systems -- Real Benefits or Just a Pain in the ISO

AGENDA

- ◆ EMS/ISO 14001 Quiz
- ◆ ISO 14001 Overview
 - Why Implement an EMS
 - Benefits of an EMS
 - Basics of ISO 14001
- ◆ Four Implementation Case Studies -- Anheuser-Busch, Bristol-Myers Squibb, DaimlerChrysler, and Ford



EMS/ISO 14001 Quiz

- ◆ The ISO 14001 standard was first issued:
 - ◆ 1970
 - ◆ 1985
 - ◆ 1990
 - ◆ 1996
 - ◆ It has not formally been issued yet.
- ◆ "ISO" stands for:
 - ◆ In Search Of (environmental excellence)
 - ◆ International Standards Organization
 - ◆ Organisation de Standards Internationale (*they are just dyslexic*)
 - ◆ The Greek root for "same"
 - ◆ Nothing. It just sounds good in front of 14001, like C in "C-Class" Mercedes
- ◆ ISO 14001 originated because:
 - ◆ The Democrats needed another "big government" program.
 - ◆ This was an idea whose time had come.
 - ◆ Al Gore attended the Earth Summit in Rio in 1992.
 - ◆ Consultants needed something to do with their ISO 9000 capabilities.
 - ◆ Don't really know . . .

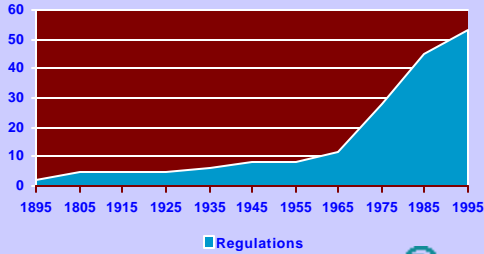


Why Implement an EMS/ISO 14001?

1. **Customer/Voter push** -- Executive Order "Greening the Government Through Leadership in Environmental Management" April 22, 2000
2. **Possible Regulatory Relief** -- EPA pilot program
3. **Marketing/PR opportunity**
4. **Reduced liability and improved confidence**
Bank & Insurance Co.
5. **Positive bottom line impact**
6. **Best Management Practice** -- to know the impact of your activities, products and services; that your employees can handle an environmental emergency, and that your employees are operating in an environmentally safe manner



Growth in US Laws on Environmental Protection



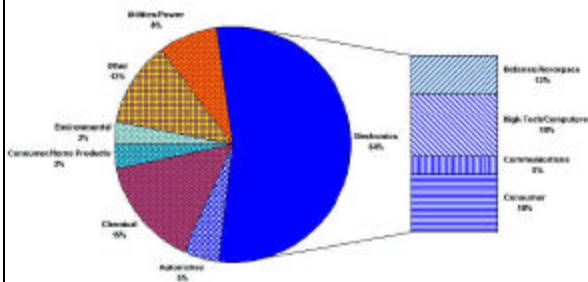
Evolution of a Organization's EMS

| Fire Fighting Stage | Compliant | Proactive | Integrated Into Business |
|---------------------|-----------------------------|---|-----------------------------------|
| Crisis Prone | Initially, Resource Intense | Incremental effort to get to this point | Significant management commitment |
| Static Performance | | | |
| Pre-1990 | 1988-1993 | 1993+ | |

Increasing System Maturity (indicated by a blue arrow pointing from the bottom-left to the top-right)



Certification Trends Types of U.S. Companies Registered to ISO 14001



Origin of ISO 14001 Environmental Management System

- ◆ ISO is a Geneva-based organization of over 100 countries
- ◆ ISO 9000 (Quality Management Systems) was the first "Management Systems" standard and set the template for ISO 14000
- ◆ 1996 - Final International Standard - ISO 14001 and 14004

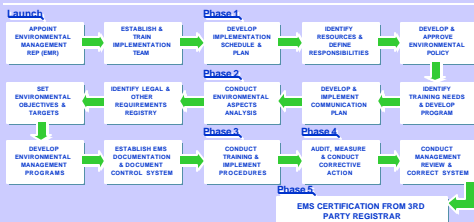


Overview of ISO 14000 Series Standards

- ◆ Major Groups of Standard
- ◆ ISO 14001 & 14004 - EMS
- ◆ ISO 14010 to 14015 - Environmental Auditing
- ◆ ISO 14031 - Environmental Performance Evaluation (EPE)
- ◆ ISO 14021 - 25 - Environmental Labeling
- ◆ ISO 14040 - 43 - Life Cycle Assessment (LCA)
- ◆ ISO 14050 - Terms and Definitions
- ◆ ISO 14060 - Environmental Aspects in Product Standards



EMS IMPLEMENTATION PATH



Facility Resources Required

| | | System Policy Implementation | Training | Procedures Development |
|--|----|---------------------------------|----------|---------------------------|
| Management Team | 2% | | <1% | <1% |
| Environmental Specialist(s) | 2% | 25-30% | | 5% |
| Supervisors | | <2% | <1% | 5% |
| Jobs with Environmental Responsibility | | 2% | 1% | 5-10% |
| All Others | | | <1% | <1% |

Assumptions: Assumes outside implementation support
 All level 3 procedures and work instructions not completed in first year
 % indicate amount of time required of various individuals to support implementation of ISO 14001 conforming EMS in first year



Possible Costs of Implementation Per Facility

- ◆ Internal Audit/Gap Analysis \$5K
- ◆ Implementation \$40 - 300K
- ◆ Certification Audit \$10 - 20 K
- ◆ Recurring Costs/year \$20 - 100K
- ◆ Surveillance Audits/year \$5 - 10K



Environmental Management Systems Implementation -Typical Metrics

- Material utilization rates per unit produced
- Cost of materials wasted per unit produced
- Quantity of Water/Gas/Electricity used per unit produced
- Number of spills / quantity of material spilled
- Hazardous Wastes Generated per unit produced
- VOC's/HAP's released per unit produced
- Percentage of waste reused/water recycled per unit produced
- Pounds of waste produced per unit produced
- NOV's received



Typical Schedule

| | <u>Month</u> |
|--|--------------|
| ◆ Aspects, Impacts, Significance Completed | 3 |
| ◆ Environmental Policy | 4 |
| ◆ Training Starts | 4 |
| ◆ All Procedures Documented & Implemented | 8 |
| ◆ Internal Audit Starts (90 days of operating) | 9 |
| ◆ Pre-Audit and corrective actions | 10 |
| ◆ EMS Manual Submitted/Accepted | 11 |
| ◆ Registration Audit | 12 |



ISO 14001 Elements

- ◆ 4.1 GENERAL REQUIREMENTS
- ◆ 4.2 ENVIRONMENTAL POLICY
- ◆ 4.3 PLANNING
 - 4.3.1 Environmental Aspects
 - 4.3.2 Legal and Other Requirements
 - 4.3.3 Objectives and Targets
 - 4.3.4 Environmental Management Programme(s)
- ◆ 4.4 IMPLEMENTATION AND OPERATION
 - 4.4.1 Structure and Responsibility
 - 4.4.2 Training, Awareness and Competence
 - 4.4.3 Communications
 - 4.4.4 EMS Documentation
 - 4.4.5 Document Control
 - 4.4.6 Operational Control
 - 4.4.7 Emergency Preparedness
- ◆ 4.5 CHECKING AND CORRECTIVE ACTION
 - 4.5.1 Monitoring and Measurement
 - 4.5.2 Nonconformance, Corrective and Preventive Action
 - 4.5.3 Records
 - 4.5.4 EMS Audit
- ◆ 4.6 MANAGEMENT REVIEW



Examples of Integrating H&SMS into ISO 14001

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> ◆ Prevent Pollution ◆ Aspects/Impact review ◆ Reduce solvent use ◆ Env. Mgmt Rep/FEMT ◆ Recycling signs ◆ HW handling proc. ◆ CEM calibration ◆ Waste manifests | <p>Policy</p> <p>Aspects</p> <p>Objectives</p> <p>Responsibility</p> <p>Communication</p> <p>Oper. Control</p> <p>Monitoring</p> <p>Records</p> | <ul style="list-style-type: none"> ◆ Prevent Injury/Illness ◆ Job Hazard Analysis ◆ Reduce solvent exp. ◆ HS Mgmt Rep/HS Comm ◆ H&S Posters ◆ Fit-testing instructions ◆ Air pump calibration ◆ Exposure data |
|--|---|---|



Four Case Studies

- ◆ **Anheuser-Busch**
Blair Norris
- ◆ **Bristol-Myers Squibb**
James Kearney
- ◆ **DaimlerChrysler**
Lynn Drinnan
- ◆ **Ford**
John Connor & Robert Devlin



Company Profiles

| Company | Products & Services |
|----------------------|---|
| Anheuser-Busch | Beverages, Beverage Containers, Ag. Products & Theme Parks |
| Bristol-Myers Squibb | Pharmaceutical, Nutritional and Personal Care products |
| DaimlerChrysler | Cars, Trucks, Engines, Transmissions & Dealerships |
| Ford Motor Company | Cars, Trucks, Engines, Transmissions, Dealerships & Rentals |



Company Profiles (cont.)

| Company | No. Employees | No. Facilities |
|----------------------|---------------|----------------|
| Anheuser-Busch | 24,000 | 150 |
| Bristol-Myers Squibb | 54,000 | 74 |
| DaimlerChrysler | 466,950 | 191 |
| Ford Motor Company | 335,000 | 112 |



Summary

- ◆ Four corporations, each with a different approach
- ◆ Common Themes
 - Corporate involvement
 - Intranet (Lotus Notes)
 - Pilot plants
 - Implementation Duration ≤ 12 mo.'s



Implementation Strategies: System Integration

- ◆ Anheuser-Busch
Not designed as integrated system
- ◆ Bristol-Myers Squibb
Integration with quality is encouraged & supported by Corporate ISO Center of Excellence
- ◆ DaimlerChrysler
Integration with quality is mandated (i.e., one system concept)
- ◆ Ford
Integration with quality is encouraged & supported by Corporate & Divisions



Implementation Strategies: GAP Analyses

- ◆ Anheuser-Busch
Conducted by Corporate
- ◆ Bristol-Myers Squibb
Conducted by Corporate upon request
- ◆ DaimlerChrysler
Not conducted
- ◆ Ford
Not conducted



Implementation Strategies: Registration vs. Self-Declaration

- ◆ Anheuser-Busch
Registration is used to validate the system
- ◆ Bristol-Myers Squibb:
Self-Declaration or registration is acceptable
- ◆ DaimlerChrysler:
Registration is required
- ◆ Ford:
 - Registration is required at production facilities
 - Self-declaration or registration is acceptable at non-production sites



Implementation Strategies: Surveillance Audits

- ◆ Anheuser-Busch
Semi-annual
- ◆ Bristol-Myers Squibb
Annual
- ◆ DaimlerChrysler
Semi-annual
- ◆ Ford
Annual



Corporate & Division Support

- ◆ Anheuser-Busch
 - Benchmarked & selected registrar
 - Established Corporate EHS manual & procedures relevant to EMS
 - Obtained plant management commitment
 - Provided EMS orientation training
 - Monitored implementation progress



Corporate & Division Support (cont.)

- ◆ Bristol-Myers Squibb:
 - Developed intranet-based tools for GAP analyses, training, aspects analyses etc.
 - Disseminate EMS documents created by other plants
 - Provide EMS orientation training
 - Monitor implementation progress
 - Guide integration



Corporate & Division Support (cont.)

- ◆ DaimlerChrysler:
 - Developed implementation templates & tools, including training materials
 - Provide EMS orientation training
 - Disseminate EMS documents created by other plants & registration audit results
 - Monitor implementation progress
 - Select consultants & trainers




Corporate & Division Support (cont.)

- ◆ Ford:
 - Established Corporate procedures relevant to EMS
 - Developed implementation tools and training courses
 - Obtained plant management commitment
 - Monitored implementation progress
 - Preselected registrars, consultants & trainers




**EMS Issues:
Environmental Policy**

- ◆ Anheuser-Busch
Corporate
- ◆ Bristol-Myers Squibb
Corporate or Facility
- ◆ DaimlerChrysler
Template or Facility
- ◆ Ford
Corporate + Facility Statement



**EMS Issues:
Document Control**

- ◆ Anheuser-Busch
Lotus Notes (intranet)
- ◆ Bristol-Myers Squibb
Lotus Notes (intranet)
- ◆ DaimlerChrysler
Lotus Notes (intranet)
- ◆ Ford
Hardcopy & intranet



**EMS Issues:
Contractor Management**

- ◆ Anheuser-Busch
Corporate procedure, purchasing process
- ◆ Bristol-Myers Squibb
(information not available)
- ◆ DaimlerChrysler
Through communication & training
- ◆ Ford
Corporate procedure, purchasing & project management process



**EMS Issues:
Compliance Reviews**

- ◆ Anheuser-Busch
Corporate, frequency based on risk
- ◆ Bristol-Myers Squibb
(information not available)
- ◆ DaimlerChrysler
Corporate, frequency based on risk
- ◆ Ford
Facility, annually



Implementation Effort

- ◆ Anheuser-Busch
1000 hrs over 11 months
- ◆ Bristol-Myers Squibb
Effort not tracked. 9 to 18 months
- ◆ DaimlerChrysler
2300 to 3000 hrs over 9 to 12 months
- ◆ Ford
2000 to 4000 hrs over 9 to 12 months



Implementation Status

- ◆ Anheuser-Busch
Pilot completed in 1999. China facility may initiate in 2001
- ◆ Bristol-Myers Squibb
20 facilities completed by end of 2000. 3 facilities scheduled for 2001
- ◆ DaimlerChrysler
Completed 3 pilots in 1999. 50 plants by end of 2003
- ◆ Ford
Production plants completed in 1998, Parts Distribution completed in 1999 and Research & Engineering to complete in 2001



Benefits

- ◆ Anheuser-Busch
Minor
- ◆ Bristol-Myers Squibb
Minor
- ◆ DaimlerChrysler
Major
- ◆ Ford
Major



EMS/ISO 14001 Questions and Answers



Jim Haried
630.574.2384

jim_haried@earthtech.com