

A Brief History of Environmental Management Systems.

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A history of Environmental Management Systems

A pictorial overview of the evolution of environmental

Environmental “Evolution”

*2000's --GHG Reduction,
Energy Conservation,
Sustainability*



*ISO 14001 EMS
Standard, 1996*



*1980's -- Recycling,
pollution prevention,
source control*



*1990's -- Global Treaties:
Montreal, Rio, Kyoto*



*1970's -- Pollution
Control*

Environmental management has been in use and in the process of evolution for an extended period of time. The figure above provides a brief visual representation of that evolution from pollution control to green house gas and carbon footprint conservation. Let's take a look at the history of environmental management system.

A brief history of EMS

The story of environmental management can be traced to the Industrial Revolutions of 18th and 19th centuries, the lack of standards for industrial products and processes in the early 20th century, the creation of environmental laws and regulations beginning in the 1970s, the emergence of voluntary codes of corporate conduct and environmental management practices over the past 30 years,

international developments related to the environment management and the more recent development of international environmental management standards and guidelines to facilitate global trade.

Widespread concern for environmental protection emerged dramatically with the advent of the Industrial Revolution. Public outcries over smoke pouring from the stacks of coal burning factories, along with the eventual expansion of the petroleum industry, led to an early foothold for the “Environmental Movement.”¹

In 1919 the petroleum and allied industries established the American Petroleum Institute (API), recognizing that a lack of standardization had resulted in industry shortages and unnecessary accidents. API’s four-fold mission includes enhancement of the environmental, health and safety performance of the petroleum industry.²

Environmental management systems in industry

Environmental management systems in industry have their origins in voluntary codes of environmental conduct and “eco-auditing” (or “compliance auditing”) programs adopted by various industries in response to increasing regulatory pressures that began in the 1970s, negative publicity stemming from industrial accidents, expensive legal cases and rising public concern over the environmental impacts of industrial processes. Early examples of such codes include the Responsible Care® program, first adopted by the Association for the American and Canadian Chemical Industry (now the Chemical Manufacturers Association) in 1988 and the Strategies for Today’s Environmental Partnership (STEP) program adopted by the American Petroleum Institute in 1990³.

¹ Culley, William C. Environmental and Quality Systems Integration. (NY: Lewis Publishers, 1998): 13.

² Ibid.

³ Watson, Michael and Emery, Anthony R.T. “Law, Economics and the Environment: A

As both American and European companies began to formalize their approaches to pollution prevention and adopt voluntary eco-auditing, there was growing recognition of the need to standardize such procedures. This need, combined with developments in the international arena, gave momentum to the environmental management system movement.

In 1987, the United Nations World Commission on Environment and Development (known as the “Brundtland Commission”) published *Our Common Future*, a report which first used the term “sustainable development” and called on industry to develop effective environmental management systems. In response to public support from more than 50 world leaders and the call for a major international conference to discuss and act upon the report, the United Nations Conference on Environment and Development (UNCED) was convened in Rio De Janeiro in 1992. Known as the “Earth Summit,” two major documents emerged from this conference: *Agenda 21* the comprehensive policy guidance document and the *Rio Declaration*, a set of twenty-seven principles for achieving sustainable development. A call for improved environmental management was reflected in both documents. Article 30.10 of *Agenda 21* states:

“Business and industry including transnational corporations should be encouraged:

- a) To report annually on their environmental records, as well as their use of energy resources,
- b) To adopt and report on the implementation of codes of conduct promoting best environmental practice, such as the International Chamber of Commerce’s Business Charter on Sustainable Development and the chemical industry’s Responsible Care initiative.”

Comparative Study of Environmental Management Systems.” *Managerial Auditing Journal* 19 (No. 6, 2004): 760.

Also in the international area in the early 1990s, a variety of national standards for environmental management began to emerge. These included, for example, the British Standard BS7750 and the French Standard AFNOR X30-200. In the meantime, steps were being taken by a variety of different groups to standardize environmental management systems so that companies and institutions could have commonly accepted guidelines for environmental management.

In 1990 the European Commission began to draft a regulation on environmental management and auditing. In 1993, the Eco-Management and Audit Regulation (1836/93/EC) was adopted, which included the Eco-Management and Audit Scheme (EMAS). EMAS established specifications for voluntary environmental management systems for companies doing business in the European Union. For industry, a set of common guidelines would reduce costs and facilitate trade.

In 1991 the International Chamber of Commerce published a *Business Charter for Sustainable Development* and a *Guide to Effective Environmental Auditing*. Another voluntary code of corporate environmental conduct was developed by the Coalition of Environmentally Responsible Economies (CERES). The “CERES Principles” include acceptance of an environmental mission statement and a commitment to the production of environmental reports.

In 1991, during the preparation for the Earth Summit, the international standards bodies, International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) formally established the Strategic Advisory Group on the Environment (SAGE) to develop recommendations regarding international standards for environmental management and received feedback from ISO and IEC members called for fewer duplicative (and sometimes competing) corporate and governmental programs, as well as a call for a way to objectively validate industry commitment to effective environmental management.⁴ SAGE

⁴ Cascio, Joseph, ed. *The ISO 14000 Handbook*. (Fairfax, VA: CEEM Information Services,

produced a series of recommendations on environmental management, including the recommendation that ISO/IEC create a new technical committee to develop standards in environmental management. In 1993, ISO created Technical Committee 207 to develop an international EMS standard, along with other standards on environmental management tools and techniques. In 1996, the ISO 14001 environmental management system specification was adopted and published. Supporting ISO guidance standards on environmental performance evaluation, environmental labeling and environmental auditing followed.

The international standard ISO 14001:2004 consists of four sections a forward, an introduction and two appendices. “Introduction,” provides an overview of the plan - do - check - act cycle of continual improvement. Section 1, “Scope,” discusses the need to address the aspects that which it can control and those which it can influence. Section 2 is titled “Normative references and it is included as a matter of format for ISO standards. There are no references cited in the 2004 version of ISO 14001. Section 3 “Terms and definitions” provides the necessary definitions for ISO 14001:2004. The definitions ensure that the user understands the terms used within the standard. Section 4 “Environmental management system requirements” contains the requirements that an organization must demonstrate in order to be conformant or registered to this standard. Appendix A is for informational purposes and it can be used as guidance. It is not an auditable part of the requirements for an environmental management system. Appendix B provides information on the comparison between ISO 9001:2000, the quality management system standard and ISO 14001:2004.

Since its initial publication in 1996, ISO 14001 has been formally adopted as a national standard by more over100 countries. Revised in 2004, the implementation of ISO 14001 by organizations around the world continues today. As of December 2005, there were 111,162 companies and organization is 138 countries that had, implemented and attained third-party certification to ISO 14001⁵. This number has

1996): 13

⁵ *ISO Survey of Certifications—2005 [Online]. Available: [Page 7 of 14](http://www.iso.org/iso/en/ISO9000-</i></p></div><div data-bbox=)*

grown dramatically over the years as large multinational companies have pushed requirements for ISO 14001 certification down into their supply chains.



Useful Web-links for ISO 14001 Certifications:

<http://www.iso.org/iso/en/iso9000-14000/pdf/survey2005.pdf>
www.whosregistered.com

In the U.S., the adoption of ISO 14001 led to a variety of experimental and pilot programs as federal regulatory and enforcement agencies explored (and continue to explore) alternatives to “command-and-control” approaches to regulation. Early pilot programs supported by U.S. EPA that sought improved environmental performance for regulatory advantages included the Environmental Leadership Program, the Common Sense Initiative (CSI), and Project XL. Because the ISO 14001 standard is not performance-based and does not ensure improved environmental performance, it has not been formally endorsed by such agencies as the U.S. EPA or the U.S. Department of Justice (DOJ). However, policies on environmental self-audits have been promulgated by both EPA and DOJ. The EPA has issued several Letters of Commitment to EMS from the EPA Administrators Office. The EPA’s support of EMS and the steps the agency will take to promote the adoption of EMSs that improve compliance and environmental performance are outlined in several policy documents issued by EPA. These include the 1999 report, *Aiming for Excellence: Actions to Encourage Stewardship and Accelerate Environmental Progress*, the August 2001 *Action Plan for Promoting the Use of Environmental Management Systems*, and the April 2004 *Strategy for Determining the Role of Environmental Management Systems in Regulatory Programs*.



Useful Web-links

[14000/pdf/survey2005.pdf](http://www.iso.org/iso/en/iso9000-14000/pdf/survey2005.pdf) [March 6, 2007]

EPA Audit Policy

<http://www.epa.gov/compliance/resources/policies/incentives/auditing/auditpolicy51100.pdf>

<http://www.epa.gov/compliance/resources/policies/incentives/auditing/auditpolicy.pdf>

<http://www.epa.gov/epainnov/pdf/report99.pdf>

<http://www.epa.gov/ems/position/position.htm>

<http://www.epa.gov/permits/ems/strategy.htm>

Presently, the EPA is engaged in a variety of voluntary initiatives involving EMSs. The National Performance Track Program, established in 2000, recognizes and rewards organizations that consistently exceed regulatory compliance requirements, demonstrate environmental stewardship and performance improvement, and are actively involved in working closely with their local communities. Implementation of an EMS is among the criterion for Performance Track membership.

The EPA's Sector Strategies Program partners with the states and selected trade associations to devise EMS solutions to sector-specific issues. The Sector Strategies Program has produced a variety of case studies as well as sector-specific EMS implementation guides for the agribusiness, metal casting, metal finishing, shipbuilding and repair and specialty chemicals industries. A summary of the programs in each state was prepared for the US Army in 2005. This document is available for your consideration and is called Incentive Programs for Implementing Environmental Management Systems. It is important to note that each state does have different programs and incentives.



[Incentive Programs for Implementing Environmental Management Systems](#)

National Performance Track Program

<http://epa.gov/performance-track>

Performance Track Participants Association

<http://www.ptpaonline.org/>

EPA Sectors Program

<http://www.epa.gov/sectors/index.html>

<http://www.epa.gov/sectors/ems.html>

EPA EMS Initiatives

<http://www.epa.gov/ems/initiatives/index.htm>

Other: The CD for this handbook includes a copy of:

[EPA Sectors Strategy Performance Report 2006](#)

Environmental management systems in the public and communities sectors

➤ U.S. EPA Initiatives in the Public Sector

In the United States, the EPA has played a key role in exploring the application of environmental managements systems in local government operations. From 1997 through 2004, EPA funded a series of three pilot projects to “test the applicability and benefit of an EMS on environmental performance, compliance, pollution prevention and stakeholder involvement in local government operations.”⁶ Positive results were achieved by all three EMS Initiatives for Local Governments. In October 2002, *An Environmental Management System Troubleshooters’ Guide for Local Governments* was published based on the experiences and lessons learned from the first two pilot projects.

In 1997, the EPA in partnership with the National Association of Clean Water Agencies (NACWA) and the Water Environment Federation (WEF) formed the National Biosolids Partnership (NBP) to advance environmental sound biosolids management practices. A key element of the mission of the NBP is to develop a comprehensive EMS for biosolids that will serve as a model for the wastewater profession. Over 80 wastewater agencies are using the NBP EMS program.

➤ EMSs in Federal Agencies

⁶ Global Environment & Technology Foundation and the U.S. Environmental Protection Agency. *Improving Performance Through Environmental Management Systems: Third EMS Initiative for Public Entities. Final Report January 2003—December 2004.* August 2005.

The implementation of EMSs in federal agencies has been driven by a series of Executive Orders (E.O.) issued by the Office of the President of the United States. Among these are two key Executive Orders, E.O. 13148 and E.O. 13423. On April 21, 2000, E.O.13148, *Greening the Government Through Environmental Leadership*, was issued. This Executive Order mandated the implementation of environmental management systems at all appropriate federal facilities by December 31, 2005. On January 26, 2007, the Office of the President of the United States issued E.O. 13423, *Strengthening Federal Environmental, Energy and Transportation Management*, requiring the use of EMSs as the primary management approach for addressing environmental aspects, establishing objectives and targets, and the collection, analysis and reporting of information to measure performance toward the environmental energy goals laid out in Executive Order 13423. A brochure for the federal managers was developed as a part of the implementation efforts by Federal Agencies explaining What is an EMS, a copy is in the toolkit for your use.



Executive Orders

<http://www.ofee.gov/>

<http://www.whitehouse.gov/government/fbci/executive-orders.html>

Other: The CD for this handbook includes a copy of:

- The [self-audit policy](#),
- The [letter of commitment from EPA](#) from 2002 ,
- The [letter of commitment from EPA from 2006](#), as well as
- The Executive order [13148](#) and
- The Executive order [13423](#) for your use.
- EMS [Fact Sheet for Senior Management](#)

➤ State Initiatives in EMS

A variety of EMS initiatives are underway in a number of states. Some of these initiatives are exploring the use of EMSs by public agencies, while others focus on encouraging the implementation of EMSs by industry.

➤ “Eco-Municipalities”

In Sweden there are communities that call themselves “eco-municipalities.” An “eco-municipality” is one that has adopted a particular set of sustainability principles as guiding municipal policy and is committed to using a democratic, highly participative approach to implementing those principles and developing an ecologically, economically and socially healthy community for the long term. The concept of an “eco-municipality” originated in Sweden in 1983 with the founding of the first such community, Övertorneå.⁷

In contrast to the project-by-project or issue-oriented basis common to many community sustainability initiatives, the eco-municipality model uses a systems approach that involves awareness raising across the community awareness raising and integrated municipal involvement, and using a common sustainability language based on the adopted sustainability principles. The sustainability principles adopted by the Swedish eco-municipalities are those of The Natural Step® (TNS) framework.⁸ ⁹ The TNS framework, combined with local Agenda 21 action plans, is being used by municipalities to reduce costs and waste while creating jobs and building community. Today there are more than 60 eco-municipalities across Sweden.¹⁰ Several eco-municipalities have begun to emerge in the U.S.¹¹

⁷ Lahti, Torbjorn and James, Sarah. *The Eco-municipality Model for Sustainable Community Change: A Systems Approach to Creating Sustainable Communities*. May 17, 2005 [Online]. Available: <http://www.wisconsinplanners.org/Ecomunicipalities/EcoMunicipalitySynopsis.pdf> [March 5, 2007]

⁸ *Eco-municipalities: Sweden and the United States: A Systems Approach to Creating Sustainable Communities*. 2003 [Online]. Available: <http://wisconsinplanners.org/Ecomunicipalities/EcoMunicipalitySynopsis.pdf> [March 13, 2007]

⁹ See http://www.naturalstep.org/com/What_is_sustainability/ for information on the principles and Four System Conditions of The Natural Step® sustainability framework.

¹⁰ James, Sarah and Lahti, Torbjorn. *The Natural Step for Communities: How Cities and Towns can Change to Sustainable Practices*. (Gabriola Island, BC: New Society Publishers, 2004): xvii.

¹¹ See http://www.sustainablebusiness.com/features/feature_template.cfm?ID=1269 for additional information on The Natural Step and the eco-municipalities movement in Sweden and the U.S.



Useful Web-links:

National Biosolids Partnership

<http://www.biosolids.org>

State Initiatives in EMS

<http://www.epa.gov/ems/otherfed/state.htm>

The Natural Step Sustainability Framework

<http://www.naturalstep.org>

Agenda 21

<http://www.un.org/esa/sustdev/documents/agenda21/index.htm>

Other: The CD for this handbook includes a copy of:

[Final Report: The US EPA Environmental Management System Pilot Program for Local Government Entities, January 28, 2000.](#)

[Second EMS Initiative for Local Government Entities April 2000-March 2002: Final Report, October 2002](#)

[Improving Performance Through Environmental Management Systems \(EMS\): Third EMS Initiative for Public Entities: Final Report January 2003-December 2004, August 2005.](#)

An Environmental Management System Troubleshooters' Guide for Local Governments, October 2002:

<http://www.peercenter.net/sector/generalresources/more.cfm?frontid=2210>

Citizens Network for Sustainable Development,

<http://www.citnet.org/>

Global Green USA,

<http://globalgreen.org/greenbuilding/>

USC Center for Sustainable Cities

<http://www.usc.edu/dept/geography/ESPE/>

Sustainlane

<http://www.sustainlane.us/overview.jsp>

Global Vision Sustainable City GIS Software

<http://www.global-vision.org/city/index.html>

Sustainable Cities

<http://www.rec.org/REC/Programs/SustainableCities/>

Sustainable Cities Research Institute

<http://www.sustainable-cities.org.uk/>

Smart Growth EPA

<http://www.epa.gov/smartgrowth/>

Smart Growth Online

<http://www.smartgrowth.org/Default.asp?res=1024>

National Center for Smart Growth Research and Education and the Environmental Finance Center

<http://www.smartgrowth.umd.edu/>

Footprint

<http://www.mec.ca/Apps/ecoCalc/ecoCalc.jsp>

<http://www.earthday.net/Footprint/index.asp>

<http://www.climatecare.org/index.cfm>

<http://www.carbonneutral.com/shop/>

<http://www.simpleliving.net/main/item.asp?itemid=556>

Useful Resources:

[Sustainable Cities](#)

[Ecologically –based communities](#)