

# ISO-14000 Environmental Standards and E-Commerce

William Foster

School of Management, Arizona State University - West

## 1.0 Introduction

There is a growing awareness, as evidenced by this conference, that information technology (IT) generally and the Internet specifically are critical tools for sustainable development. Last year, the Joint Symposium on E-Commerce and the Environment hosted by the New York Academy of Sciences brought together many researchers and practitioners involved in exploring the relation of the Internet to the environment.

The summary of the NYAS conference states:

Without a crystal ball it is impossible to say what kind of impact the Internet and wireless communications will have on the environment. Its effects are unlikely to be limited to the ways in which we communicate. More likely, it will bring about a profound change in our society and culture and therefore the way in which we interact with our environment. (NYAS, 2000)

Though there are some that argue that the Internet and personal computers are in fact increasing global energy consumption, there are many others that believe that the appropriate use of IT offers opportunities for reducing waste by improving the efficiency of manufacturing and distribution. What has only begun to be explored is the possibility that information systems can provide decision-makers at various positions in society with better assessments of the environmental costs and benefits of particular products and processes. The NYAS Symposium called for such systems.

Actors in e-commerce (producers, retailers, end-users, decision makers elsewhere who effect supply chain like recyclers) throughout the supply chain could have access to information about environmental impacts of all decisions they make including design and new material choice. There needs to be a web-based public data resource, making that information available. A methodology for making environmental assessments needs to be refined. (NYAS, 2000)

In creating these systems we can provide a way of internalizing the costs of what economists have called externalities (Pigou, 1932). Pollution, if the producer does not bear its cost, is an externality (Baumol and Oates, 1979). Is it possible that environmental costs that have traditionally been ignored by the market could be included in the decision-making processes of production and consumption? Hawkins in the Ecology of Commerce (1994) makes a convincing case that the economy needs a "funnel" to make sure that the marketplace takes into account environmental costs. Given our global economy that funnel ultimately needs to be global in scope. What role does IT have to play in developing this funnel? Certain authors have pointed to the potential of "green" bots that evaluate the environmental costs of various products and choose the most friendly (Cohen, 1999). The challenge is not so much the "bot" technology itself, but rather developing meaningful standards of environmental friendliness of products.

## 2.0 ISO14000 Environmental Standards

The United Nation's historic Conference on Environment and Development in 1992 initiated a series of initiatives around the world to develop workable approaches to sustainable development. One of these efforts involved forming a technical team within the context of the international standard-setting body, ISO, to develop voluntary environmental management standards.

Delegates from more than 100 member countries have participated in the establishment of these standards that have become known as the ISO-14000 standard series. Delegates from national standard bodies, government agencies, industry, as well as organizations representing environmental stakeholders have participated.

One of the standards that has begun to gain momentum is the ISO14001 standards for Environmental Management Systems (EMS). The ISO 140001 document contains the required elements that must be satisfied by an organization seeking registration or certification of its environmental management system to the standard. The elements detailed in ISO 140001 must be implemented, documented, and executed in such a way that an independent third-party registrar can grant and just registration on the basis of evidence that the organization has implemented, in good faith, a viable environmental management system.

ISO14001 is not a benchmarking standard. There are no standards for environmental performance that a company is evaluated against. For certification, a company must be meeting all national and local environmental regulations and must be committed to a continual process of minimizing its impact on the environment.

The International Standards Organization does not directly certify companies. Rather registrars around the world are responsible for certification. Certification requires the development and publicizing of documentation regarding the company's environmental goals and strategies for meeting them.

Though some may consider ISO14001 a panacea, it represents a significant step forward by companies in terms of taking responsibility for their environmental consequences. As such customers and purchasing managers should take an organization's ISO14001 status into account when making a purchasing decision. There are a number of lists and databases of ISO14001 certified companies. One survey was last done in 1999 by ISO itself <<http://www.iso.ch/iso>>.

Another ISO standard, ISO-14042, provides guidelines for life-cycle impact assessment (LCIA) which assesses the potential impacts of industrial systems and their associated products. LCIA considers the environmental impact on a cradle to grave basis. Another words, the impact of each stage of a product is assessed from the time a product is extracted from the ground through disposal.

ISO-14042 establishes guidelines for using LCIA to compare competing products. Organizations such as Scientific Certification Systems <<http://www.scs1.com>> have developed techniques under these guidelines for comparing products such as paint, energy, and steel. Under this system each product has an "eco-profile" that measures the products impact on different aspects of the environment. These indicators are compared against a

baseline of the impact an average product would have. When a product exceeds the baseline in every category, it can be certified as environmentally preferable. The "eco-profile" can be graphically presented as a series of bar charts for how the product's impact compares to the baseline for each environmental category.

Another relevant standard is ISO-14021 that provides guidelines for the environmental information that companies can place on the Web. This document provides the definitions of terms commonly used by organizations when they self-declare, either on labels or through other forms of claims, that their products have certain environmental attributes or qualities. The intent is to help ensure that information on the labels or other forms is accurate, verifiable and non-deceptive.

### **3.0 Environmental Purchasing Databases**

The US Government has demonstrated its commitment to using its purchasing power to influence the environmental impact of its supply chain. Through its Environmentally Preferable Products (EPP) programs the US Environmental Protection Agency provides a database <<http://notes.epa.gov>> for assistance in identifying vendors who environmentally preferable. The database lists programs and vendors that conform to them such as the conservation program Energy Star. It also lists programs of other countries and provides links to programs such as that run by private organizations such as Scientific Certification Programs. Some of these programs are based on the ISO-14042 guidelines (SCS, 2000).

### **4.0 Conclusion**

The fact that a manufacturer is ISO-14001 certified could be considered by any "bot" or decision support system that is purchasing or supporting purchasing. The implementation of the ISO-14042 guidelines should be closely watched because they provide a rational method of making comparisons between products. The actual process of evaluating products according to ISO-14042 guidelines can be supported by information technology. In fact, it may be eventually possible for computers to gather enough information from the Web, supply chains, and related databases to automate the evaluation and comparison of products based on their lifecycle environmental impact. More importantly, the Web can provide decision makers with what ever level of detail of information they need to be comfortable with their decision. It is time to apply the latest in information technology to building Web based environmental decision support systems that leverage the work of the ISO-14000 community.

### **REFERENCES**

Baumol, William and Wallace Oates (1979). *Economics, Environmental Policy, and the Quality of Life*. Prentice-Hall, Englewood Cliffs, N.J.

Cohen, Nevin (1999). "Greening the Internet: Ten Ways E-Commerce Could Affect the Environment and What We Can Do," *iMP*, October. Available at [http://www.cisp.org/imp/october\\_99/10\\_99cohen.htm](http://www.cisp.org/imp/october_99/10_99cohen.htm).

Hawken, Paul (1994). *The Ecology of Commerce*, Harper Business.

New York Academy of Sciences (NYAS)(2000). Joint Symposium on E-Commerce and the Environment, October 24-25. A synopsis of the conference can be found at [http://www.nyas.org/scitech/contents/ecommerce/ecommerce\\_summary.html](http://www.nyas.org/scitech/contents/ecommerce/ecommerce_summary.html).

Scientific Certification Systems (SCS) (2000). Overview, Life Cycle Stressor-Effects Assessment (LCSEA). Available at <http://www.scs1.com/lifecycle.shtml>.

Pigou, A.C. (1932). *The Economics of Welfare*. Macmillan, London.