ISO 14000 AND BUSINESS STRATEGY:
AN ANNOTATED BIBLIOGRAPHY

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Overview

The vast majority of the pieces in this bibliography present ISO 14000 as a solution to many problems: unintentional trade barriers created by environmental standards; the inefficiency of command and control regulations; and the plethora of permits, inspections, regulations and standards faced by companies trading across international borders. Other authors, if not enthusiastic, suggest that the standard will be necessary for doing business, especially business in Europe. A few authors critique ISO 14000 or doubt its ability to do what others believe it will do. Regardless, many companies are prepared to certify if necessary. Many authors such as Donaldson, Sissell and Watson describe the actions of companies and accreditation boards that are preparing for the standard even though there is still uncertainty regarding the potential impact of the standard.

Six main issues related to business strategy are discussed in the bibliographic references that follow: the question of whether 14000 will create a "level playing field", thereby reducing trade barriers; the question of the worth of ISO 14000 for companies (i.e. the dilemma between cost and benefits); the integration of the standard with other standards, regulations or initiatives; the issue of the applicability of ISO 14000 to SMEs; the idea that the ISO 14000 series is part of the beginning of the voluntary or post-regulatory era of regulation and the end of the command and control era; and whether ISO 14000 will be successful in reducing the environmental impact of corporations even though it contains no environmental performance specifications.

The ISO 14000 series of standards was created in order to reduce unintentional trade barriers which had arisen from the sudden over abundance of national environmental standards, rules and regulations; however, it is questionable whether all nations will benefit from the "level playing field" created by ISO 14000. Though some authors such as Zuckerman believe that the absence of performance standards within ISO 14000 will allow developing countries to improve their environmental performance at an

achievable rate and still be ISO 14000 certified (thereby allowing them to have market access and compete with other nations), authors such as Cascio and Silverstein argue that certification may be unattainable for companies in developing countries. Furthermore, the difference in national regulations between industrialized and developing countries may not allow the creation of a level playing field, since those companies certified in developing countries will only be required to comply with the regulations of their country, however lenient those regulations may be.

Another issue of concern is the question of the benefits of ISO 14000 certification in comparison to the cost of certification. While most authors suggest companies will gain a whole host of advantages and the standard will be a *de facto* requirement for business, some authors are more cautious and recommend that companies be prepared for certification, though third party certification may not be necessary. In fact, self-declaration is an option as well as simply using the ISO 14000 series as a model to follow. Some authors believe that certification will be beneficial for every company, but others believe that some companies, such as those with well established EMSs, may not need to certify.

The integration of ISO 14000 with other standards, initiatives and with government regulations is a prevalent topic. Many authors such as Begley, Shah, and Sissell and Mullin discuss the possibility of combining ISO 9000 procedures with ISO 14000, or the relationship between those two standards - how certification under one compliments the other or how certification under 14000 may become a prerequisite for certification under 9000. Also, there are suggestions of combining ISO 14000 with Responsible Care or with ISO 20000. Governments such as Pennsylvania State's Department of Environmental Protection is in the process of integrating ISO 14000 requirements into government regulations. As well, ISO 14000 may become a national standard in Japan. There is also the question of the integration of the Eco-Management and Audit Scheme (EMAS) and ISO 14000 in Europe.

Small- and medium-sized enterprises (SMEs) were apparently left out of ISO 9000 considerations when it was developed; consequently, there is a fair amount of discussion around the impact and the applicability of ISO 14000 for SMEs. While Silverstein and Brucato believe ISO 14000 will be too expensive and too much work for SMEs to handle, Knight and Wolfe believe the standard will help small businesses. Tremblay suggests that ISO 14000 may have little impact on SMEs because it may only be necessary for large firms.

Many authors are bold in declaring that ISO 14000 is part of the beginning of a new regulatory era. The end of command and control may be in sight, and ISO 14000 could be influential in advancing the success and acceptance of voluntary initiatives and the trend towards deregulation.

Regardless of the hope many authors place in the potential of ISO 14000, there are some fundamental criticisms of the standard. The lack of specified environmental performance requirements is criticized by a few authors including Mary Buckner Powers and Benchmark Environmental Consultants. Many observers believe that the standard will cause an improvement in the environmental stewardship of companies due to market pressures; however, it is questionable that a standard that does not require a company to be evaluated on the basis of environmental performance can achieve that goal. Undoubtedly some companies will use the proactive standard as a means of preventing environmental problems and will approach environmental compliance and improvement from a systemic and ordinate perspective. Though many authors understand that performance specifications were eliminated from the standard in order to reduce trade barriers which could result from not being certified and to make the standard internationally accessible, the lack of performance specifications has the potential to corrode the integrity of the standard and its effectiveness.

Most pieces in this bibliography - even those that present the view that ISO 14000 may not be as significant as some are predicting - suggest that ISO 14000 compliance will enable companies to be prepared for the "post-regulatory" or voluntary era of

regulation. In fact, deregulation is already occurring, and ISO 14000 may become a national standard in some countries or incorporated into national or state standards. The timeliness of ISO 14000 cannot be debated, but the dilemma of harmonizing standards through the creation of an international standard is something that has not been addressed thoroughly enough and may become a larger issue once the standard exerts its full effect and possibly erects trade barriers itself.

Begley, Ronald. 1996. "ISO 14000: A step toward industry self-regulation."
Environmental Science and Technology, **Vol.30, No.7, pp. 298A-302A.**

ISO 14000 will help companies scrutinize their environmental performance and operations. It requires that a company develop an environmental policy, set objectives in order to meet the policy, monitor progress towards objectives, mitigate environmental problems and continually revise the environmental management system (EMS) in order to ensure continual improvement of environmental performance. Regardless, some regulators are skeptical of allowing ISO 14000 certification to be seen as reason to reduce regulation of certified companies. After discussing the origins of EMSs, the potential benefits of having an internal EMS, the benefits of ISO 14000 certification, the response of American and European companies to ISO 14000 and the Eco-Management and Audit Scheme (EMAS), and components of ISO 14000, Begley analyzes the potential for ISO 14000 to effect a decrease in environmental regulation in the United States (U.S.).

Begley believes that a reduction in regulatory demands is the most appealing aspect of ISO 14000 certification for many U.S. companies. Though standardizing EMS activities through auditing, monitoring and documentation appears to be a method to assure regulators that companies are achieving or surpassing regulatory requirements, ISO 14000 does not set environmental performance standards nor require public disclosure of environmental performance. Therefore, there is still a need for regulations that ensure a certain level of environmental performance is attained. Also, there are no provisions for decertifying companies. Companies can self declare conformance to ISO 14000, but this only means that a company conforms to a prescribed system, not to prescribed environmental technologies, pollution levels, or safety. The EPA is involved in investigating the impacts of incorporating ISO 14000 standards into regulatory requirements, and several companies are hinging their decision to certify on increased flexibility in regulating. In some states such as Pennsylvania, government officials are proposing a reduction in inspections and permits as well as less fines and penalties for

ISO 14000 certified companies that report their violations soon after discovering them. Begley concludes with a statement that ISO 14000 does not replace existing environmental regulation but merely changes the way those standards are met.

Benchmark Environmental Consulting. 1995. *ISO 14000: An Uncommon Perspective, Five Public Policy Questions for Proponents of the ISO 14000 Series*. **Prepared for the European Environmental Bureau, November 1995.**

ISO 14000: An Uncommon Perspective was written by Benchmark Environmental Consultants, a federation of European environmental non-government organizations. The report centers around the argument that ISO 14000 will not help organizations initiate environmental improvement or performance since it is not a performance standard but a conformance standard: ISO 14001 only measures a company's conformance with its own prescribed environmental policy. Before answering five public policy questions, the report outlines the history of the International Organization for Standardization, the ISO 14000 series, the relevance of the new international trade rules and the World Trade Organization to the standard and the context of corporate and industry sustainable management initiatives.

Benchmark argues that ISO 14001 certification will in no way enable a company to demonstrate it has good environmental, health and safety performance because ISO 14001 requires only conformance and a measure of input rather than output, resulting in a weak standard that will only ensure process efficiency. Benchmark notes that business efficiency is not a public concern, but environmental performance of business is.

A second criticism of ISO 14001 is the fact that no environmental information collected by a certified company needs to be disclosed to the public - it is considered confidential. ISO 14001 seems to be a regressive standard in another aspect: multinationals will not be required to use the same standards world-wide; instead, each individual facility will be required to abide by the applicable national or regional laws and regulations of its location. In other words, the progress of initiatives such as the Canadian Responsible Care Program, the Japanese Keidanren Global Environmental Charter, or the International Chamber of Commerce Business Charter on Sustainable Development

which requires multinationals to apply the same standards as the host country world-wide, is lost in ISO 14000. ISO 14001 requires that multinationals set "double standards". The environmental impacts of multinationals may worsen rather than improve, since multinationals certified under ISO 14001 can choose to locate in countries which have few or lenient environmental laws and regulations, yet still comply with ISO 14001.

Brucato, P.S. 1995. "ISO 14000: The New Kid On The Block." *American Inkmaker***, Vol.73, No.8, pp. 60-64.**

Brucato's article provides a basic overview of ISO 14000 accompanied by some opinions regarding the implications of ISO 14000 for all U.S. companies and the implications for the ink, pigment and paper industries. The paper industries are much more aware of ISO 14000 than the ink and pigment industries although the standard can be applied to almost any company - from a global petroleum company to a corner fast food gasoline station.

Brucato believes that companies involved in global markets should be most concerned with ISO 14000, since ISO 14000 may become necessary for doing business in some trading blocks the way ISO 9000 is becoming an absolute requirement in the European Union.

According to U.S. observers, in Europe environmental regulation is not as stringent as in the U.S.; therefore, Europe needs market pressures such as ISO 14000 in order to assure environmental performance. Some Americans believe that ISO 14000 will not create an equal playing field for environmental regulation because the U.S. is very advanced and is already functioning at a level above any that may result from a harmonized international standard.

Brucato presents 12 benefits of ISO 14000 suggested by the ISO 14000 technical committee (TC 207), some of which are improved public, customer, and government relations, reduction of liability, conservation of resources used in processes, improved investor opinions and access to capital and a reduction in cost of operations. Some potential difficulties with ISO 14000 mentioned by Brucato include the application of ISO 14000 to smaller enterprises, the deficiency of sector specific standards, and the possibility that the cost of certification will eliminate some companies from international markets if it does become a *de facto* requirement of trade.

Cascio, Joseph. 1994. "International Environmental Management Standards." *ASTM Standardization News*, **Vol.22, No.4, pp. 44-49.**

Cascio begins this article with a comprehensive history of TC 207, the ISO 14000 technical committee. Then he outlines some of the impacts that ISO 14000 will have on organizations. Cascio believes that it will only be a short time after the standards are published before certification will be a requirement for businesses (especially those trying to sell in Europe). Cascio estimates that the cost of certification will be high. A significant portion of the cost will be the employee training and cooperation which will be necessary in order to institute systemic changes in plant management and process decision making.

Cascio outlines various benefits of ISO 14001 certification: it will assist companies in carrying out their commitments to environmental eminence; it will eliminate manifold registrations, permits, inspections, labels, and conflicting requirements and provide a single system for companies operating internationally; it may negate the need for some command and control regulations; for some companies it may improve their environmental image or the credibility of their environmental covenants; and for some companies it will aid their environmental compliance.

Although a major objective of TC 207 is to facilitate trade and reduce trade barriers, Cascio explains that ISO 14000 will reduce the competitiveness of indigenous companies in developing countries unless assistance is provided and an achievable, gradual improvement plan is initiated for those companies. Cascio suggests that certain national delegations are seeking to achieve a "level playing field" in business through ISO 14000. Cascio believes that the motivation for this "level playing field" arises out of defensive motives of industrialized nations which have found environmental issues to be favorable trade barriers and are "imposing the requirements and systems of advanced industrial economies on the developing world". Also, Cascio states that some nations will not be willing to harmonize their national standards with international

standards. In that case, standards such as ISO 14000 will not succeed in reducing the cost and confusion caused by the present plethora of regional and national standards such as eco-labeling programs.

In conclusion, Cascio recommends that companies prepare for ISO 14000 by working on developing and improving their own environmental management systems.

Donaldson, John. 1996. "U.S. Companies Gear Up for ISO 14001 Certification."
InTech, Vol.34, No.4, pp. 34-37.

According to Donaldson, several U.S. companies are leaping into ISO 14001 certification plans. SGS-Thompson Microelectronics is the first company in the U.S. to have achieved facility certification to the draft international standard of ISO 14001. Over a year ago all Eastman Kodak facilities evaluated their management against the ISO 14001 draft standard, and all manufacturing sites (domestic and international) reviewed their readiness for the standard. Austria, Switzerland and Turkey have adopted the draft standard, and the Japan Ministry of International Trade and Industry has requested that companies in Japan prepare environmental management systems that conform with ISO 14001 by the end of 1996. Donaldson stresses the present relevance of ISO 14000 and encourages companies to act now.

Donaldson believes that the impact of ISO 14000 on U.S. business could be very significant. Globally, ISO 14000 could result in greater support for sustainable development and voluntary, flexible and responsive approaches to environmental compliance. For companies and organizations, ISO 14000 could become a requisite for business loans, lower insurance premiums, participation in World Bank and other financial institution projects, and some supplier transactions. ISO 14001 certification may play a role in legal instruments as well as multinational trade agreements. Also, ISO 14000 may help companies involved in international trade, avoid multiple permits, registrations, and inspections. Inherently, environmental management will improve an organization's impact on the environment thereby improving operation efficiency, reducing costs and reducing environmental liability.

The European Union (EU) may possibly develop a bridging document to explain the relationship between ISO 14000 and the Eco-Management and Audit Scheme (EMAS). It is also possible that the EU will institute ISO 14001 as a European standard. Government involvement in ISO 14000 is also prevalent in the United States. In

addition, ISO 14001 and environmental auditing standards (ISO 14010-14014) may be appended to existing U.S. environmental regulation schemes.

Donaldson believes that companies ISO 9000-certified or registered to the draft ISO 14001 have an advantage in gaining ISO 14001 certification. Furthermore, ISO 9000 and ISO 14001 audits may, under certain conditions, be combined.

-----. 1995. "World Environment Standards will affect Thailand's Industry."
Financial Daily Post, **Vol.8 (173), December 5, 1995. p. 18.**

Thailand is struggling with environmental issues such as solid waste management and waste water; however, changes are occurring. Along with the many changes including the introduction of a tax on environmentally degrading products and services, adoption of an eco-labeling scheme and reforestation program, ISO 14000 is expected to help improve environmental performance in Thailand.

This article briefly describes ISO 14000 and the work of Canadian environmental consultants in Thailand. A new environmental auditing program in Thailand will be run with the help of a Canadian consulting firm.

Thailand is encouraging industry to execute environmental audits and work toward ISO 14001 certification. In Thailand certification of manufacturers is expected to be driven by the competitive advantage believed to result from certification and the need for it in certain markets.

Hotter, David. 1996. "Squeaky Clean! How Companies Prepare for ISO 14000."
Machine Design, **Vol.68, No.1, January 11, 1996, pp. 42-44.**

Numerous environmental disasters such as the Exxon Valdez oil spill have proven that compliance with laws or regulations does not prevent such incidents. However, environmental management systems such as ISO 14000 may help. The impact of ISO 14001 certification is uncertain and may not achieve as large an impact in terms of marketing as that of ISO 9000; however, there are several regulatory and commercial benefits to certification. Due to the cost of certification and unproved benefits, many companies in the US are preparing for the standard without actually becoming certified by using the standard as an archetype.

Du Pont is using ISO 14000 as a comparison tool for environmental management system assessments, and has prepared for ISO 14001 certification by naming all corporate roles and responsibilities, developing action plans from its goals and objectives and then recording progress towards those goals and objectives. Another company with a head start on certification is 3M. Employee training in environmental management is one of the ISO 14000-like schemes 3M began establishing years ago.

ISO 14000 requires a redistribution of environmental responsibility to the whole corporation: rather than ensuring compliance through hired environmental engineers or other specialists, a certified company distributes environmental knowledge and responsibility for potential environmental outcomes to each dimension or employee of the company. ISO 14000 may not exert the same domino effect as ISO 9000, since product quality relies so heavily on all suppliers and vendors. However, concern for alliance with environmentally unconscious suppliers may cause a similar and equally forceful effect.

-----. 1995. "European Enviro Group Blasts 14001, Accuses US of 'Blackmail' Attitude." *International Environmental Systems Update*, **Vol.2, No.12, December 1995.**

The European Environmental Bureau (EEB), a federation of European environmental non-government organizations, has argued that ISO 14001 will not ensure an improvement in the environmental performance of companies. ISO 14001 and the Eco-Audit and Management Scheme (EMAS) are contrasted in light of the EEB's criticisms of ISO 14001. Two problems with ISO 14001 which are presented include ISO 14001's leniency in compliance, since ISO only requires compliance with 'applicable' laws and regulations rather than with international standards or with standards of the firm's country of origin and the problem of inconsistency of ISO 14001 implementation by multinational companies which will be required to evaluate each of their sites according to the applicable laws and regulations at that particular location.

A debate over the question of whether ISO 14001 will be accredited as equivalent to the EMAS has arisen in the EU. One European group is attempting to convince European companies to implement EMAS rather than ISO 14001.

Nonetheless, in this article the author presents an advantage that ISO 14001 has over EMAS: for small and medium-sized enterprises (SMEs) in the European Union, ISO 14000 could be a good starting point because EMAS requires much more money and effort than ISO 14001. The requirement to publish a public statement is very costly, whereas ISO 14000 is designed for all sizes of companies. A company that wants to implement an EMS should be given the choice of EMAS or ISO 14001 so that they are not prevented from implementing any EMS as a result of the requirement to produce a public environmental statement.

International Institute for Sustainable Development. 1996. Global Green Standards: ISO 14000 and Sustainable Development. IISD, Winnipeg, pp. 101.

This report is a comprehensive discussion of ISO 14000. ISO 14000 is explained and analyzed within the context of several relevant issues: sustainable development, voluntary standards, global trends influencing ISO 14000 (i.e. the World Trade Organization) and global trends affected by ISO (i.e. implications for the developing world), and other environmental management system (EMS) standards (i.e. BS 7750).

ISO 14000 and TC 207 are outlined in detail. The various standards within ISO 14000 and their topics of concern (i.e. EMS and environmental auditing, labelling etc.) are described and evaluated. Also, the question of why the business world is so interested in ISO 14000 is answered, and the benefits of ISO 14000 for business are elucidated.

The benefits of having an EMS or ISO 14001 certification can be divided into two categories: internal benefits and external benefits. Benefits which aid an organization in its own operations and private concerns are internal whereas external benefits have to do with the relationship between an organization and outside parties. Internal benefits of ISO 14000 include a reduction in environmental incidents and liability, an increase in efficiency of operations and processes, an improvement in the environmental and financial performance of a company, and an improved approach and attitude towards environmental responsibility within the top management of a company and within the company as a whole.

ISO 14000 certification may benefit an organization externally by providing recognition and assurance of conformity through third party verification, a right of passage into business markets, a reduction in regulatory demands, a sign of due diligence, improved public and community relations, and improved investor confidence.

Johnston, Cameron. 1995. "The Globalization of Health and Safety." *Papermaker*, **Vol.48, No.2, pp. 22-24.**

If the Canadian pulp and paper industry is going to continue to do business in Europe it will have to adopt ISO 14000. Europe will use compliance with the standard as a means of bringing the management systems of Canadian pulp and paper mills to the level of European mills. The pressure to comply with ISO 14000 will also come from bankers and shareholders, since compliance ensures a reduction in liability: ISO 14001 certification indicates that a company has complied with environmental standards and can more easily prove due diligence in court cases regarding environmental and health and safety issues.

Johnston emphasizes the documentation aspect of ISO 14000, stating that, though several companies have environmental health and safety programs, these programs are usually not documented. ISO 14000 is a first step toward better performance, for ISO 14000 requires that the health and safety and environmental elements of each employees' responsibilities be recognized and specifically documented. However, ISO 14000 documentation will not ensure that ISO 14000 mills are safer.

The documentation required for ISO 14001 certification will result in immense paper work for all companies, even those already having a health and safety program in place, but will be most burdensome for companies which have no environmental management system (EMS) in place. These companies will have to work twice as hard in order to reach the level of environmental management of those with an EMS already in place. ISO certification will be a long and expensive endeavor, yet for virtually all companies hoping to do business in Europe, and especially for the forest products industry which has already experienced legislative opposition to Canadian logging practices from European countries, it will be a necessity.

Kantardjieff, Alexandra, J. Peter Jones, and Michel Germain. 1995. "The Canadian Pulp and Paper Industry and the New ISO 14000 Environmental Standards." Canadian Pulp and Paper Association 1995 Environment Conference Proceedings, Halifax, NS, October 23-26, 95, p 13(4).

Increasingly, pulp and paper industries must confront a confusion of global environmental regulations. The original approach to environmental regulation whereby each nation established its own regulations is not suitable for a global economy. The ISO 14000 international environmental management system standards may help to begin the necessary change in approach to environmental regulation. Kantardjieff *et. al.* outline the scope of ISO 14000 and its requirements, what a company should do to prepare for certification and the implications for the Canadian pulp and paper industry. The intent of ISO 14000 is to help companies achieve environmental commitments, reduce environmental trade barriers, avoid multiple registrations and inspections of products sold internationally, and to help companies to reach sustainable development goals through the provision of guidelines, the requirement of continued improvement in their environmental performance and ensuring compliance with specific requirements.

Kantardjieff *et. al.* emphasize three factors effecting the ISO 14000 series: global trade pressure from foreign customers, public/stockholder/employee relations, and solid corporate management. ISO 14000 will provide companies with an opportunity to incorporate environmental management into all business programs, systems and operations and consequently the opportunity for benefits such as minimization of trade barriers, an improved environmental image, increased productivity and a reduction in environmental fines and time spent on compliance issues. Kantardjieff *et. al.* conclude that besides the legal and environmental benefits of ISO 14000 certification, it is good business because it gives companies a competitive advantage.

Kirkpatrick, David. 1995. "Guidelines create opportunity to excel." *Pulp and Paper*, **Vol.69, No.5, p. 186.**

The pulp and paper industry is meticulously observed by regulatory agencies and environmental groups, causing distrust and affecting the industry's reputation, relations and compliance efficiency. The joining of business performance with environmental performance through the new ISO 14000 international environmental standards will help the industry overcome these problems.

ISO 14000 is a new system for handling environmental issues: the environmental impact of every contribution and each operation within an organization is managed from the beginning. Kirkpatrick suggests five benefits for companies in the pulp and paper industry that pursue ISO 14000: increased global competitiveness; simplification of compliance; marketing advantage; improved company image; and an increase in profits due to savings from prevention of problems.

Canada has proposed that its new Sustainable Forest Management Guidance Document become part of ISO 14000 as the new harmonized international forest product standards. Until now, ISO 9000 and ISO 14000 have been general standards that are not specific to any one sector. Regional and national sector standards exist, but if ISO 14000 adopted a harmonized forestry product standard it would be the first of international sector standards. Kirkpatrick believes the ISO committee might consider adopting the sector standard and believes that international sector standards would guarantee that companies with an environmental management system share equal status.

Kirkpatrick, D. and C. Pouliot. 1996. "Environmental Management, ISO 14000 Offer Multiple Rewards." *Pollution Engineering*, **Vol.28, No.6, pp. 62-65.**

ISO 14000 requires that environmental considerations encompass every aspect of a company's operations and procedures. An integral dimension of the standard series is its incorporation of environmental management with a company's business strategy. The proactive series of standards should encourage other companies to become more involved in environmental management. Kirkpatrick and Pouliot believe that ISO 14000-certification will soon be obligatory for companies competing in global markets.

There are four key characteristics shared by both ISO 9000 and 14000: leadership of top management in instituting the standards; infrastructure support for the standard; the creation of the system in a manner which enables maintenance; and education and communication internally and externally about the standard and the company's business strategy.

Kirkpatrick and Pouliot delineate the fundamentals of ISO 14000 and list 11 benefits of environmental management systems, some of which may not be apparent for several years. A company will become more efficient when it is not compliance run. A company will have more discipline and overall control in dealing with environmental issues. The company will become more marketable. The employees of the company will become better educated. Pollution prevention will save money, and there will be less changes necessary over time in products, processes and activities in order to meet compliance. Fines and penalties should decrease or not recur as the potential to mitigate them will increase and the ability to meet new and existing regulations improves.

Some of the many changes arising once an environmental management system or ISO 14000 is established are discussed: a company will want to ensure its suppliers abide by the same standards; the whole organization will become responsible for recognizing

environmental impacts; long term considerations will gain equal status as short term considerations when developing processes or products; and legal compliance will not be the sole force for motivating environmental actions.

A discussion of what a company should do to prepare for ISO 14000 is followed by an update of the present progress of the standard. Kirkpatrick and Pouliot believe that ISO 14000 is a good business idea for all companies, not just global ones.

Kissel, R.J. and J.W. Watson. 1995. "Voluntary Environmental Standards are on the Way." *Paper, Film and Foil Converter*, **Vol.69, No.9, pp. 61-62.**

Movement towards deregulation is coincident with the idea of "reinventing government" and is prevalent across the United States within all areas, not just the environmental sector. Kissel and Watson believe it will take time before environmental deregulation happens, but progress towards it may be quickened by ISO 14000.

Kissel and Watson describe the need for ISO 14000: it was a response to the trade barriers and conflict arising from the plethora of national and regional environmental management, labeling and audit schemes that resulted from the Rio conference. Kissel and Watson explain what ISO 14000 is and it's requirements and components. Environmental management must be one of the highest priorities if the system is to be successful. Also, not only the environmental impacts of procedures or operations within a company must be considered, but the system must include consideration of the impacts of products or goods produced once they leave the facility.

Those opposed to ISO 14000 believe that it will only result in much paperwork and few benefits whereas proponents of the standard believe it will result in a simplification of compliance, improved public relations, a potential reduction in costs and increased profits from a preventative, proactive approach to compliance and management of environmental liabilities. Kissel and Watson are careful not to predict the impact of ISO 14000 on the industrial community, but they comment that many observers believe it will have an important impact, especially on internationally operating corporations which may need certification in order to maintain business abroad.

Kissel and Watson believe that many U.S. companies will not adopt ISO 14000 unless the U.S. Environmental Protection Agency (EPA) provides benefits for ISO 14000 certified companies. Presently, the EPA has taken a cautious approach toward the standard, but Kissel and Watson think that the EPA is gradually moving toward "ISO

14000-styled programs". Kissel and Watson suggest that fewer inspections, reorganized permitting procedures and protection from prosecutions for violations revealed during ISO 14000 implementation should be guaranteed by the EPA for ISO 14000-certified-companies.

In conclusion, Kissel and Watson suggest that being prepared to respond to ISO 14000 is important, since the benefits of ISO 14000 implementation will encompass more than environmental protection and because ISO 14000 is a new era.

Knight, A. and J. Wolfe. 1995. "Performing to a higher standard." *CA Magazine*, **Vol.128, No.9, pp. 39-40.**

Interest in the new ISO 14000 standard series has been growing: at the second annual plenary meeting of the technical committee (TC 207), 320 delegates from 40 countries were present, and at the third annual plenary meeting there were 540 delegates from 60 countries. In this article Knight and Wolfe describe the ISO 14000 series of standards and their potential benefits.

Knight and Wolfe believe the standard should be of special interest to small businesses, since it will assist them in dealing with the complexity of environmental guidelines and help ensure that environmental performance will be combined with business performance.

Knight and Wolfe describe the three types of labeling programs for which TC 207 is developing standards. Type I labeling programs include programs such as Germany's Blue Angel Program, Type II labeling programs include self declared programs and Type III labeling programs are akin to nutritional labels.

Accredited registration organizations, such as a registration division of the Canadian Standards Association, Quality Management Institute (QMI), are expecting much demand for ISO 14001 registration. In order to assist Canadian organizations preparing for ISO 14000, the Canadian Standards Association has supervised an EMS pilot program. In fact, QMI's EMS registration program is ready for action.

Kuryllowicz, Kara. 1996. "ISO 14000: Buying into the international environmental standards." *Modern Purchasing*, **Vol.38, No.3, pp. 14-17.**

Kuryllowicz believes that ISO 14000 certification will be pursued by many companies, but is cautious about predicting when the standard will really take off. Kuryllowicz states that ISO 14000 certification will affect sourcing decisions made by purchasing/supply management and that supply management should be concerned with the environmental management systems specifications (ISO 14001), and especially the life cycle analysis and labeling documents (ISO 14040 and 14020).

Some of the reasons why businesses are considering the ISO 14000 series are: liability, company image, insurance, pollution prevention, improved internal management and savings from energy and resource conservation. The risk of liability may be minimized by ISO 14001-certification, since a firm will be better prepared to demonstrate that they took necessary precautions. Insurance coverage may be more easily obtained by businesses that have a confirmed environmental management system. Also, a perceived competitive edge will influence ISO 14000 registration. Kuryllowicz believes that the three main reasons driving implementation of ISO 14000 are customer demand, marketing advantage, and the motivation to become a better company.

Companies are presently cautious about registration because of the expense, the necessary actions and the effect on suppliers. Regardless, Kuryllowicz concludes that this present hesitancy will vanish once firms realize the benefits of ISO 14000 compared to the alternative "increasingly restrictive and costly government regulations".

McCreary, J.H. 1996. "ISO 14000: A Framework for Coordinating Existing Environmental Management Responsibilities." *CIM Bulletin*, **Vol.89, No. 999, pp. 65-70.**

This article begins with a discussion of the emergence of environmental auditing and environmental management systems, the International Organization for Standardization, the ISO 14000 fundamentals; and the relationship between ISO 14000 and the European Eco-Audit and Management Scheme (EMAS); and the British BS 7750. Benefits and drawbacks of ISO 14000 compliance are then outlined.

Market forces may become a strong incentive for ISO 14000 conformance. Extensive acceptance of ISO 14000 may establish an internationally recognized minimum level of environmental management as well as reducing the need for command and control methods of regulating. Also, in the US, comprehensive environmental auditing can result in a reduction in risk of criminal referrals or regulatory inspections and act as a means of alleviating punishment. ISO 14000 conformance may also demonstrate a company's dedication to environmental concerns, improving customer and stakeholder relations. The systemic changes produced by an environmental management standard may produce benefits such as increased productivity and efficiency; energy conservation; pollution, liability and risk prevention; improved compliance and regulatory relationships; and reduced insurance premiums.

The drawbacks of ISO 14000 certification include the present uncertainty of the future importance of the standard: an over-estimation could be extremely costly for a company. Also, the third-party review of document required for ISO 14001 certification could make a company vulnerable to domestic regulatory actions against the company.

Registration and certification requirements are explained clearly and an overview of all parts of the ISO 14000 series is given. The article is concluded with a statement of the importance of accepting the emergence of recognized auditing techniques and generally

accepted auditing principles in the global environmental field and the present trend in environmental enforcement toward more and more self-management and self-evaluation and away from command and control methods of regulation. McCreary advises companies to acknowledge and embody these trends in order to maintain a "competitive edge".

Nash, J. and J. Ehrenfeld. 1996. "Code Green: Business Adopts Voluntary Environmental Standards." *Environment***, Vol.38, No.1, pp. 16-45.**

ISO 14000 is one of many recently established private codes of environmental management practice. In this article Nash and Ehrenfeld compare five different codes and compare the function of private codes to that of government regulation in the United States. A characteristic shared by the private codes considered by Nash and Ehrenfeld is the exclusion of specific environmental performance standards. Instead, these codes focus on the adoption of new, broad, systematic, environmental behaviour forms.

The authors describe the origins of the five codes and provide a comprehensive evaluation of the requirements of those codes. Nash and Ehrenfeld explain that ISO 14000 originated from the push of multinational corporations to eliminate international trade barriers arising from the individual environmental management standards of many industrialized countries. Unlike some codes, ISO 14000 does not encourage the strengthening of a company's public relations. An ISO 14001-certified company is only required to concern itself with environmental matters within its control. All five codes help firms to solidify management systems through providing a framework and through requiring the assessment of environmental releases, the measurement and recording of progress, identifying weaknesses through auditing, and through the training of employees.

The authors state that many predict ISO 14000 will be required for international business; however, the degree of dedication to accomplishing the standards requirements will vary among companies. Large firms seem to have the most incentive to participate because they attract the most attention and therefore are very concerned with their environmental image. Furthermore, large firms with several locations have an added incentive: ISO 14000 may assist these companies in streamlining operations across local, state or national boundaries.

Private codes fill a void left by regulations: they help firms to respond to a demand for improvement. Regulations tend to concentrate on the firms with problems, yet private codes are a proactive means of prevention. In the U.S., many firms have already caught on: many have environmental management systems (EMSs) already in place, and ISO 14000 will simply provide them with a tool for expanding and strengthening their EMS.

Pouliot, Chuck. 1996. "ISO 14000: Beyond Compliance to Competitiveness."
Manufacturing Engineering, **Vol.116, No.5, May 1996, pp. 51-56.**

In this article Pouliot discusses the benefits of ISO 14000 from a manufacturing engineering perspective and discusses how to prepare for ISO 14001 implementation and certification. Pouliot states that some observers predict ISO 14000 will have as great an effect on the environmental systems of U.S. manufacturers as ISO 9000 had on quality systems. Pouliot describes ISO 14000 as a series of 21 standards which will be published over three years beginning this summer. They can be divided into two areas: standards for process and organizational issues and product standards (life cycle analysis, labeling, and a product standard for organizations that write product standards provisions). ISO 14001 is the environmental management standard in the series and the only standard available for certification. ISO 14004 is the guide to 14001 and helps firms in implementing ISO 14001.

Pouliot admits that ISO 14001 registration is not a simple task; however, he believes there are several benefits to ISO 14001 conformance. ISO 14001 will improve a company's image and can be a marketing advantage. It makes environmental perspectives an integral part of process evaluation. Environmental considerations must be taken at all stages of manufacturing including the incipient and design stages. Also, ISO 14001 makes compliance with environmental regulations a responsibility of every member of a company, and establishes compliance as a consideration at the beginning of process development. ISO 14001 may become necessary for business (especially in Europe), and it will reduce liability, regulatory strain, and product and process costs.

Powers, Mary Buckner. 1995. "Companies await ISO 14000 as primer for global eco-citizenship." *Engineering News Record,* **Vol.234, May 29, 1995, pp. 30-32.**

Though ISO 14000 is a voluntary standard, it may be necessary for doing multinational business and will improve "corporate performance". Not only manufacturing firms, but all firms from equipment supply companies to corporate law practices, will be affected. In the beginning it will give firms a competitive advantage, but eventually it will become a necessity.

About 200 U.S. companies are taking part in the development of ISO 14000 through their involvement with the U.S. technical advisory group. Powers states that companies doing international business believe that ISO 14000 will help to reduce unintentional non-tariff trade barriers arising from national rules and regulations. The U.K. and the European Union have already developed their own prescriptive environmental management standards (BS 7750 and the Eco-Audit and Management Scheme). If ISO 14000 is considered equivalent to these standards, then ISO 14000 certification will be an essential requirement for companies doing business in Europe. In countries with poor enforcement of environmental regulations companies consider ISO 14000 an opportunity to show environmental responsibility. Also, manufacturers hope that ISO 14000 can demonstrate the effectiveness of industry-lead voluntary regulations in ensuring environmental protection and consequently prove that not all situations demand command and control methods of regulating.

Though the standard does not require public disclosure of environmental impacts, some firms may do this in order to gain a competitive edge and consequently force others to do the same through competitive pressure. However, Powers mentions that some observers doubt the effectiveness of using economic pressure to influence the environmental stewardship of companies when no evaluation of environmental performance is required. ISO 14000 does not stipulate any degree of environmental

performance, and even if companies release this information publicly there is no requirement that the information released be reviewed.

The U.S. EPA is considering how ISO 14000 certification should influence their operations, regulations, inspections, or opinion of a company's environmental leadership. Regardless of the outcome, Powers states that many U.S. companies will adopt ISO 14000.

Rhodes, Stanley. 1995. "International environmental guidelines to emerge as the ISO 14000 series." *Tappi Journal*, **Vol.78, No.9, pp. 65-66.**

Rhodes believes that ISO 14000 will affect all industries. The standard is expected to become necessary for the future of businesses. Rhodes describes the context out of which ISO 14000 evolved, the work of the ISO 14000 subcommittees and some issues which are relevant to the non-wovens industry, and the pulp and paper industry as a whole.

For the pulp and paper industry, life-cycle assessment (LCA) is the most significant standard of the ISO 14000 series, according to Rhodes. Decisions regarding choices of manufacturing technologies, modification in product performance, and differences between virgin and renewable resources are some of the considerations which will all be integrated into one "accounting system" and will result in a vast differentiation in performance within products. Also, the integration of the standardization of LCA methodology with environmental labeling and environmental performance will be of interest to the pulp and paper industries.

Roberts, Michael. 1996. "Europe Homes in on a Standard." *Chemical Week*,
Vol.158, No.13, April 3, 1996, p. 37.

Roberts contrasts the three major environmental management system standards (BS
7750, the European Eco-Audit, and Management Scheme and ISO 14001) and gives an
update on Europe's position on ISO 14000. Roberts claims that most multinationals
have already established an internal environmental management system (EMS);
however, companies are confused about which external system they should pursue.

The European Commission has formally acknowledged BS 7750 as fulfilling the EMS
portion of EMAS. EMAS and BS 7750 are also similar in their requirements for
continuous improvement of environmental performance while ISO 14000 only requires
continuous improvement of the EMS. Bayer and several other major chemical
companies in Germany are implementing EMAS first with the hope that the German
government may reduce regulation for EMAS-certified companies.

In the U.S., some companies will have to be persuaded that ISO 14001 registration will
be more worthwhile than ISO 9001 before they make a decision to register. Also, some
companies are concerned about the legal implications of the requirement to release
information found in the registration process. Rhone Poulenc is a company with no
need of convincing: the company is working at both ISO 14001 registration and EMAS
certification, and is experimenting with trial programs to find out how ISO 9001
coincides with ISO 14001.

Roberts ends the article with a discussion of the European Standards Body's (CEN)
work at creating a document to define the relationship between ISO 14001 and EMAS.
Although there was talk of this document becoming an annex to ISO 14001, the CEN
group working on the document would like it to be independent.

Rothery, Brian. 1995. *ISO 14000 and ISO 9000.* **Hampshire, England: Gower.**

This book is a guide for implementing ISO 14000 or ISO 9000 management systems. Rothery explains the origins of the standards and addresses questions such as who the standards apply to and their relationships with other standards. Then a brief section deals with ISO 9000, and the majority of the remainder of the book deals with ISO 14000. Rothery explains that the technical committees of the two standards have been holding joint meetings since 1995 and have a three-stage plan that aims to eventually harmonize the ISO 9000 and ISO 14000 standards.

In terms of ISO 14000, Rothery focuses on the initial environmental review, the registration of regulations, the environmental management programme, the register of environmental effects and control and monitoring manual, product life cycle assessment, auditing, staff training, certification, and health and safety regulations. Though health and safety issues arose frequently in TC 207 sub-committee discussions, ISO delegated research on this topic to a separate ISO committee. Health and safety is identified as an optional issue which can be managed under the ISO 14000 standard, but it is obvious that Rothery believes the TC 207 committee did not adequately address the topic. He outlines an approach to managing health and safety using Europe as a model and presents a sample health and safety manual.

For companies interested in standard integration, this book would be helpful. Rothery includes a chapter on Responsible Care and discusses how this system can be integrated into ISO 14000 and used to augment ISO 14000 certification. Throughout the book Rothery often interweaves his discussion around both ISO 9000 and ISO 14000, and often uses examples from ISO 9000 experience in his discussion of ISO 14000. For example, in the chapter on certification, a corporation can learn about what problems may arise in ISO 14000 certification through learning about situations which have arisen from ISO 9000 certification problems.

This book is a very practical guide for companies implementing ISO 14000. In fact, Rothery even includes, among other aids, samples of an environmental questionnaire for suppliers, a register of environmental effects, a control and monitoring manual, an environmental management manual, and pre-certification checklists .

Samdani, G.S., S. Moore, and G.Ondrey. 1995. "ISO 14000: New passport to world markets." *Chemical Engineering*, **Vol.102, No.6, p. 41.**

Companies want to get ahead with ISO 14000 because many were left to catch up when the significance of ISO 9000 became apparent. The U.S. Chemical Manufacturers and the Japan Chemical Industry are both preparing themselves for ISO 14000. The European Chemical Industry Council believes that the standard will become necessary for international trade.

Samdani *et. al.* outline the requirements of the standard and provide a diagram which illustrates the ISO 14000 process of continual environmental performance improvement and a table of the schedule for publication of the series of standards.

Two impacts of the standard are stressed. The standard will enable firms to continually improve their environmental performance. Also, the standard will have an effect on bankers and insures who will use ISO 14000 certification as an indication of a company's environmental performance record in order to make lending and liability decisions.

In the U.S., ISO 14000 may be combined with the Responsible Care program and many companies in the Japanese chemical producing industry already consider ISO 14000 an expansion of their individual Responsible Care programs. The article ends with a discussion of how the United States and Japan are preparing for the standard. A pilot EMS demonstration project has begun in the U.S., and auditors in Japan are getting ready.

Shah, G.C. 1996. "ISO 14000: Enviro-marketing Tool?" *InTech*, **Vol.43, No.6, pp. 30-31.**

The benefits of ISO 14000 certification do not apply equally to all organizations but depend on various internal and external factors. In addition, there are two ways in which an organization may certify. A firm may self-declare or obtain third-party certification. Shah divides the factors that firms should consider before becoming ISO-certified into external and internal factors.

Marketing, access to international markets, regulatory implications, and legal aspects of certification are the external considerations discussed by Shah. He believes that though a marketing advantage may be an initial benefit of certification it may not be a sustained benefit once more companies become certified. Shah states that ISO 14000 may eventually be a compulsory requirement for ISO 9000 certification. Also, customers may demand ISO 14000 certification. Regulatory agencies such as the U.S. Environmental Protection Agency may reduce audits or penalties for firms ISO 14000-certified and international environmental agencies may require certification. Possible negative legal consequences which may result from audits, product labeling, and liability must be considered when becoming certified; however, certification may result in legal benefits such as reduced liability and chances of litigation.

The cost of certification and employee participation and organization are internal considerations. ISO 14000 certification, including the maintenance of certification, is very costly. However, certification could lead to better employee cooperation and record keeping. As well, documentation required by ISO 14000 may provide methods or improved budget preparation and improved processes.

Shah believes that market forces may have the largest influence on ISO 14000 certification and if an organization chooses to become certified, senior management must be the catalyst for systemic change.

Shah, G.C. 1996. "ISO 14000: To be or not to be?" *Hydrocarbon Processing*, **Vol.75, No.3:D, pp. 132-D (2).**

Shah believes that ISO 14000 may affect the long term economic and marketing integrity of any organization. After describing the ISO 14000 family of standards Shah identifies considerations for ISO 14000 certification, since he believes that ISO 14000 certification may not always create "visible incremental benefits" for a company.

The marketing advantage may be the most important consideration and justification for certification of organizations involved in international business. Suppliers may dictate ISO 14000 certification. Also, Shah believes that ISO 14000 may become mandatory for ISO 9000 certification. With 14000 certification, the image of a company may improve in the eyes of customers, lenders, and investors. In the U.S., regulatory privileges may be granted to organizations with ISO 14000 certification. For example, 14 states have enacted legislation granting audit privileges or immunity to auditing findings of companies if the findings are reported and problems are mitigated quickly.

Shah states that the cost of certification will depend on the size of a site and the stage of preparation towards ISO 14000; however, he also advises that beyond the initial cost of certification are the costs of preparation and continued record keeping. Another consideration is the legal repercussions of certification due to aspects such as product labeling. Shah ends his article with advice on how to prepare for certification.

Silverstein, Michael. 1995. "Market Forces Now Drive the Environmental Steamroller." *Business and Society Review*, **No.94, Summer 1995, pp. 51-54.**

The U.S. is no longer the global leader in environmental protection. In almost all cases, including environmental management standards, the European Union (EU) and state members of the EU are exerting the most influence on environmental protection policy.

In terms of ISO 14000, the 500 largest companies in the U.S. and their multinational counterparts are incorporating environmental management not only as a means to reduce waste and future liabilities, they are also grabbing at the competitive advantage of environmental management. In fact, Silverstein believes that ISO 14000 will most likely have a greater impact as a "green passport" than ISO 9000 did as a quality passport in the international trading arena.

Silverstein believes that the ISO 14000 series is the beginning of the "post-regulatory era" in which environmental stewardship is a business model, not simply a legal requirement. According to Silverstein, ISO 14001 is the door for companies to compete with the most economically influential companies. Although ISO 14001 does not require registration, Silverstein believes it will become a *de facto* requirement for companies in Japan and other trading blocks where ISO 14000 may become a necessary or national standard. The European Union is expected to combine ISO 14001 with its own environmental management standard, the Eco-Management and Audit Scheme. Also, ISO 14000 may become important for a company's relationship with government regulatory agencies.

The downfalls of ISO 14000 presented by Silverstein focus on the impact on small- and medium-sized enterprises and organizations in developing countries. Although ISO 14000 would ideally accommodate all firms and reduce trade barriers, Silverstein recognizes that larger companies and those from industrialized countries have a clear advantage due to the expense and paperwork required for achieving and maintaining

ISO 14000 certification. Also, American and western European companies have been installing their own environmental management systems since the early 1980s. The developing world is not oblivious to this problem: several government officials and business people from developing countries have expressed concern over the inequalities and trade barriers which may be caused by ISO 14000. Silverstein states that these inequities are "largely unavoidable" and that social justice is not a frequent consideration in the new era of "post-regulatory, market-driven environmental imperatives".

Sissell, Kara. 1996. "One Size Fits All." *Chemical Week***, April 3, 1996. pp. 27-36.**

Sissell contrasts ISO 14000 and ISO 9000, discusses the reasons for ISO implementation, explains the reasons for corporate conditional acceptance of the standard thus far, and describes the preparatory actions of companies. Although some companies say that ISO 14000 will not be worth the cost of implementation, companies such as Union Carbide and Dow are experimenting with test programs and implementing the best components of the standard series. Union Carbide is testing one plant in order to decide which aspects of ISO 14000 would be useful to implement for the whole corporation. Merck is also conducting a pilot project at a facility. However, these companies are not convinced that third-party-certification will be necessary for improved performance. Observers admit that ISO 14000 certification may not be worthwhile for every company or for every facility.

If federal agencies in the U.S. endorse ISO 14000, companies will be much more likely to pursue certification. The Environmental Protection Agency (EPA) is considering whether it will grant privileges to ISO 14000 certified companies. For example, ISO 14000 certified companies may be able to use the EPA's audit privilege policy which would, among other things, allow companies protection from fines if they voluntarily release information of noncompliance and mitigate the problem before fines are laid. In Pennsylvania, the Department of Environmental Protection will probably incorporate ISO 14000 into its regulatory framework and change some state requirements for ISO 14000-certified-companies.

Some observers believe ISO 14000 will be worth the cost because it will create a level playing field for companies from all countries, eliminating the disadvantage of companies in industrialized countries with more stringent environmental regulations than newly industrialized countries. Others say Responsible Care may be better for leveling the playing field. Regardless, the safest approach at this point is to establish an

ISO 14000 framework and become certified once the benefits of certification are confirmed.

Sissell suggests that companies that choose to implement ISO 14000 should also adopt health and safety standards. The next ISO standard to appear after ISO 14000 is believed to be a new health and safety standard which should be combined with ISO 14000.

Sissell, K. and R. Mullin. "Fitting in ISO 14000: A Search for Synergies."
Chemical Week, **Vol.157, No.17, pp. 39-43.**

Sissell and Mullin evaluate ISO 14000 and analyze the relationships between ISO 14000, ISO 9000, ISO 20000 and Responsible Care, and the potential to combine these standards. The authors state that most firms, if it is viable, would like ISO 14000, ISO 9000, Responsible Care and perhaps even the health and safety standard presently being developed by ISO, ISO 20000, integrated into one standard; however, some observers doubt that auditors will possess the diversity of skills required to audit different areas. Furthermore, the authors believe that companies have conflicting views about the value of ISO 14000 certification. Some companies believe that ISO 14000 will have an equal impact and importance as ISO 9000. Others are researching the need for certification and want to be ready just in case there is a need to certify but are skeptical of its value for chemical companies that already have environmental management systems.

Companies questioning the value of certification face several uncertainties. Will the expense of certification be worth the price and effort? Will noncompliance with regulations discovered during ISO 14000 auditing result in exorbitant fines from government agencies, or will ISO 14000 certification be used by the EPA as a means for reducing requirements for reporting, record keeping or monetary fines against companies? Due to the many uncertainties, many companies, such as Hoechst Celanese, are ready to certify if it seems necessary but are waiting for answers to these uncertainties before moving ahead.

Many companies are attempting to combine ISO 14000 and ISO 9000. Olin's Lake Charles, a Los Angeles facility, is combining auditing guidelines and forming an internal quality, environment, health, and safety auditing team. In the U.K., companies such as BOC Gases are using BS 7750 as a foundation for adopting ISO 14000 and as a possible means of integrating environment and quality standards. However, some

chemical companies are not resolved that ISO 14000 will benefit companies that have adopted Responsible Care principles.

Regardless of all attempts at combing these standards, the environmental management department at Rhone-Poulenc, a major French chemical producer, believes ISO 14000, ISO 9000, and ISO 20000 have very different purposes and were designed as separate standards, and, it would be impractical to combine them.

Tibor, T. and I. Feldman. 1996. *ISO 14000: A Guide to the New Environmental Management Standards.* **Irwin Professional Publishing .**

This book describes the background and development of ISO 14000 and explains the elements of each standard of ISO 14000 as well as related standards such as the European Eco-Audit and Management Scheme (EMAS). As well, Tibor and Feldman describe the effects of ISO 14000 on the regulatory community and the trade and business community and reasons for implementing the standard. The book is directed towards corporate environmental managers and other environmental personnel.

One strength of this book is the clear explanation of the emergence and development of environmental management systems. Tibor and Feldman describe this phenomenon as a paradigm shift. The paradigm shift to environmental management has been caused by the growth of environmental regulations, increasing cost of environmental protection, increased concern of financial institutions for environmental issues, and the evolution away from command and control regulation.

Tibor and Feldman believe that ISO 14000 can help to level the "playing field" on which countries trade. Also, Tibor and Feldman believe the standard series will reduce the number of environmental standards, regulations, permits, or conflicting requirements for multinationals, and may become a *de facto* requirement for trade. Governments, such as the German government, may incorporate the standard into deregulatory efforts. Tibor and Feldman also mention the advantages of improved environmental image, improved insurance rates, and investment opportunities as well as internal benefits and pollution prevention.

The challenges of ISO 14000 presented by Tibor and Feldman include the cost of implementation and certification, the possible non-tariff trade barriers created by the standard, the possibility that the standard may not remain a voluntary standard if it is adopted by governments - and it will not perform its intended purpose if it does not

remain voluntary, the problem that it may not necessarily lead to improved environmental performance, and the possibility that third party registration will present problems if there is inconsistency in ISO auditors and verifiers, and the issue of the role of self-declaration verses third-party registration.

Tilton, Helga. 1996. "The Dawn of ISO 14000." *Quality*, **April, 8, 1996, pp. SR5-SR6.**

There is significant worldwide interest in ISO 14000. This article is based on the opinions of environmental consultants and chemical producers. With respect to the chemical industry, ISO 14000 certification will present opportunities for U.S. multinational organizations such as increased competitiveness, improved or reinforced credibility with shareholders, increased capacity to deal with environmental challenges, a single EMS standard for all locations of business, and the possibility that ISO 14000 may become recognized as an alternative to present command and control approaches to environmental enforcement.

There are three dimensions to conformance. Internal efforts to establish an environmental management system that conforms to ISO 14000 is the first type. There is also self-declaration of conformance and third party verified registration. The decision to become certified and what dimension of certification to achieve, is a business decision. It is possible that certification may not be beneficial for all companies, especially those that already have strong EMSs. Nonetheless, there are potentially important market, financial and trade advantages for some companies, since certification may change opinions of customers, insurers, and non-certification may erect trade barriers. Some potential disadvantages of certification include the cost which could run as high as $50,000 to $100,000 for SMEs with an additional cost of $25,000 annually per facility for continued certification. Also, there is some doubt that third-party registration will guarantee that a company is complying with all applicable laws and regulations.

Tilton believes that U.S. firms are taking a cautious approach. However, she follows this statement with descriptions of some of the seemingly laborious preparatory actions of some chemical companies including DuPont, Monsanto and Elf Atochem. Tilton gives the impression that companies in North America are still reluctant to commit to

ISO 14000 because of a question of the value of certification for businesses, yet companies in Europe have reservations about the standard for reasons such as the lack of technological performance standards and the lack of validation of environmental statements.

Tremblay, Jean-Francois. 1996. "Rapidly Deteriorating Environments in Asia Catch Governments Unprepared." *Chemical and Engineering News***, Vol.74, No.5, pp. 13-15.**

Tremblay attributes Asia's poor environmental situation to the incredible economic growth in countries of the region over the past 15 years, to cultural influences, to a lack of priority given to environmental issues, to the disorganized effort to control pollution, and to the problem of extreme transitions from insignificant regulations to very prescriptive laws. China is an example. Without consultation or warning, China will issue new environmental laws that no one is aware of until they are told of their non-compliance. There is also a lack of systematic enforcement in Asia.

ISO 14000 is seen by many government officials as a possible solution to Asia's environmental enforcement problems because ISO 14000 will circumvent Asia's main problem: many Asian countries have a problem with creating effective environmental laws or a problem with enforcing environmental laws. ISO 14000 requires that companies undergo private auditing and that the EMS system comply with all relevant environmental laws in the country of the facility. The method of compliance is up to the company. ISO 14000 may not be an antidote, however. If it does not become a *de facto* requirement for companies in Asia, then companies will not become certified. For example, some argue that it will only be necessary for large firms, and consequently have no impact on small firms. Also, ISO 14000 may not be able to create a level playing field in international trade because certification granted in Asia may not necessarily be equal to certification granted in other parts of the world due to the difference in environmental laws and regulations in those areas; ISO 14000 partly depends on the laws and regulations of countries, since ISO 14001 requires a company to adhere to the laws and regulations of the region in which it is located.

Zuckerman, Amy. 1996. "Don't Rush into ISO 14000." *Machine Design*, **Vol.68, No.1, January 11, 1996, pp. 38-42.**

In this article, Zuckerman outlines the ISO 14000 series, describes its requirements, and advises how companies can get a head start on implementing the standards. According to Zuckerman, all companies should be cognizant of ISO 14000, but major companies can do the ground breaking work for now.

The standard is voluntary and will help companies manage and evaluate their environmental impacts in a preventative manner without rigid requirements, yet it will allow companies to demonstrate dedication to environmental protection, and to ameliorate their environmental management. Internationally, it will benefit companies by reducing environmental trade barriers and advancing voluntary consensus environmental standards.

Two issues concerning the standard addressed by Zuckerman include the overlap between ISO 14000 and ISO 9000 and the problem of technological pressure placed on developing countries. Zuckerman states that ISO 9000 and ISO 14000 technical committees have coordinated efforts in order to evade unnecessary duplication in the two standards and ISO-certified companies in developing countries will be required to use the best technology readily available, not unattainable technologies.

World Wide Web Sites

es.inel.gov/partners/iso/iso.html

This page is the U.S. EPA Standards Network home page. The EPA Standards Network "coordinates Agency [EPA] involvement in international standards development and provides public information". The home page has eight main links which provide a basic overview of ISO 14000, U.S. participation in the development of the standards, and contacts for obtaining more information.

qn.net/~achmm/iso14000.html

Smith, W.R. and R.J. Patchak. 1996. "ISO 14000 Perspective: So Long! Command and Control...........Hello! ISO 14000".

The authors of this article believe that Europe is solving some environmental problems through using regulatory programs that bring those who are regulated and those who regulate to work together. In the U.S., some 600 lawsuits involving the EPA, demonstrate that regulatory efforts in the U.S. today are too rigid and too complex for innovation and do not promote a cooperative relationship between regulating agencies and those who are regulated. The authors describe ISO 14000 and its emergence, how it will benefit corporations, industries acceptance of the standard series, and conclude that the ISO 14000 has a potential for environmental improvement far and beyond command and control efforts.

rfweston.com/sd/iso.htm

Briggs, R. and G.K. Nestel. 1995. "ISO 14000: Proactive Building Blocks for Achieving Global Sustainable Development", Roy F. Weston, Inc.

In this article, the authors discuss what is influencing companies to register for ISO 14000 certification including the recent change in stakeholders. Stakeholders now include not only the traditional stakeholders such as regulators, but also customers, suppliers, employees, trade associations, and professional associations. The authors describe the elements of ISO 14000, the relationship between ISO 14000 and ISO 9000,

the work to prevent ISO 14000 from erecting trade barriers (for example, adoption of ISO 14000 under NAFTA and various GATT agreements is being contemplated) and the reasons why companies should begin to prepare for ISO 14000 certification now if they have not begun already.

www.cris.com/~isogroup/14000.html

This page is a link from the home page of the ISO 9000/QS 9000 Support Group Home Page. This group supports implementation of ISO 9000, QS 9000 and ISO 14000 through providing discussion, information exchange and advice to assist companies in implementing these standards. The ISO 14000 information page has links to five sections: The Basics of ISO 14000, Inside ISO 14000, Auditing ISO 14001, ISO 14000, The Basics of EMAS and ISO 14000, and the Small Business. The location of "ISO 14000 and the Small Business" is: www.cris.com/~isogroup/14002.html. This is a hopeful article for small businesses - it gives the message that ISO standard developers have learned a lesson since ISO 9000 was developed and are developing ISO 14000 keeping small businesses in mind. The article strongly encourages the development of an EMS for most small businesses and outlines the steps that must be taken in order to establish an effective and cost efficient EMS.

www.iso14000.com/

This site is called the ISO 14000 InfoCenter and provides - among other links including an ISO 14000 overview, education and training information, and discussion lists - a link to Business Opportunities. At the Business Opportunities link, there is a link to ISO Partnerships through which ISO World can be reached. ISO World includes information about the Japan Accreditation Board Trial and Pilot Program prior to release of the final ISO 14000 series as well as a list of BS 7750, EMAS and ISO 14001 registered sites in Japan. The list, as of April 1996, included nine ISO 14001 registered sites, seven of which were registered in March of 1996.

www.mgmt14k.com/ems.htm

Fredericks, I. and D. McCallum. 1995. "International Standards for Environmental Management Systems: ISO 14000", originally published in *Canadian Environmental Protection*, August 1995.

This web site is a four page article in which the authors outline ISO 14000, compare ISO 14000 and ISO 9000, present reasons for adopting or becoming certified to the ISO 14000 EMS model, and outline how to implement, maintain, and integrate ISO 14000 into an organization.

www.mgmt14k.com/realityc.htm

McCallum, D. and I. Fredericks. 1995. "ISO 14000: A Reality Check", originally published in *Hazardous Materials Management*, October/November 1995.

This article is centered around a discussion of the dilemma a company would be faced with if it had to choose between spending money on implementing ISO 14000 or pollution control equipment. The authors state that the answer depends on the position of the company; if the company already has a system for monitoring improvement opportunities, it is effectively balancing environmental risks and feels that the money would best be spent on pollution upgrades, then that might be the best thing to do. However, if a company decides to spend the money on pollution control, but is not able to prevent legal action and huge site remediation cost, then ISO 14000, which is a preventative tool, would have been a better choice. The authors also suggest that ISO 14000 is not a cure-all, but depends on the efforts of the company to be conscientious when implementing ISO 14001, so that the system will ensure good environmental performance. The authors present some insightful and useful information and conclude that the degree of impact of the standard will depend somewhat on the ISO 14000 registrars.

www.pader.gov/dep/seif/isosenat.htm

This web site, part of the Pennsylvania Department of Environmental Protection's site, is the written copy of the testimony of James M. Seif, the Secretary of the Department of Environmental Protection before the Senate Environmental Resources and Energy Committee, March 20, 1996. His testimony outlines his argument for the use of ISO 14000 in state government regulations. He argues that ISO 14000 is not only a key to market access, but "represents the next generation of tools needed to more effectively achieve our environmental protection goals" and "is a system that will essentially privatize environmental regulation".

www.quality.co.uk/quality/iso14000.htm

This web site is divided into nine links which include an introduction, the history of ISO 14000 and its background, the need for ISO 14000, who the standards apply to, what the

standards apply to, a list of the ISO 14000 series of standards, a general description of ISO 14001 and a comparison table of the elements of ISO 14000, EMAS and BS 7750.

www.stoller.com/iso.htm

This is an excellent resource which provides several links and covers ISO 14000 in depth. One of the links includes papers and presentations on ISO 14000 such as a comprehensive article titled "Conformity and Assessment for EMS and EL: Case for Harmonization" by Joe Cascio, the chairman of the U.S. technical advisory group to TC 207 and an article by Gabriel G. Crognole titled "Environmental Management: What ISO 14000 Brings to the Table". Other links include: What's New, Introduction and Background, Roadmap (an EMS diagram), Standards Overview and Description, Drivers and Benefits, Links to ISO 14000 Resources and ISO 14000 Training.