A Comprehensive Evaluation of Integrated Management Systems

Company XYZ

by

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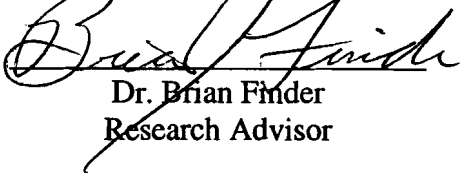

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ABSTRACT

The purpose of the study was to identify the similarities and differences between ISO 14000 and IS0 9000 management standards, as it relates to the safety and environmental protection-based internal standards that are in effect for Company XYZ and its acquired company. The review of literature included the background of ISO 14000 environmental management and ISO 9000 quality management systems, benefits of ISO 9000 and ISO 14000 management systems and a review of integrated management systems. Interview questions were used to collect the data that were related to the integration of ISO 9000 quality and ISO 14000 environmental management systems at Company XYZ and Company ABC. The questions were developed from the literature review. The interview questions addressed specific areas of ISO 9000 quality and ISO 14000 environmental management systems and best techniques for integrating ISO 9000 and ISO 14000 into a single management system.

The results of the research indicated that, it is possible to integrate the similar elements and policy statement of ISO 9000 and ISO 14000 management systems into a company's practices. Finally recommendations were given. The recommendations given suggested that similar elements of ISO 9000 and ISO 14000 management systems should be integrated. Company XYZ should also conduct a general review of ISO 9000 and ISO 14000 management systems before a final integration can be achieved. Examples of the similar elements for ISO 9000 and ISO 14000 management systems are policy statement, documentation procedures and training.

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Chapter One

Statement of the Problem

Introduction to the Study

In today's global world, it is likely that most organizations focus on the objective of demonstrating sound management of economic, safety and environmental practices. In order to achieve this objective, it would therefore seem important for organizations to adopt management systems that proactively address quality, safety and environmental issues that may be present in the workplace. As stated by Petersen (2003), a system is an integral part of an ongoing process within an organization. This implies that a management system is a continuous process that is used to ensure that an organization can fulfill the tasks required to achieve its objectives. Many of these management-based systems may be prompted by the presence of governmental standards as well as universally accepted best management practices. Those standards that would fall under the auspices of being best management type would include ones that have been developed by the International Organization for Standardization (ISO) which address not only product quality, but also safety and environmental protection.

Company XYZ has 131 facilities in the United States and in other parts of the world. Most facilities have implemented some form of ISO 9000 (safety and product quality) as well as 14000 (safety, product quality and environmental protection) based systems to improve performance in the workplace. A Minnesota facility of Company XYZ, which is ISO 14000 certified, recently merged with another company that is utilizing the more basic ISO 9000 system, and Company XYZ is concerned about how

this may be affecting the efficiency of the new company's practices. Therefore the presence of misalignment between ISO 14000 driven safety practices and ISO 9000 driven safety practices for Company XYZ's new acquisition may be resulting in the occurrence of inefficient procedures.

Purpose of the study

The purpose of the study is to identify the relationship between ISO 9000 and ISO 14000 standards, as it relate to the safety and environmental protection-based internal standards that are in effect for Company XYZ.

Goals of the study

1. To analyze the correlation as well as system-oriented differences between the ISO 9000 and ISO 14000 management systems being utilized at Company XYZ and its acquired company.
2. Identify current practices for integrating ISO 9000 quality management standards and ISO 14000 environmental management standards into a company's activities.

Background and Significance of the Study

Management systems are very important in organizations today because they enable an organization to perform certain functions in a standardized/low risk manner and therefore provide satisfactory services and quality products to customers. Organizations with effective as well as agreed-upon management systems have an advantage over others by complying with state and federal regulations. The International Organization for Standardization develops variety of standards for management systems that are used in manufacturing-based industries, business organizations and government public sectors. In general, this organization contributes to the quality of life by ensuring that tools,

machinery and services provided to the public are all safe during and after the processing stage. The ISO 14000 and ISO 9000 management systems are among the International Standard Organization's most widely known standards. ISO 14000 has been referred to as "a frame work which if followed, forces a discipline which drives improvement in performance" (International Federation of Standards Users, 2003).

ISO 14000 is utilized at Company XYZ as part of its environmental, health and safety management system. At Company XYZ, ISO 14000 promotes the basis for sound environmental management decisions and it also assists the company to address changing customer needs. Company XYZ has a long history of concerted compliance with Occupational Safety Health and Administration regulations based on continuous improvement through the use of these management systems. The recent merging of company XYZ with another company which is ISO 9000 certified, is resulting in conflicting management practices because ISO 9000 standards have a more limited focus and consequently there is the need to identify opportunities to better integrate the ISO 9000 and ISO 14000 systems being followed. As with any organization that is embracing a new management system, it is likely that strategic methods to measure improvements in safety performance and customer satisfaction must be considered before additional systems are integrated into the company's existing practices. Therefore it is probable that conducting research to determine the differences as well as similarities between both systems will assist in aligning their internal standards and therefore improve safety performance, quality productions, and environmental management at Company XYZ.

Limitations

1. This study is limited to company XYZ facilities that are either ISO 14000 or ISO 9000 certified.
2. The data collected as part of this study is limited to the time period of 3/1/07 and 5/1/07, because Company XYZ is at the initial stage of implementing an integrated management system

Definition of Terms

International Organization for Standardization (ISO): The International Organization for Standardization is an international, non-governmental federation of "standards bodies from 111 nations. It was founded in Geneva Switzerland, in 1946 with aim of promoting standardization and related activities to facilitate international exchange of goods and services (Von Zharen, 2001, p. 45).

ISO 9000 quality management systems: The term ISO 9000 quality management systems is used as a collective term to address all international standards established by ISO Technical Committee 176 relating to quality management systems (Petrick, 2002, p.17).

ISO14000 environmental management systems: This is a series of international standards that are designed to help organizations manage their environmental obligations such as compliance with legal requirements. The ISO 14000 management standards also define management processes that will be followed in order to control the impact an organization will have on the environment (Von Zharen, 2001, p. 57).

Chapter II

Literature Review

The purpose of the study is to identify the similarities and differences between ISO 14000 and IS0 9000 management standards, as it relates to the safety and environmental protection-based internal standards that are in effect for Company XYZ and its acquired company. The sections of this chapter will focus on studies that have been conducted regarding the background of ISO 14000 and ISO 9000 management systems, the benefits to organizations, the similarities and differences of both systems, and integration strategies of ISO 14000 and ISO 9000.

Background of ISO 14000 Environmental Management Systems

Environmental protection had been a major concern in the United States since the 1800s (Von Zharen 2001). Environmental laws were developed based on the principle that natural resources are finite, and human activities have the potential to degrade the environment and natural resources present in the earth (Von Zharen, 2001; Environmental Protection Agency, 2006) . Environmental laws have often become an integral part of statutes and regulations that determines corporate actions and policy directions (Von Zharen, 2001). Industrial activities, human beings and the environment as a whole are all interconnected to each other, and corporate organizations are concerned about how to maximize the few resources in the country for their benefits and to minimize negative impacts on the environment (Von Zharen, 2001). Therefore, it appears that the best approach to achieve this aim is to provide a framework on which adequate monitoring of the environment will be performed.

The development of ISO 14000 environmental management systems can be traced to the United Nations Conference on environment and development, and the global environmental initiative conference held in Rio de Janeiro in 1982 (International Organization for Standardization, 2002). The conference discussed global concerns about the environment and called for world commitment to protect the environment. Organizations were also required to assess the positive and negative impacts that their activities, products and services have on the environment in order to identify opportunities for improvement (Global Environmental Management Initiative, 2000). An agreement was reached by developing international environmental management standards. The acceptance of ISO 9000 (a series of quality management systems) in the global world enhanced the possibility of creating an environmental management system. The International Organization for Standardization was eventually petitioned to develop the ISO 14000 environmental management standard. ISO developed a technical committee (ISO/TC 207) that designed the method needed for organizations to assess their various operations in a systematic procedure (Von Zharen, 2001). This ultimately initiated the development of the ISO 14000 environmental management series.

The ISO 14000 series

ISO 14000 series is a group of international standards that was developed for organizations of all types and different sizes (International Organization for Standardization, 2006). The ISO 14000 series also provide organizations with guidelines and specification for monitoring their environmental performance. The ISO 14000 series include; environmental management systems (ISO 14001), environmental auditing (ISO 14010, ISO 14011), environmental site assessments and product evaluation standards.

(Defense Environmental Network & Information Exchange, 2006). As stated by Von Zharen, (2001), the ISO 14000 management series are not legal standards, but rather, they are designed to help organizations manage their environmental obligations and compliance with legal requirements. ISO 14001 is a series of the ISO 14000 environmental management system. It is a specification standard and which provides an organization with the framework for a structured environmental management system that can be easily integrated into the organization's overall management process (Defense Environmental Network & Information Exchange, 2006). ISO 14001 is the heart of the systematic approach to improving environmental performance (Global Environmental Management Initiative, 2000). The key elements of ISO 14001 include environmental policy, planning, implementation, checking and corrective action and management review (Stapleton, Glover, & Davis, 2001; Global Environmental Management Initiative, 2000; Von Zharen, 2001). These key elements are required for the implementation of ISO 14001 environmental management system in different organizations. In order to implement ISO 14000 environmental management systems, an organization must develop an environmental policy that includes a commitment to the prevention of pollution (Von Zharen, 2001). An organization must also establish procedures for identifying environmental aspects of their activities and determine which aspects have significant impacts on their different operations and services. Objectives and targets of an environmental management system must also be documented to reduce environmental impacts and all personnel whose work significantly affects the environment must be trained to ensure implementation (Von Zharen, 2001). The key elements of ISO 14001

environmental management system are further defined by the (International Organization for Standardization (2006) as follows:

- Environmental policy: A process whereby a company develops a statement that reflects the organization's commitment to environmental protection. The policy is used as the template on which to build the other elements of the EMS
- Environmental planning: This is the analysis of the environmental aspects of the organization. It includes the processes, products and services as well as the goods and services used by the organization.
- Implementation and Operation: This involves implementation and organization of processes to control and improve operational activities that are critical from an environmental perspective.
- Checking and corrective action: A process that involves monitoring, measurement and recording of the activities and characteristics that can have a significant impact on the environment.
- Management Review: The organization's top management reviews the environmental management system to ensure its continuing suitability, adequacy and effectiveness.
- Continual Improvement: This is a key element of the system that continues the process of plan, implement, check, review and continuous improvement (International Organization for Standardization, 2006).

In conclusion the above elements of ISO 14001 are used to assess conformance of an environmental management system to ISO 14000 environmental management standards. According to Von Zharen (2001), the ISO 14001 standard can be applied to all

types and sizes of organization and it is designed to accommodate the different geographical, cultural and social conditions. Therefore the whole series of ISO 14000 effectively address the needs of an organization by providing a structured process for the achievement of continual improvement. The rate of continual improvement and the cost benefits to an organization's can be determined by the management's approach of reviewing the positive and negative aspects of implementing an environmental management system (Martin, 1998).

Benefits of Implementing ISO 14000 Management Systems

The interest in environmental protection and sustainable development is growing every year and organizations are increasingly challenged to demonstrate its commitment to the environment (Stapleton et al., 2001). Effective environmental management systems can assist an organization to identify the causes of environmental problems and then eliminate them. An environmental management system helps an organization to save money by preventing pollution to the environment (Stapleton et al., 2001). According to the Global Environmental Management Initiative, reducing environmental pollution means increasing efficiency and wasting fewer resources (Global Environmental Management Initiative, 2000). Organizations have found out that they can benefit from the environmental management systems through improved compliance performance, enhanced management confidence, increased efficiency, and enhanced employee morale (Stapleton et al., 2001). Therefore, by properly implementing an environmental management system, organizations can ensure that they effectively manage environmental risks while identifying and exploring the opportunities that proper

environmental management can bring (Global Environmental Management Initiative, 2000).

Background of ISO 9000 Quality Management Systems

The ISO 9000 was used as a collective term, to address all international standards relating to quality management systems and technologies (International Organization for Standardization, 2006). It was established by the International Organization for Standardization technical committee (176) in 1980. The use of ISO 9000 standards was driven by the trend of increasing international trade and by the fact that they proved their value in the global market place (West, 2002). As product requirement standards and the associated test methods evolved, industry began to develop a framework to manage the new requirements and their increasing complexity (West, 2002). According to Rutkowski (2003), he believes that ISO made use of this opportunity to prevent national proliferation of similar standards. ISO believed that developing a consensus standard that can be used worldwide would reduce the cost of having to comply with different set of standards. It also appeared that there could be significant advantages if the national standards could be drawn together to create a single family on a worldwide basis (West, 2002). Therefore ISO created a technical committee (TC 176), which constitutes a group of quality experts from 160 countries to develop ISO 9000 family standards (Rutkowski, 2003). The American set of standards (ANSI) and British standards (BS) were used in the development process of the ISO 9000 standards. The ISO 9000 standards were a huge success and have since become the most recognized and widely used standards for the global marketplace (Rutkowski, 2003).

ISO 9000 series

In the year 1997, the ISO 9000 family of standards had grown to a cumbersome number of standards with 20 required elements, with more requirements from specific industries Rutkowski (2003). The TC 176 committee, which was selected by the International Organization for Standardization, reviewed the ISO 9000 standards and this resulted into four main series of ISO 9000 family standards (Rutkowski, 2003). The four main series are;

- ISO 9000: 2000: this is a greatly reduced series that consists of only three standards and six requirements (Rutkowski, 2003).
- ISO 19011: This is the guidelines for quality and environmental management systems auditing (Petrick, 2002).
- The other two standards are ISO 9001:2000 - Quality management system requirements and ISO 9004:2000 - Quality management- Guidelines for performance improvement (Petrick, 2002; Rutkowski, 2003).

At present, companies are only required to utilize ISO 9000:2000 quality management systems for their registration purposes. According to Von Zharen (2001), the older versions of ISO 9000 (ISO 9001, ISO 9002, and ISO 9003) were combined into a single ISO 9001: 2001 standard. It is required that when utilizing ISO 9000: 2001 for implementation, organizations must ensure that all three documents (ISO 9000:2000, ISO 9001:2000, ISO 9000:2004) should be used (Rutkowski ,2003). A key point to note is that one of the principles driving the revision of ISO 9001: 2000 from the old versions was to design the system to be compatible with other management systems such as ISO 14000 environmental management system (Von Zharen, 2001; Ketola & Roberts, 2001).

ISO 9000 Quality Management Principles

It is reasonably accepted that a principle is defined as a fundamental belief of a group of scholars or professionals (West, 2002). The ISO 9000: 2000 standards were based on a process model, using eight quality management principles that reflect best practices and consequently facilitate continual improvement of the business (Rutkowski, 2003). The eight principles are further defined by West, (2002) and Rutkowski, (2003) as follows:

1. Customer focus: Organizations should meet customer needs and strive to exceed customer expectations
2. Leadership: Leaders establish unity of purpose and direction of the organization. Therefore leaders should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.
3. Involvement of people: People at all levels should be involved in all activities to enable their abilities to be used for the organization's benefits
4. Process Approach: All activities and related resources should be managed as a process for a effective results
5. System Approach to Management: Organizations should identify, understand and manage all interrelated processes as a system. This will contribute to the organization's effectiveness and efficiency in achieving its objectives.
6. Continual Improvement: Continual Improvement of the organization's overall performance must be a permanent objective of the organization.

7. Factual Approach to Decision-Making: An organization's business performance and quality products and services can be approved by analyzing data, conducting internal audits and management reviews.
8. Mutually beneficial Supplier Relationship. A mutual benefit relationship enhances the ability of an organization and its suppliers to gain benefits in terms of decreased cost and improved performance (West, 2002 and Rutkowski, 2003).

These management principles give an organization the opportunity to reassess the basis for their business (West, 2002). In conclusion, organizations should also apply these eight principles to the design and improvement of ISO 9000 quality management systems in order to attain quality excellence and good customer services relations.

Benefits of Implementing an ISO 9000 Quality Management System

ISO 9000 quality management system provides a solid foundation for good business management by applying thought-out processes and proactively pursuing continual improvement and customer satisfaction (Rutkowski, 2003). The intention of the committee that developed ISO 9001:2000 was to emphasize the measurement of customer satisfaction, process management utilization, and informational analysis to drive continuous improvement (Ketola & Roberts, 2001). It is highly important for organizations to establish a measurement system to assess the performance of ISO 9000 quality management systems, and monitor the system to ensure it meets the needs of the organization (Schnoll, 2002). The most common effective paybacks of ISO 9000 quality management system have been identified by Schnoll (2002) and Rutkowski (2003). These benefits include:

1. Customers and end users will benefit by receiving products that meet requirements and are more consistent, more dependable and available when needed.
2. People within organizations will benefit from better work conditions, increased job understanding and satisfaction, improved safety, improved morale and stability.
3. Owners and investors will benefit from an increased return on investment, improved operational results, increased market share and improved profits.
4. Also an organization that has an effective quality management system will have an advantage over its competitors who do not. A system compliant with the requirements of the ISO 9001 standard will provide an added thrust for an organization's ability to increase business (Schnoll, 2002 and Rutkowski, 2003).
5. The society as a whole will benefit from the fulfillment of statutory and regulatory requirements, improved safety, reduced environmental impacts and increased security.

In conclusion organizations that have embraced ISO 9000 quality management systems have made increased profits in their business. The use of ISO 9000 quality management systems also promotes international trade. This is a unique advantage because companies can easily trade with each other in different parts of the world without acquiring debts from products with defects and products that are not in compliance with the requirements of other countries.

Integrated Management Systems

An integrated management system is a method that is developed to handle several issues in the same system (Holmgren, 2002). He further states that an integrated management system combines all functions and common documents of other systems in order to achieve effective time management. Examples of such combined integrated systems would be a quality management system, an environmental management system, and occupational safety and health management system. According to Jackson (2001), a single integrated management system must be based firmly in the needs and values of the business. If any new requirements emerge after the systems are integrated, there should be careful consideration to integrate the systems into the existing systems framework (Jackson, 2001). A company can have a single system that manages both their environmental and quality systems instead of managing the systems separately (Jackson, 2001). The integration of the elements of both systems will not change the goals and objectives of an organization (Jackson, 2001). The ISO 9000 quality management systems and ISO 14000 environmental management systems consist of related supporting tools that can be applied equally to private industry and public sector of any size, and that also offer any valuable product, activity or service (Defense Environmental Network & Information Exchange, 2006). Organizations will be able to achieve their aim of having a single integrated management system for ISO 9000 and ISO 14000 management systems because of the inherent compatibility of quality and environmental management systems (Highland, 2002).

Similarities of ISO 14000 and ISO 9000 Management Systems

The ISO 14001 a series of ISO 14000 uses the same fundamental elements as ISO 9000. The fundamental elements include; document control, management system auditing, operation controls, recordkeeping controls, management policies, audits, training and corrective and preventive actions (Defense Environmental Network & Information Exchange, 2006; Jackson, 2001). ISO 9000 and ISO 14000 require senior management support and commitment for success, and require organizations to have a system for establishing and reviewing objectives and targets, for quality and environmental standards (Defense Environmental Network & Information Exchange, 2006). Companies that have implemented a comprehensive quality system to meet the ISO 9000 standard have a clear advantage in implementing ISO 14000 environmental management system (Jackson, 2001). This is justified by the Defense Environmental Network & Information Exchange in their article "The Relationship between ISO 9000 and ISO 14000." In this article, it was stated that the ISO technical committee (TC 207) purposely developed the newer ISO 14000 standards to be in conformance with the basic aspects and structure of the previously issued ISO 9000 standards. Thus an organization can combine ISO 9000 quality management system and ISO 14000 environmental management system by properly reviewing the different standards and identifying the elements that can be integrated into a single system.

According to Highlands (2002), ISO 9000 quality management system and ISO 14000 environmental management system are also targeted toward the identification and elimination of root causes for actual and potential nonconformance in the system. Nonconformance actions are related to poor quality products, worker safety and negative

impacts on the environment. The similarities between ISO 9000 quality management systems and ISO 14000 environmental management systems suggests that one fully integrated management system for all business and operational activities can be effective (Defense Environmental Network & Information exchange, 2006).

Differences between ISO 14000 and ISO 9000 Management Systems

The ISO 14000 environmental management system and ISO 9000 quality management system may have many similarities and overlaps, but there are still some differences (Defense Environmental Network & Information exchange, 2006; Jackson, 2001). ISO 9000 is concerned with quality management and meeting customer quality requirements, achieving control of processes, and encouraging continuous improvement, while ISO 14000 is concerned with environmental management (Defense Environmental Network & Information Exchange, 2006; Highlands, 2002). According to Jackson (2001), a quality management system will include evaluation of suppliers and review of customer contracts, but an environmental system will include methods of evaluating environmental impacts and systems for responding to emergencies. Therefore, a quality management system is more focused on keeping up with customer requirements and quality products specifications but an environmental management system complies with stakeholder requirements. Examples of stakeholders include regulatory bodies, local communities and environmental activists groups.

Environmental management systems are driven by the identification of environmental aspects that relates to an organization activities and may be profoundly influenced by laws and regulations (Highlands, 2002). Laws and regulations for environmental management that relate to quality management systems (such as design

control) is a new requirement that is not specifically addressed within ISO 9001 and ISO 9002 quality standards (Highlands, 2002). Regulatory bodies, local communities and environmental activists groups have an interest in a business environmental performance and they may have a potential impact on the business if they are displeased with the performance (Jackson, 2001). It is possible that organizations operating in the highly regulated business community of North America are likely to have systems in place that may provide access to environmental laws and regulations (Highlands, 2002). Another unique element of ISO 14000 environmental management system that is different from ISO 9000 quality management system is the area of environmental emergency response and preparedness (Highlands, 2002). This standard requires that the emergency response and preparedness systems be tested frequently. Although organizations with a rigorous compliance system may have existing procedures already in place, there are little requirements for emergency response and preparedness in ISO 90001 and ISO 9002 quality management systems (Highlands, 2002). Therefore, the full integration of both systems could result in significant savings of time and money (Defense Environmental Network & Information Exchange, 2006; Highlands, 2002).

Integration of ISO 14000 and ISO 9000 Management Systems

According to Von Zharen (2001), organizations that are concerned with the integration of ISO 9000 and ISO 14000 management systems should consider the system as a whole instead of the two systems functioning as individual units. To achieve this aim, all organizations should carefully determine how all sections, functions, and divisions might be affected by environmental issues (Von Zharen, 2001). Adding environmental reviews to the ISO 9000 design reviews or purchasing procedures may

provide excellent controls in an organizations system (Highlands, 2002). There may be some systems which exist in the quality system, but are not currently applied to environmental systems (Jackson, 2001). These systems can simply be expanded to include environmental elements. A good example is document control. In order to get registered for ISO 9000, organizations are required to ensure that important quality related documents are up-to-date and available when required (Jackson, 2001). This same system can be used to ensure that environmental documents are available and reviewed.

From an ISO standards integration standpoint, the International Organization for Standardization also established a technical advisory group (TAG 12) to investigate how a better interface can be achieved for users who wish to implement both standards (Defense Environmental Network & Information Exchange, 2006). The technical advisory group recommended the various actions to augment the standards compatibility (Defense Environmental Network & Information exchange, 2006). The actions include:

1. Relevant terms and definitions for both standards should be identical, and there should be consistent use of terminology in both families of the standards.
2. Auditing systems for both standards should be integrated to consist of a common core document with separate clauses on quality and the environment.

Von Zharen (2001) emphasized the compatibility of both standards. She believes that the ISO 14000 standards are relatively direct and once information gathering and analysis is achieved, the next stage is relevant to the techniques of ISO 9000:2000 involved with running any effective management system. In conclusion an organization should choose a system that best fits its working environment. An organization should determine whether it is best to develop a separate system for ISO 14000 environmental standards and ISO

9000 management system or combine both ISO 14000 environmental management system and ISO 9000 quality management systems into existing procedures and policies.

Best Practices by Different Organizations

An integrated management system contributes to the success and sustainability of most organizations. It motivates quality and environmental focused companies to align their environmental and quality objectives with their business objectives. Von Zharen (2001) gave examples of best practices used by some companies in implementing integrated environmental health and safety management systems into their operational practices. This practical approach is achieved after objectives, targets, training, operational controls, record keeping, and documentation are implemented. Best practices for integrating ISO 9000 quality management system and ISO 14000 environmental management systems are identified in the following companies: Examples of companies that utilize a practical approach for integrating ISO 9000 and ISO 14000 into their business operations include: 3M, IBM (U.S.A Based) and Xerox.

3M

3M Company integrates its environmental management techniques into the quality aspects through the pollution prevention program. The program's approach is to prevent pollution at the source in the manufacturing processes and products rather than removing it after it has been created (Von Zharen, 2001). The strategy of this program is to eliminate pollution through product reformulation, process modification, equipment redesign, and recycling and reuse of waste materials (Von Zharen, 2001).

IBM (U.S.A)

IBM Company integrates the environmental management system into its quality aspects through energy conservation in manufacturing processes, recycling of used products and avoidance of hazardous waste from production processes (Von Zharen, 2001). In 1995, IBM Company saved $15.1 million in its energy conservation activities (Von Zharen, 2001).

Xerox (U.S.A)

Xerox Company integrates the environmental management system into its quality aspects through site recycling programs which includes the conversion of solid waste to useable energy through incineration (Von Zharen, 2001). The process for Xerox plastic recycling program include; collection of high-grade plastic panels, sorting of the plastic panels, disassembling and grounding for reprocessing (Von Zharen, 2001). The plastics are then used for manufacturing Xerox products, or to generate revenue for the company through sales (Von Zharen, 2001). In 1995, this recycling program enabled the Xerox Company to divert 250 metric tons of plastics from landfill. (Von Zharen, 2001).

In conclusion, practices for integrating ISO 9000 quality and 14000 environmental management systems should be firmly based on an organizations procedures and policies. A successful approach for an integrated management system can only be achieved if there is a strong commitment from top management, safety supervisors, engineers and ISO 9000 and ISO 14000 auditors. According to Highlands (2002), the usefulness of integrating the quality system with environmental management system depends on whether the organization is dealing with spent

nuclear fuels, toxic waste or recycled paper. He emphasized that an organization may elect to expand the scope of its QMS review to include the EMS in a single review, but it depends on the level of integration that is desired. Elements of the review include combined documentation, objectives, training and continual improvement. Jackson (2001) also concluded that organizations should set specific objectives and targets that are consistent with its quality standards, business and financial policies. She also stated that the key to integrated management systems is to build a solid business system framework which will cover all aspects of the company.

Summary

The reviewed literature on ISO 9000 quality management system and ISO 14000 environmental management system has revealed that both systems are important in organizations. The ISO 14000 environmental management system has enabled different organizations to comply with environmental regulations. The use of ISO 14000 environmental management systems in manufacturing industries has also increased the awareness and importance of resource conservation and waste recycling. The ISO 9000 quality management system also assist companies with producing quality goods and conforming to the required designs for their products and for the satisfaction of their customers. Sustainability is the most important issue facing industries in this 21st century. Companies that strive to keep up with quality measures must also be concerned with environmental impacts. According to Smith, (2004), quality and environmental sustainability are deeply connected. Quality and sustainability provide winning solutions for social responsibility, environmental performance and business results. Sustainability

should involve a process in which the society and industries reorganize their activities to protect the environment from suffering at the expense of economic benefits.

The literature review also suggests that integrating ISO 9000 quality management system and ISO 14000 environmental management system will improve safety practices. A good example is emergency response and preparedness. This is a requirement for ISO 14000 standard. Organizations with ISO 9000 are required to integrate emergency response and preparedness into their ISO 9000 quality standards. Emergency response and preparedness helps a company to proactively address potential losses and hazards thus increasing good safety practices. Therefore according to William (1999), a good company delivers excellent products and services, but a great one delivers excellent products and services and strives to make a world a better place to live (as cited in Smith, 2004). This can be achieved by a proper integration of the ISO 14000 environmental and the ISO 9000 quality management systems.

Chapter III Methodology

The purpose of the research is to identify the similarities and differences between ISO 14000 and IS0 9000 management standards, as it relates to the safety and environmental protection-based internal standards that are in effect for Company XYZ and its acquired company. The basic elements and clauses of ISO 14000 and ISO 9000 will be examined in Company XYZ and Company ABC to determine the strategy for integrating ISO 9000 quality management system and ISO 14000 environmental management systems.

Goals of the Study

1. Analyze the correlation as well as system-oriented differences between the ISO 9000 and ISO 14000 management systems being utilized at Company XYZ and its acquired company.
2. Identify current practices for integrating ISO 9000 quality management standards and ISO 14000 environmental management standards into a company's activities.

The sections of this chapter will describe the procedures for subject selection, instrumentation, data collection procedures, data analysis, and limitations of the instrument used.

Subject Selection and Description

Safety professionals, supervisors and top management staff that have certifications or experience in ISO 9000 and ISO 14000 management systems were selected to participate in this study. The partcipants were selected based on the recommendations of the safety professional for Company XYZ. Ten candidates were involved with the individual interview process.

Instrumentation

An unstructured interview method was used to interview the selected candidate for this research. The survey process involved an onsite personal taped interview. The interview questions were provided to candidates one week before the interview. Interview questions were developed based on the literature reviewed. The interview questions addressed specific areas of ISO 9000 quality management system and ISO 14000 environmental management and methods for integrating ISO 9000 and ISO 14000 management system into an organization's practices.

Data Collection Procedures

Ten participants were interviewed from Company XYZ and ABC. The interview process was conducted within two days. The researcher interviewed the participants in person. The interview was taped and notes was taken for each question asked. The collected data was stored in a secured cabinet. The names of the individuals and the companies were withheld during the transcription of the interviews and no false information was involved. Company XYZ and ABC was used for the name of the company and its newly acquired company.

Data Analysis

The main objective of this study was to determine the best procedure for integrating ISO 9000 quality and ISO 14000 environmental management systems into the policies and practices of Company XYZ and Company ABC. The data collected was analyzed based on the responses from the participants to the interview questions and the data was grouped into the following specific sections developed from the goals of the study.

The sections include:

1. Elements of ISO 9000 quality management system
2. Elements of ISO 14000 environmental management system
3. Nonconformance and conformance measurements for ISO 9000 quality and ISO 14000 environmental systems
4. Similarities and differences of ISO 9000 quality and ISO 14000 environmental management systems
5. Vision/Policy Statement for ISO 9000 quality and ISO 14000 environmental management system
6. Procedures for integrating ISO 9000 quality and ISO 14000 management systems

The data was also classified into tables to present the reader with good content, clarity and proper organization of the recorded interviews.

Limitations of the Study

A limitation of the study was that the instrument used had no measures of validity because the interview questions were developed based on the literature review and exisiting practices in the integration of management systems. Also the results from this study should be cautiously applied to other companies who are interested in integrating ISO 9000 quality management system with ISO 14000 environmental management system because only Company XYZ and Company ABC participated in this study.

Chapter IV: RESULTS

The purpose of this study was to identify the similarities and differences between ISO 9000 and ISO 14000 management standards, as it relates to the safety and environmental protection-based internal standards that are in effect for Company XYZ and its acquired company. The methodology that was utilized for this study involved an unstructured interviewing process in which a survey was conducted for the participants of Company XYZ and ABC based on the questions developed from the literature review. The purpose for the interviewing process was to determine the basic procedures for integrating ISO 9000 quality management system and ISO 14000 environmental management system. The following goals of the study formed the basis on which the interview questions were analyzed.

Goals of the Study

1. Analyze the correlation as well as system-oriented differences between the ISO 9000 and ISO 14000 management systems being utilized at Company XYZ and Company ABC.
2. Identify current practices for integrating ISO 9000 quality management standards and ISO 14000 environmental standards into a company's activities.

As stated in Chapter III, the data collected will be analyzed based on the following sections developed from the goals of the study. Section a – d and interview questions 1 – 11 are classified under (Goal 1). Section e-f and interview question 12 is classified under (Goal 2).

Sections Developed from Goals of the Study

a.) Elements of ISO 9000 quality management system.

b.) Elements of ISO 14000 environmental management system.

c.) Nonconformance and conformance measurements for ISO 9000 quality and ISO 14000 environmental systems.

d.) Similarities and differences of ISO 9000 quality and ISO 14000 environmental management systems.

e.) Vision /policy statement for ISO 9000 quality and ISO 14000 environmental management system.

f.) Procedures for integrating ISO 9000 quality and ISO 14000 management system.

The participants for the interview were selected based on the recommendations of a safety professional from Company XYZ. These participants had experience or certifications in ISO 9000 quality and ISO 14000 environmental management systems. Three participants were interviewed from Company XYZ and ABC out of the proposed ten participants. The reason for this was that the interview was conducted during the relocation process of Company ABC into Company XYZ. The interview was conducted on April 25, 2007. This remaining part of this chapter will discuss the results from the interviews with the participants of Company XYZ and ABC.

Results of the Interview Questions

1. Types of International Organization Standardization Certifications at Company XYZ and Company ABC

Company XYZ is ISO 14000 environmental management systems certified and specifically ISO 14001 certified (which is the specification document). Company XYZ also stated that they are ISO 9000 and more specifically, ISO 9001 certified (which is the requirements for quality management systems as identified in the literature review). A

key point to note is that the ISO 9000 standard of Company XYZ is also different from Company ABC.

Company ABC is ISO 9000 certified and more specifically, ISO 9001 certified. Company ABC does not have an ISO 14000 environmental management system in place. According to the interviewee, he explained that Company ABC focused more on developing their ISO 9000 quality management system before the emergence of the integration of Company ABC and Company XYZ.

2. What are the basic elements of ISO 9000 and ISO 14000 management system?

Company ABC and Company XYZ identified the basic elements of ISO 9000 quality management system and ISO 14000 environmental management system, these elements are listed in Table 1.1, Elements of ISO 9000 and 14000 for Company ABC and Company XYZ.

Table 1 Elements of ISO 9000 and 14000 for Company ABC and Company XYZ

Elements of ISO 9000 and 14000 management systems	Company ABC (ISO 9000 elements)	Company XYZ (ISO 14000 elements)
a.)	Management responsibility	Environmental Policy
b.)	Resource Management	Planning
c.)	Product or Service Realization	Implementation and
d.)	Measurement Analysis and Improvement	Checking (Monitoring and Measurement)
e.)	Auditing/Management Review	Management Review

Discussion of Table1.1

The elements listed in Table 1.1 are the requirements for companies that are interested in implementing ISO 9000 quality and ISO 14000 environmental management

system. Management responsibility is an important requirement for ISO 9000 certification. At Company ABC, the management is responsible for developing a written policy that defines their commitment to quality for their customers. The management is also responsible for communicating the policy to the employees. Another example of management responsibility is to assign a management representative who oversees the implementation and continuous improvement of the quality system.

The resource management element of ISO 9000 quality management system is focused on providing training to employees, assigning qualified personnel to production processes, maintaining records and establishing employee awareness programs. Company ABC ensures that the product realization element requirement is fulfilled through identifying all processes that directly affect the quality of their products. Company ABC also ensures that the processes are performed under a formal approval of process design and equipment and documented work instructions. Company ABC utilizes the measurement, analysis and improvement technique element of ISO 9000 for the purpose of ensuring that its products conform to necessary standards and customer's requirement. This is achieved through product inspection.

Company XYZ ISO 14000 environmental management system elements are listed in Table 1.1. Company XYZ utilizes these five elements to establish a procedure for identifying the environmental aspects of their activities and to determine which aspects have significant impacts on their operations and services. Management review is a similar element for Company XYZ and Company ABC is a required element for ISO 9000 and ISO 14000 management systems, although management must conduct inspections and internal audits to ensure continuous improvement in the organizations procedures and

processes. External audits are also conducted in Company XYZ and Company ABC by an accredited body to ensure that quality and environmental systems of both companies complies with the requirements of ISO 9000 quality and ISO 14000 environmental management systems.

The similarities and differences of ISO 9000 quality management system and ISO 14000 environmental management system elements are also identified in Table1.2.

Table 2 Similarities of ISO 9000 and ISO 14000 Management Systems

ISO 9000 Quality System (Company ABC)	ISO 14000 Environmental (Company XYZ)
Policy Statement	Policy Statement
Documentation	Documentation
Monitoring and Measurement	Monitoring and Measurement
Management Review	Management Review

Discussion of Table 1.2

The pattern and process for the policy statement of Company XYZ and Company ABC are similar because it is the responsibility of the management to develop a policy to show their commitment to ISO 9000 quality and ISO 14000 environmental management systems. Company XYZ and Company ABC agreed that the quality and environmental management system policies could be combined into one policy based on the similar development procedures used at both companies. The documentation procedure used at both companies is also similar. Company XYZ and Company ABC utilize standard operating procedures for their documentation processes and the management also delegates a representative to review the documents of the management systems for

continuous improvement. ISO 14000 was developed based on the frame work of ISO 9000 management system and this is why there are some similarities in the documentation procedure.

The monitoring and measuring elements for ISO 9000 quality and ISO 14000 environmental procedures are similar. Company XYZ calibrates the equipment that are used for inspecting the environmental aspects in the Company such as storm water pollution and industrial hygiene testing for contaminants in the work environment. Company ABC also calibrates the equipments used for measuring conformance to product design specifications. This process is similar and both companies discussed the possibility of combining monitoring and measuring procedures for ISO 9000 quality and ISO 14000 environmental management systems. The procedure for management reviews at Company XYZ and Company ABC are also similar. Internal audit and external audit are conducted at both companies and the management reviews the documents for corrective actions in order to ensure that recommendations form the auditing body are implemented.

Table 3 Differences of ISO 9000 and ISO 14000 Management Systems

ISO 9000 Quality	ISO 14000 Environmental
Design Control for Quality products	Environmental aspects
Legal Regulations	Legal Regulations
Auditing Methods	Auditing Methods
Competence Training and Awareness	Competence Training and Awareness

Discussion of Table 1.3

The main differences between Company ABC's ISO 9000 quality management system and Company XYZ's ISO 14000 environmental management system can be identified in

the design control for quality products, environmental aspects, legal regulations, auditing methods and competence training and awareness. At Company ABC, the design control process for quality products ensures that the products conform to customer's specifications. This area is more focused on customer satisfaction while the environmental aspects at Company XYZ is more focused on Identifying and controlling pollution materials that could be released into the environment. Also the environmental aspects involve good house keeping and storage of hazardous waste materials. Legal regulations are a major aspect of Company XYZ's ISO 14000 environmental management system and legal regulations are not specifically required in Company ABC's ISO 9000 quality management system. The ISO 14000 environmental management systems make provisions for standards such as complying with Environmental Protection Agency requirements, state regulations and the Occupational Safety ad Health Administration regulations. Also emergency preparedness and response, a major aspect of Company XYZ's environmental management system, was not identified in the ISO 9000 quality management system for Company ABC.

The Auditing process of ISO 9000 quality management system and ISO 14000 environmental management system is conducted separately. The rationale for this is because of the difference in some of the elements of ISO 9000 and ISO 14000 management systems. Examples of such element include training procedures on the use of equipments designed for quality and training procedures on negative impacts of workplace activities on the environment. A joint audit could be conducted for ISO 9000 and ISO 14000 management system, but the auditing body must be accredited and certified in ISO 9000 quality and ISO 14000 environmental management systems. In

conclusion the training program is also a different process for ISO 9000 and ISO 14000 environmental management system. Company ABC conducts a training program for its employees on how to effectively work with the design process for quality productions and employees at Company XYZ are trained on how to identify major environmental aspects of the company and how to identify and control pollution sources.

3. Mission Statement for ISO 9000 quality and ISO 14000 environmental management system.

The mission statement for ISO 14000 environmental management system at Company XYZ includes the following;

- Solve Company XYZ environmental problems
- Meet all Regulations pertaining to the environmental aspects of Company XYZ
- Assist governmental agencies and other official organizations that are engaged in environmental activities
- Conserve natural resources through the use of acclamation and other appropriate methods
- Develop environmentally safe products
- Support continual environmental improvements consistent with its mission and vision.
- Prevent pollution at the source of all activities at Company XYZ wherever and whenever possible
- Set and review environmental objectives and targets appropriate to its activities, products and services.

The mission statement for Company ABC is to achieve the highest levels of customer satisfaction and significantly outperforming their competitors through the continuous improvement of their quality management system and by treating their employees, customers and suppliers with dignity and respect.

4. Objectives, targets and plans for measuring the requirements of ISO 14000 environmental management system

Company XYZ identified two main objectives and targets to meet the requirements of ISO 14000 environmental management system. The objectives and targets are to reduce waste materials or scraps from filtration products, as well as focus on electricity and energy usage reduction measures in the company's activities

The plans for meeting this requirement are as follows:

- In order to reduce the scrap from production activities, Company XYZ monitors the ratio of the finished product to semi finished product in the converting process
- Lighting bulbs that consume less energy are used in Company XYZ

Company ABC also identified two main objectives for their quality management systems. The objectives are to improve their process design methods and quality performance of their products for customer satisfaction. The plan for achieving these objectives is through maintaining their system for tracking conformance to product designs.

5. Training Specifications for ISO 14000 environmental management system

Awareness training is a specific requirement form ISO 14000 environmental management system. Training specifications for ISO 14000 environmental management systems include;

- Environmental management system training

- Storm water training
- Emergency Planning and Community Right to Know Act training
- Emergency Response training
- Severe Weather training
- Evacuation Drill training
- Hazardous Waste Storage Area Inspection training

Company ABC's training program includes instructing employees on process improvement for their products as well as for the development of product design. Employees are also trained on different gauging aspects to measure conformance of the products to customer specifications.

1. Procedure of documentation for ISO 9000 quality management system and ISO 14000 environmental management system.

   Both Company XYZ and ABC use standard operating procedures and spread sheets for their documentation procedures. The standard operating procedures is a set of procedures or steps workers follow to complete a job safely, with no adverse impact on the environment (and which meets regulatory compliance standards), and in a way that maximizes operational and production requirements (Friedman, 2005).

2. Procedures for measuring conformance and nonconformance actions to quality productions and environmental management requirements.

   Company XYZ utilizes the following methods in measuring conformance and nonconformance actions for ISO 14000 environmental management system:

   - Conduct environmental inspections in the workplace with an environmental-based self inspection check list

- Calibration of measuring devices that are used for monitoring pollution in the water discharge
- Taking immediate preventive actions for any nonconformance activities that are identified

Company ABC also measures their conformance and nonconformance actions through the following methods;

- Measure the number of waste materials from filtration products during the production process (i.e. product conformity measurement)
- Conduct in-process inspection on manufacturing lines, design inputs, design outputs and the development plan for production processes
- Rework the design process for the production of goods and products for different suppliers and customers
- Take preventive actions for any nonconformance activities identified and document the changed procedures.

8. Environmental Aspects of Company XYZ's and Company ABC's manufacturing processes. Company XYZ's environmental aspects of its manufacturing process include;

- Reduction of environmental pollution in the work environment
- Reduction of energy usage in production activities.
- Conforming to effective hazardous waste storage practices
- Recycling of production materials and the reduction of waste materials from filtration productions during production processes

Company ABC did not identified any specific environmental aspects for their manufacturing processes, but safety is part of the precautions taken for their workers' health and wellbeing.

9. Management Review

Company ABC and Company XYZ reviews ISO 9000 quality and ISO 14000 environmental management systems. Company XYZ reviews ISO 14000 environmental management system annually to ensure that the laid down objectives and plans are followed. The internal and external audits for environmental protection are also reviewed for the purpose of implementing the suggested preventive actions by external and internal auditors. Company ABC also conducts management reviews for their ISO 9000 quality management system through the following procedures:

- Review the performance of the process designed for production operations.
- Review corrective actions, customer feedback, preventative actions and changes made to the quality management system.
- Recommendations are also suggested for continuous improvement.

10. Regulations for ISO 9000 quality and ISO 14000 environmental management system. There are no regulations needed to comply with for ISO 9000 quality management system at Company ABC. There are regulations for ISO 14000 environmental management system at Company XYZ. The regulations are the state, county and federal regulations, Environmental Protection Agency and regulations developed by the corporate or management for Company XYZ.

11. Procedures for Integrating ISO 9000 quality management and ISO 14000 environmental management. This interview question is classified under Goal 2.

Company XYZ did not fully support the integration of ISO 9000 quality management system with ISO 14000 environmental management system. Company XYZ explained that it is a good idea to integrate both systems, but at present it will take some time and it will be a long term process. Company XYZ also discussed the possibility of integrating the environmental aspects into ISO 9000 quality management system because there are no emergency preparedness and response as well as storm water pollution inspection systems. A key point to note is that Company XYZ recently conducted a training session on environmental management system for Company ABC's employees

Company ABC supports the integration of ISO 9000 quality management and ISO 14000 environmental management, though the company also agrees that it will take a long term process but they stated that integrating both systems will eventually save time and money. Company ABC and XYZ suggested that the documentation elements and measuring system should be integrated together. In conclusion, Company ABC and Company XYZ did not specifically discuss procedures for integrating the management systems, but they suggested that similar elements or clauses of the system could be integrated into a single comprehensive internal standard in order to save the time spent on auditing of ISO 9000 quality and ISO 14000 environmental management systems.

Discussion

The data collected supports the reviewed literature on the similarities between ISO 9000 quality and ISO 14000 environmental management systems, benefits of ISO 9000 and ISO 14000 management systems, and the examples of best practices for integrating ISO 9000 quality management system and ISO 14000 environmental management systems. The data collected from Company XYZ and Company ABC

discussed the similar elements between ISO 9000 quality and ISO 14000 environmental management systems. These elements are document control, training, management review, objectives and targets. These similar elements were also given in the literature review. The literature review revealed that elements of ISO 9000 and ISO 14000 management systems that are similar should be integrated together. Also the companies in the examples provided in the literature review practiced the integration of both systems through recycling, reduction of waste generated during production processes and energy reduction. This is related to the responses of Company XYZ and Company ABC to the interview questions on methods similar to environmental practices. Company XYZ identified the reduction of waste materials during production processes and energy usage reduction. Company ABC did not identify environmental aspects relating to the company's practices, but they have an environmental gauge used for checking the environmental condition in the workplace.

In conclusion, Company XYZ and Company ABC expressed in their policy statement that they are taking measures to protect the community from environmental pollution and provide good services for their customer satisfaction. This is also relevant to the reviewed literature on the production of quality goods in manufacturing companies and environmental sustainability for the survival of mankind.

This chapter reviewed the purpose of the study, goals of the study, results from the interview process and the data collected in relation to the literature reviewed. The data from this chapter provided the basis on which recommendations will be given in Chapter V.

Chapter V: CONCLUSIONS AND RECOMMENDATIONS

The purpose of the study was to identify the similarities and differences between ISO 14000 and ISO 9000 management standards, as it relates to the safety and environmental protection-based internal standards that are in effect for Company XYZ and its acquired company. The following were the goals of the study:

1. Analyze the correlation as well as system-oriented differences between the ISO 9000 and ISO 14000 management systems being utilized at Company XYZ and its acquired company.
2. Identify current practices for integrating ISO 9000 quality management standards and ISO 14000 environmental management standards into a company's activities.

An unstructured interview was the research instrument used for collecting the data for this study and the associated research questions were developed from the reviewed literature. The research questions addressed specific areas of ISO 9000 and ISO 14000 management and strategy techniques for integrating both systems. Safety professional and top management staffs that have certifications in ISO 9000 and ISO 14000 management systems were selected to participate in the interview process. The goals of the study served as the basis for the type of data to be collected as well as its eventual analysis.

Major Findings

After the interview process and the data collection procedure were completed, the findings were as follows:

- The findings from the data collected revealed that ISO 9000 and ISO 14000 environmental management systems are core elements in an organization and they

are also used for achieving the production of quality products and environmental management.

- The findings also revealed that it may be possible to combine both systems into a single comprehensive management system. Company XYZ supports the integration process for ISO 9000 and ISO 14000 management systems but they prefer both companies to use ISO 9000 and ISO 14000 management systems separately. They further explained that similar elements could be integrated but different areas should not be combined.
- However Company ABC agreed that, ISO 14000 environmental management systems should be integrated into their ISO 9000 quality management system and at present Company XYZ is conducting a training session on environmental management system requirements for Company ABC's employees.

Conclusion

It appears that Company ABC's ISO 9000 quality management system is focused on customer satisfaction and Company's XYZ ISO 14000 system is more concerned with environmental management and environmental pollution reduction in the workplace. This supports the reviewed literature on the difference between ISO 9000 quality and ISO 14000 environmental management systems. It was discussed in the literature review that the ISO 14000 environmental management system is more focused on the sustainability of the environment and though ISO 9000 quality management system is developed for meeting the requirements of customers, it is also concerned with meeting different specifications of regulatory bodies. Therefore there are unique aspects of both systems

that are necessary for integration to assist a company with meeting its annual projected targets and objectives.

The remaining sections of this chapter will discuss the conclusions on the policy statement of ISO 9000 and ISO 14000 environmental management systems, regulations that apply to ISO 9000 and ISO 14000 management systems, emergency preparedness and response, and the documentation procedures.

- Policy statement. It can be concluded from the study that the same procedure is used for developing a policy statement for Company ABC's ISO 9000 quality and Company XYZ's ISO 14000 management systems. Company XYZ and Company ABC policy statement reflects the need to serve their customers through manufacturing of quality products and provision of a healthy environment to their employees and the communities that are located within their facilities vicinity. The business and financial success for the company is achieved through fulfilling this policy statement. It can be observed from this statement that the main goal for both companies is customer satisfaction as well as employee welfare and safety.
- Regulations. In the research conducted, regulations are a major aspect of ISO 14000 environmental management system. The researcher of this paper observed that regulations are not fully included in ISO 9000 management systems. An ISO 9000 quality management system is driven by the requirements of the International Organization of Standardization and specifications from the customers. A good example for the ISO 14000 environmental regulations aspect is emergency preparedness and response. Companies are to prepare different routes of evacuation and shelter areas in case of fire emergency, tornadoes and

hurricanes. This is one of the major factor in determining whether ISO 9000 and ISO 14000 management should be integrated at Company XYZ. It can be concluded from the results and findings that Company XYZ and Company ABC are interested in the integration of the regulations aspect for both systems. This will enable both companies to comply with all environmental and federal regulations and avoid fines and imminent danger to their employees' health and safety.

- Documentation of procedures. The documented procedures for company ABC and Company XYZ are similar as identified in the findings presented in Chapter IV and the reviewed literature. The elements of ISO 9000 quality and ISO 14000 environmental management system are all documented and updated in standard operating procedures. As stated in the literature review, ISO 9000 quality management system requires a company to update all the documents before the registration process. This same process is used at Company XYZ for its ISO 14000 environmental management system documentation procedures. Therefore, it may be possible to integrate the documentation practices for ISO 9000 and ISO 14000 management system into a single set of operating standards.
- Training. It was observed that the training aspects for ISO 9000 quality and ISO 14000 management systems at Company XZ and Company ABC are different but the reviewed literature suggested that the same procedures and practices could be used for the training aspects of ISO 9000 and ISO 14000 management system.

Therefore it can be concluded that ISO 9000 quality management system and ISO 14000 management system could be integrated or implemented separately. The

integration process depends on the business sector and production activities of a company.

Recommendations

The integration procedure for ISO 9000 and ISO 14000 management system may be a success but it may also be a long term project. It is a continuous process that must be reviewed for improvements and developments of new standards. Environmental sustainability has become a major issue in companies today and most customers require quality services and products from manufacturing industries. Most companies strive to produce environmental friendly products and this production plan may be achieved through the implementation of integrated management systems that consists of ISO 9000 quality management and ISO 14000 management systems. This is related to Company XYZ and ABC because they prefer to work with both systems due to the advantages of producing quality products and sound environmental management. Therefore the following recommendations are given:

- Company XYZ and Company ABC should conduct a general review of their ISO 9000 quality management system and ISO 14000 environmental management systems to determine the similar elements for both systems and avoid overlaps during the process of implementation.
- The policy statement, objectives and targets of ISO 9000 quality standard of Company ABC's and ISO 14000 environmental standard of Company XYZ should be expanded to include the requirements and mission statement for both systems. Since both companies utilize the same standard operating procedures, they could consider integrating the objectives and goals of ISO 9000 and ISO

14000 into one mission statement. Also the main objective of the policy statement for ISO 9000 and ISO 14000 is to provide employee welfare, customer satisfaction and develop quality products that will have minimum effects on the environment. Therefore Company ABC and Company XYZ should combine the requirements of ISO 9000 and ISO 14000 management systems into a single policy statement.

- Emergency preparedness and response is very important for the health and safety of workers. One of the requirements of ISO 14000 environmental management system is for companies to have a refined system in place for emergency preparedness and response. This will assist a company to prepare for fire emergencies, chemical explosions and fatal incidents from energized equipments. Therefore these environmental aspects should be integrated into the ISO 9000 quality management system of company ABC. This will facilitate safety and health practices and loss prevention activities at Company XYZ and Company ABC.
- The training requirements for ISO 9000 quality management system should also be expanded to include the requirements for ISO 14000 environmental management system. This could be achieved by encouraging employees to recycle all waste products from the production process, minimize the rate of hazardous chemical spills during production and reduce the use of energy in production activities. For example, old equipment that consumes excessive amounts of energy could also be replaced with new equipments. In conclusion, the process of integration for ISO 9000 and ISO 14000 management system at

company XYZ and Company ABC may be a long term project, but both companies will save time and money if some aspects of quality and environmental management are integrated. Also they will be able to fully comply with environmental and safety regulations that are guiding their corporation.

Recommendations for Further Research

Recommendations for further research can be conducted in the following areas.

- Further research could be conducted in other companies that have achieved the integration procedures for ISO 9000 and ISO 14000 management systems. A general survey should be conducted in these companies on the methods and significant strategies they used for integrating ISO 9000 and ISO 14000 management systems.
- Further research could be done in different organizational settings or industries. The research on the integration of ISO 9000 quality and ISO 14000 environmental management systems could be conducted and compared in groups of manufacturing industries, food industries and construction industries.
- A further study could be conducted on the perspective of certified external auditors of ISO 9000 and ISO 14000 management systems on the integration of ISO 9000 and ISO 14000 management systems.

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Appendix A

Protection of Human Subjects Consent Form

Consent to Participate in UW-Stout Approved Research

Title: A Comprehensive Evaluation of Integrated Management Systems at Company XYZ.

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Description:
The purpose of this study will be to identify the relationship between ISO 9000 quality management and ISO 14000 environmental management standards, as it relates to the safety and environmental protection-based internal standards that are in effect for Company XYZ and its acquired company.

The objectives of this research will include:

- Analyze the correlation as well as system-oriented differences between ISO 9000 environmental management system and ISO 14000 quality management systems being utilized at Company XYZ and its acquired company.
- Identify current practices for integrating ISO 14000 environmental management standards and ISO 9000 quality management standards into a company's activities.

Significance
Due to marketing and quality-based demands, industries are required to implement either ISO 9000 quality management systems or ISO 14000 environmental management systems into their different workplace activities. The purpose of these management systems is to ensure that industries produce quality products, reduce environmental pollution, increase safety practices and comply with federal regulations. Company XYZ is utilizing ISO 14000 environmental management system to comply with environmental regulations and its acquired company is utilizing ISO 9000 for its quality services. At present, both companies are merging together and there is the need to integrate ISO 9000 and 14000 to keep up with the reduction of environmental pollution and production of quality goods for customer benefits. As with any organization that is embracing a new management system, methods to determine improvements in safety procedures and consumer satisfaction must be considered before an integrated management system can be implemented. Therefore without both management systems, the company may not be able to comply with workers safety and health regulations, improve their environmental performance and produce quality products.

The following methodology will be used in this research:

- Conduct research on ISO 9000 and ISO 14000 systems and identify best practices for integrating both systems through the literature review.
- Perform individual interviews within Company XYZ and its acquired company that are ISO 9000 and 14000 certified.The purpose is to compare the different procedures for integrating ISO 9000 quality management system and ISO 14000 environmental management system. The partcipants will be selected based on the recomendations of the safety professional for Company XYZ. Participants will include environmental health and safety coordinators and top management staff that have certifications in ISO 9000 and ISO 14000 management systems. Participants will be interviewed with questions developed from the literature review on the requirements of ISO 9000 and ISO 14000 management systems. Responses will be recorded and notes will be taken for the questions asked. Data will be stored in a secured file cabinet.
- Based on the data collected from the individual interviews and literature reviews provided, recommendations regarding how to effectively integrate environmental and quality management systems for a company's benefit will be proposed to assist other organizations with good quality services, environmental and safety practices.

Risks and Benefits:

Benefits: The results from this research and interviews conducted may assist manufacturing industries with improving their safety practices, reducing workers injuries and ensuring quality control for products that are manufactured.
No risks have been identified.

Time Commitment:

The individual interviews will take 60 minutes to complete. Responses will be recorded and notes will be taken for every questions asked.

Confidentiality

"Your name will not be included in any documents. I do not believe that you can be identified from any of this information. This informed consent will not be kept with any of the other documents completed with this project."

Right to Withdraw

"Your participation in this study is entirely voluntary. You may choose not to participate without any adverse consequences to you. Should you choose to participate and later wish to withdraw from the study, you may discontinue your participation at this time without incurring adverse consequences."

IRB Approval

The study has been reviewed and approved by The University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the investigator or Advisor. If you have

any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.

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Statement of Consent

"By signing this consent form you agree to participate in the project entitled, A Comprehensive evaluation of Integrated Management System."

_____

Signature.....Date

_____

Signature of parent or guardian.....Date
(If minors are involved)

Appendix B

Interview Instrument

This research has been approved by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46.

Hello _____

I am conducting a research on the integration of ISO 9000 quality management and ISO 14000 environmental management system within Company XYZ and Company ABC. Thank you for allowing me to interview you on questions regarding ISO 9000 and ISO 14000 management systems.

Please note all of the information used will be kept confidential, no names will be used in the data collected. Thank you for your participation. I greatly appreciate your time.

Interview Questions

A comprehensive Evaluation of Integrated Management Systems at Company XYZ.

1. Is your company ISO 14000 (environmental management system) and ISO 9000 quality management system certified?
2. What are the basic elements of the systems?
3. Do you have mission statements or policy statements for ISO 14000 environmental management system and ISO 9000 quality management system?
4. Are there objectives and targets for measuring the requirements of ISO 14000 environmental management system and ISO 9000 quality management system?
5. Has your facility developed a plan for meeting these objectives?

6. Is awareness training a specific requirement for ISO 9000 quality management system and ISO 14000 environmental management system?
7. What is the procedure of documentation for ISO 9000 quality management system and ISO 14000 environmental management system?
8. a. What are the procedures for measuring conformance to quality productions and environmental management requirements?

   b. What are the procedures for measuring nonconformance actions?
9. What are the environmental aspects of your manufacturing processes?
10. Does your organization conduct management review for ISO 9000 quality management system and ISO 14000 environment management system?
11. Are there regulations for ISO 9000 quality management system and ISO 14000 environmental management systems that your organization must comply with?
12. What is your opinion on integrating ISO 14000 and ISO 9000 into a single system for a company?