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ISO 14000 and Environmental Management Systems

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ISO 14000 AND ENVIRONMENTAL MANAGEMENT SYSTEMS

Training Manual

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BLUEPRINT FOR ADDRESSING ISO 14001

Firms that may be affected by ISO 14001 should address the standard in an orderly fashion Many firms should have an environmental management system of some kind in place irrespective of ISO 14001 and reference to the standard is sensible in establishing or revising an EMS whether or not certification is contemplated in the near future

A six phase "blueprint" is suggested for addressing ISO 14001

Phase I	Understand the issue
Phase II	Compare the company environmental management system and ISO 14001
Phase III	Conduct a "gap' analysis to identify where the EMS falls short of ISO 14001
Phase IV	Evaluate the benefits and costs of certification under ISO 14001
Phase V	Implement ISO 14001 *(if indicated by the results of Phase IV)*
Phase VI	Conduct an initial internal audit of the EMS to assess compliance with ISO 14001

If the results of Phase VI are positive, the firm should be prepared for audit and certification A business with multiple subsidiaries or facilities will normally seek certification on a facility-by-facility basis

EXECUTIVE SUMMARY

In September 1996, a new international standard became effective that defines requirements for organization environmental management systems The standard is intended for voluntary use by companies and other organizations It was issued by the International Organization for Standardization (abbreviated as ISO) and is designated as ISO 14001 The ISO is an international organization headquartered in Geneva, Switzerland, with members representing the standard-setting organizations of 112 countries

ISO STANDARDS

The ISO has issued many international standards on technical matters It also has issued a series of standards on "quality" management that are designated as the 9000 series The ISO 14000 series, including ISO 14001, addresses environmental issues and builds on experience with the 9000 series standards Five standards in the 14000 series were issued in 1996

ISO 14001	Environmental management systems - Specification with guidance for use
ISO 14004	Environmental management systems - General guidelines on principles, systems and supporting techniques
ISO 14010	Guidelines for environmental auditing - General principles
ISO 14011	Guidelines for environmental auditing - Audit procedures - Auditing of environmental management systems
ISO 14012	Guidelines for environmental auditing - Qualification criteria for environmental auditors

Each of the standards above was developed primarily to facilitate the implementation of ISO 14001 ISO 14004 provides background information pertinent to the requirements of ISO 14001, and ISO 14010, 14011 and 14012 define procedures for audits under ISO 14001 Although additional ISO 14000 series standards may be issued on environmental labeling environmental performance evaluation, and life cycle analysis their issuance content and application are uncertain Hence at this time ISO 14001 is the focus of this ISO manual

SIGNIFICANCE OF ISO 14001

ISO 14001 is a useful guide for companies that want to establish an environmental management system (EMS) or improve systems currently in place The standard is receiving a great deal of attention because ISO anticipates that some companies will seek to have their environmental

management systems certified (or registered) as consistent with the standard's requirements A significant number of private sector and government organizations may give preference to, or buy only from, firms with environmental management systems certified under ISO 14001 For these and other reasons, many companies are closely examining what they must do to establish and maintain environmental management systems conforming to ISO 14001 In addition, many consulting firms and consultants are developing services to help companies with this process or to provide audits and certification

Firms in Egypt that export products or services have a special incentive to understand and address ISO 14001 because the first customer requests for certification are expected to come from developed countries In particular, firms and agencies in members countries of the European Community, such as Germany, the Netherlands, and the United Kingdom, are addressing the standard aggressively Forty-three percent of Egyptian exports are sent to EC markets Industrial products comprise about 86 percent of major exports from Egypt (petroleum and petroleum products, cotton yarn and textiles, certain foodstuffs, chemicals, and engineering and metallurgical goods), and the production processes involved have significant environmental impacts Hence priority is due for firms that produce industrial goods for export to the EC

REQUIREMENTS OF ISO 14001

The requirements for environmental management systems are defined in clause 4 of ISO 14001 The clause is just three printed pages long, and each provision should be carefully evaluated by those who may seek certification or wish to assist firms seeking certification or to conduct certification audits ISO 14001 is copyrighted by the ISO and copies may be purchased from the ISO or its ISO members

The requirements of clause 4 are specified in subclauses addressing policy planning, implementation and operation checking and corrective action and management review The primary requirements and their numbering are as follows

4 2 **Environmental policy**

a) appropriate to the nature scale and environmental impacts of activities, products or services
b) commitment to continual improvement and pollution prevention
c) commitment to compliance with relevant environmental laws and requirements subscribed to
d) framework for setting and reviewing objectives and targets
e) documented implemented, maintained and communicated
f) available to the public

CHAPTER 1
TRAINING MANUAL ROAD MAP

This Training Manual has been prepared to serve as an introductory information resource participants can use as needed in the workplace The manual includes additional information not covered in the training session Further, information in the manual is presented at a greater level of detail and in a different order than the information presented during the training session

The primary purpose of this manual is to provide background information on ISO 14001 and surrounding issues It does not provide an all-encompassing set of solutions for ISO 14001 certification but rather functions as a tool for those interested in gaining a base of knowledge on environmental management systems, ISO 14001 requirements and how the standard may impact government and industry It is useful for business owners and plant engineers, public sector and agency representatives and consultants specializing in environmental management and/or business process reengineering

The remaining portion of the document is structured as follows

- ***Chapter 2 Overview of Environmental Management Systems and ISO 14000*** introduces how environmental management has risen in strategic importance for companies, describes the driving forces for adoption of environmental management practices previews the components and objectives of an EMS presents the evolution of ISO 14000, and specifies why ISO 14000 is important for Egypt

- ***Chapter 3 Requirements of ISO 14000*** provides a detailed walk-through of the standard s components and briefly discusses how ISO 14001 is linked to other international standards on environmental management

- ***Chapter 4 Blueprint for Addressing ISO 14000*** describes a six-phased methodology for moving forward from understanding the basic issues through a cost-benefit assessment and on to final EMS certification if a firm so desires

- ***Chapter 5 The Impacts of ISO 14000 on Government*** presents an overview of how the standards will likely evolve and what that could mean for Egyptian government bodies

- ***Chapter 6 The Impacts of ISO 14000 on Industry*** presents the potential impacts of ISO 14000 on Egyptian industry including trade and export issues and cost implication of ISO 14001 certification

- ***Chapter 7 Closing Remarks*** offers some final thoughts on environmental management systems and ISO 14001 with a focus on the key challenge of changing culture and attitudes

The appendices provide additional sources of information including copies of the standard and mini case studies on implementing an environmental management system

CHAPTER 2
OVERVIEW OF ENVIRONMENTAL MANAGEMENT SYSTEMS AND ISO 14000

Environmental management is a systematic approach to environmental care in all aspects of business Implementation of this approach is normally a voluntary process Companies are however not only assessing benefits of adopting environmental management in financial terms (savings production efficiency market potential) but also the risks of not adequately addressing environmental aspects (accidents inability to obtain bank credit and other investment money loss of markets) [1]

2 1 INTRODUCTION

The future health and well-being of people and the environment depends on what people do today Unless people make drastic changes to the way they live the environment on which they depend for survival will continue to deteriorate Industry has long been considered the primary target of efforts to slow environmental degradation Business leaders now understand the value in raising the environmental function to a strategic level of importance For this reason and others ISO 14000 has been developed to bring clarity to developments in this area around the world

2 1 1 Industry as a Source of Environmental Degradation

Industry can be a source of some of the most serious local and international environmental problems These problems can have rapid or gradual impacts on human health affecting entire neighborhoods cities or regions of a country Pollution can travel through the air rivers and groundwater from one country to another having severe effects on the quality of life of people living downwind or downstream from the source of the pollution

Many in the business community have realized that the current patterns of production and consumption are unsustainable At the same time enterprises have realized that in order to stay in business they will increasingly have to integrate environmental considerations into their business strategy and long term planning This is essential if they are to use business

[1] Sections 2 1 through 2 3 of this chapter are partly derived from The United Nations Environment Program s manual Environmental Management System Training Resource Kit

opportunities, compete with other businesses which take environmental considerations into account, and provide for interested parties/stakeholders with increasing environmental expectations

2 1 2 Integrating the Environmental Management Function into Business

An environmental strategy and policy is, of course, a starting point for businesses to integrate environmental aspects into their operations Tools to ensure systematic attention and the achievement of policy and objectives include, among others, environmental management systems and environmental auditing These help to control and improve the environmental performance in line with the company environmental policy Additional tools are also under development such as environmental life cycle assessment methodologies, environmental labeling programs and performance evaluation methods

2 1 3 ISO Definition and Role in Global Environmental Management

Activities on standardization and certification have therefore started at both national and international levels The International Organization for Standardization (ISO) is a global federation headquartered in Geneva, Switzerland whose members are 112 national standard-setting bodies The United States is represented by the American National Standards Institute Egypt is represented by the Egyptian Organization and Quality Control (EOS) located in Cairo ISO members represent 95% of the world's industrial production The group is a non-governmental organization which was established in 1947 to develop worldwide standards to improve international communication and collaboration, and to facilitate the international exchange of goods and services ISO does much of its work through technical committees of members (identified by "TC' and a number), which develop international voluntary standards for industry ISO has developed the ISO 14000 series on environmental management and specifically the ISO 14001 standard which specifies the basic components of an environmental management system

2 2 DRIVING FORCES FOR ADOPTION OF ENVIRONMENTAL MANAGEMENT PRACTICES

Environmental management can help companies to approach environmental issues systematically and to integrate environmental care as a normal part of their operations and business strategy Some major driving forces for companies in this context are

- environmental legislation and enforcement

- an increasing volume of policies, laws and regulations and their enforcement

- stakeholder pressure, awareness, image, and reputation
  - the increasing pressure of third parties such as financial institutions and insurance companies,
  - pressures from shareholders and employees,
  - attention from environmental interest groups, consumers and their organizations and the general public (in the locality),
  - growing awareness in the business community concerning the environment (trade associations),
  - corporate image (public, authorities),
  - some of the impacts on business of accidents and failures in environmental management controls (negative publicity, damage to corporate image),

- competitiveness
  - growing awareness that the environmental aspects of products and processes may play a role in international competitiveness,
  - the fear of international trade barriers formed bv different standards for environmental performance,

- finance
  - impacts on business of accidents and failures in environmental management controls (liability issues, cost of remediation, business interruption),
  - the introduction of economic (financial) instruments such as pollution charges to stimulate pollution reduction,
  - incentives from government (licensing), banking (more attractive credit facilities) and insurance companies (more attractive premiums)
  - cost savings through cleaner production and eco-efficiency

2 2 1 Environmental Legislation and Enforcement

Governments at all levels are strengthening the control of industrial activities and increasing the penalties for violation of environmental regulations and permits Judiciaries in developing countries in particular have in recent years become very 'green indeed New and more serious civil and criminal penalties are imposed on the violation of environmental permits and laws particularly if the violation leads to a risk to health or to the long term damage of natural resources such as groundwater or soil quality Enterprises are required to carry out the monitoring necessary to prove that they are in compliance with their permits and with applicable legislation Local police are being trained to identify violations of environmental laws

Civil or criminal liability for violations of laws and administrative regulations is becoming more severe and the basis of liability is being broadened in many countries to cover any environmental

damage without evidence of fault ("strict" liability) The related business risks include the loss of freedom to operate or produce and the imposition of civil or criminal penalties directly on top management

The authorities may increase the level of control and be less agreeable to negotiation and compromise with an enterprise which is known to have problems complying with environmental laws and permits, than with an enterprise with a good compliance record

Apart from criminal and civil liabilities for damages from accidental or other pollution, enterprises in a growing number of countries are also facing emergency abatement notices, where authorities order them to stop production until the emergency has passed In some cases, industries have been forced to relocate or to make substantial capital investments in new pollution control equipment In other cases, enterprises have been forced to pay for cleaning up the problem

The shift from command-and-control, or CAC, toward more market-based regulatory instruments (such as pollution charges, emissions trading, etc) is providing industry with greater freedom in meeting requirements which creates the need for more accurate and useful information on environmental impacts This approach generates greater opportunities for cost savings if decision makers have the necessary analytical tools to determine optimal strategies

2 2 2 Stakeholder Pressure, Awareness, Image, Reputation

Enterprises are expected to be good citizens and there is growing peer pressure to maintain certain minimum standards and an accepted level of vigilance to guard against environmental problems Many people believe that an enterprise with poor environmental performance cannot possibly produce high-quality products Consumers increasingly favor products which are produced under conditions which are viewed as less burdensome on the environment

Other stakeholders such as financial institutions and insurance companies increasingly evaluate the environmental performance of an enterprise in the course of the overall evaluation as a potential or an existing client before further services are rendered or favorable conditions can be negotiated

An important 'customer' of every enterprise is the local community where it operates The most successful companies in industry today take the view that they must 'earn the right' to operate in each community where they are present These enterprises raise the standards of environmental performance for their competitors

Enterprises that disregard the concerns of local populations with respect to pollution sometimes find their applications for permits and their entrance gates, blocked by protesters In one extreme case, a crowd of angry local citizens in Thailand actually attacked and burned a factory

to the ground over an incident of pollution of drinking water Usually, however, opposition results in costly delays in obtaining planning and construction permission and difficulties with regulatory authorities

Environmental and consumer groups are becoming more influential in many countries All of these can affect an enterprise's image throughout the country and abroad, as well as its ability to sell goods and obtain loans or capital investment Environmental disputes not only can harm an enterprise's reputation, they can turn the attention of managers and workers away from their main responsibilities, they can lower morale, and they can bring the enterprise into a state of uncertainty and confusion

"Clean' companies are frequently perceived as good neighbors and responsible firms that inspire the confidence of authorities and customers They are more likely to be consulted by policymakers who are preparing new legislation They may have a stronger negotiating position with the permit authorities in case of accidents or the agreement of pollution control or environmental improvement plans

As the environmental performance of the enterprise improves, it can publicize its progress to increase its value and possibly its market share For example, some companies have public environmental policies and action plans They document their progress toward reducing pollution and waste and towards meeting their environmental goals and targets Other enterprises publicize their use of recycled materials or of cleaner technology Others develop products which use recycled or biodegradable materials, or meet customer demands for less hazardous wastes, and market their products as ' green "

2 2 3 Competitiveness

An enterprise can lose its competitive position in domestic as well as international markets by failing to pay attention to environmental issues The most obvious way is through the higher costs which can come from wasted materials and energy Exposure to wastes and pollution may cause injury or illness in the workers or in the local community

Today in the United States the European Union and other affluent areas of the world enterprises must assume environmental responsibility and in many cases accept liability for the environmental effects of their actions as a matter of basic business practice Until recently this trend has not applied to enterprises in the emerging and industrializing economies But rapidly evolving global business practice and international agreements are set to change this Enterprises with serious environmental liabilities may be driven out of business

Green consumerism is now a significant market force Firms that sell to consumers frequently demand that their suppliers meet newer tougher product environmental criteria Such demands can range from assurances that the products supplied meet all legal requirements in the country to

which they are exported to demands that suppliers meet certain minimum environmental criteria in their own business and manufacturing practices High standards for the quality of a product may mean that a supplier must impose equally high standards on the production process Some companies may impose process standards directly on their suppliers, and monitor compliance with their standards

Laws may be passed by parliaments many thousands of kilometers away which have no direct jurisdiction over the enterprise but which — by banning a product or product component — can put an enterprise out of business As many formerly acceptable substances are being regulated out of products because of their health or environmental implications, suppliers of products containing such substances are forced to find alternatives or face loss of markets Domestic or foreign competitors may be gaining a competitive advantage with consumers by selling the environmental "friendliness" of their products or production processes In this case an enterprise may be obliged to prove a certain level of environmental compliance to the public if it wants to remain competitive

The owner or manager of an enterprise should be concerned with environmental management for one fundamental reason poor environmental results will decrease the value of their activity and undermine their competitive advantage

At first glance environmental concerns may seem irrelevant to companies operating in today s emerging market economies, whose main priority is survival and rapid liquidity This seems even more true for small and medium-sized enterprises who sell products or services to a mainly national market

There is a growing web of national and international standards and requirements which enterprises will have to comply with if they want access to new international markets or even if they want to maintain good relations with the enterprises and countries to which they already are exporting their products

In the very near future enterprises may not be able to export products that are dangerous to the environment (low biodegradability containing dangerous substances etc) Or that are made under unacceptable' environmental conditions Efforts have been made to reduce emissions across many industries for example and the list of regulated products and wastes is steadily growing

Enterprises in emerging economies soon will have to play by the same rules as their counterparts in the U S and the European Union (EU) To be able to sell their products in the U S and the EU they will have to demonstrate that they follow accepted international environmental practices

Some governments are adopting legislation stimulating (but not requiring) enterprises to audit the environmental impacts of their activities and to reduce wastes or improve their technologies

Others, such as the EU, have adopted broad requirements for environmental management and audit schemes ISO has developed a standard (among others) for environmental management systems The new World Trade Organization (WTO) will pay increasing attention to the environmental aspects of trade in the coming years, as environmental standards and business practices become more international

Environmental laws are becoming more harmonized in all parts of the world The free trade areas such as the European Union and North American Free Trade Agreement, have common structures for environmental regulation, compliance and policing The emerging economies in South America, Africa, Asia Eastern Europe and the Newly Independent States of the former Soviet Union will be asked to meet the same standards if they wish to export to these regions

Enterprises around the world also will be subject to an increasing number of international environmental conventions in the very near future For example

- Traders in wastes must comply with the Basel Convention on the control of trans-boundary movements of hazardous wastes and their disposal

- Energy enterprises in Europe will have to comply with the limits on sulfur emissions, nitrogen oxides and volatile organic compounds under the Convention on long-range transboundary air pollution, and

- Enterprises selling chemicals to the EU will have to comply with regulations on the import, packaging and labeling of hazardous chemicals

At the production stage, the technical improvements in environmental performance can sometimes be developed as new products for new markets Existing products may benefit from environmental sensitivities in other countries and find new markets

Products that are more responsive to the environmental sensitivities of customers may have an important competitive advantage over those of competitors who do not attach importance to these considerations particularly if the price difference is reasonable The German market is practically closed to producers of chlorine-bleached paper for example although the product itself is virtually identical to paper which is bleached without chlorine

An enterprise without major environmental problems has staff who are free to concentrate on their main tasks without fear of major disruption from accidents or public protests about the environmental impacts from the enterprise s activities The avoided burden and cost of disrupted operations and low staff morale should not be underestimated

2 2 4 Finance

Enterprises which find ways of reducing or even eliminating pollution, waste and energy consumption can bring about important cost savings, and thus be more competitive Common cleaner production opportunities are found in areas such as energy efficiency, emission reductions, recycling or recovering value from waste, minimizing raw material usage, etc The success of pollution prevention efforts has driven companies to take a broader, more inclusive approach to environmental management with an emphasis on improved integration of business procedures Hence, companies are approaching environmental decision-making from a more strategic perspective This means incorporating both short-term and long-term goals into the environmental decision making perspective

This behavior of enterprises is often encouraged by economic incentives such as taxes or levies on emissions

The globalization of the economy has increased investor and financial pressures on management Lenders have become more sensitive to environmental issues and are incorporating such issues into lending decisions For example, lenders are asking for verification that plants under construction or other new establishments will not create environmental problems that would lower their value as investments An enterprise with lower environmental risks can obtain project financing more easily at more favorable conditions, and insurance at lower costs

2 3 ENVIRONMENTAL MANAGEMENT SYSTEMS

Many companies therefore try to achieve and demonstrate sound environmental control and active management of their environmental performance In many companies there is already some tradition of performing environmental "audits" These investigations although a useful tool in environmental management cannot provide the assurance that the company environmental performance meets and will continue to meet the requirements of the company environment policy (including legislation) It is now accepted that a better approach is to develop implement and maintain a well-structured EMS integrated with overall management activity and addressing all aspects of desired environmental performance

The main objectives of an EMS are to

- Identify and control major environmental impacts
- Identify environmental opportunities,
- Identify relevant environmental regulatory requirements

- Establish a sound environmental policy,
- Set priorities, determine objectives and work toward their achievement, and
- Monitor performance and evaluate the effectiveness of the system

At present, there is worldwide attention to environmental management systems in companies An EMS offers a structured and systematic method to incorporate environmental care in all aspects of business The aim is not only to comply with environmental regulations, minimize the (financial) risks of liabilities and reduce the costs of operations, but to improve the environmental performance continuously in order to strengthen corporate image and gain competitive advantage In 1985 the concept of EMS was first introduced in Europe (in the Netherlands) The concept is now firmly established in western Europe and is receiving increasing attention in Central and Eastern Europe, Asia and South America as well as in the U S and Canada Governments around the world adopt EMS as an important management tool, and companies make EMS an integral part of their business strategies

During the development and implementation of their EMS and also during the application of the concepts of environmental auditing and other tools many companies encountered the need for more clarity on the details of EMS and auditing concepts Activities on standardization and certification therefore started at both national and international level In several countries national standards have been developed, and the ISO has developed international standards for environmental management systems

2 4 EVOLUTION OF ISO 14000

ISO 14000 has attracted interest from industry international organizations and governments around the globe Both policy-makers and the business community regard the standards as a key component of a new paradigm for cooperation between regulators and industry This realization seems to have resulted from a growing awareness that the fragmented reactive approach to environmental management in the past has not produced optimal results Businesses are realizing the value of integrating their compliance procedures for each regulation into a broader system Compliance problems can often be linked to system problems such as inadequate training lack of responsibility at the right level inadequate data and other related causes An effective EMS eliminates these pitfalls The evolution of the EMS has been largely shaped by the concept of sustainable development and the success of the ISO 9000 quality standards

2 4 1 The Concept of Sustainable Development

In Western Europe and the U S , and increasingly worldwide, the approach to controlling or influencing the impact of industrial activity on health and the environment has undergone a significant transition Initially (in the 1970s and early 1980s in Europe and the U S), efforts concentrated on the development of legislative and regulatory structures together with enforcement through an environmental permit structure The response of industry was largely reactive Industry invested in "end-of-pipe" technological solutions to ensure compliance with the ever increasing regulations and the environmental conditions attached to operating permits

The international process of integrating business and environmental aspects started after the 1972 United Nations Conference on Human Environment when an independent World Commission on Environment and Development (Brundtland Commission) was created This Commission took up the task of re-assessing the environment in the context of development and published its report *Our Common Future* in 1987, which is now considered to be a landmark report This report introduced the term "Sustainable Development," and urged industry to develop effective environmental management systems The report was adopted by more than fifty world leaders, who called for a major conference for further discussion and decisions on actions

Sustainable development refers to a development approach for the entire globe A sustainable society is able to satisfy its economic and social needs without jeopardizing the prospects of future generations Experts believe that the present society uses the earth s resources and degrades the environment in ways that can not be supported indefinitely Sustainable development means balancing economic growth with environmental protection Sustainable development can involve implementing pollution prevention, reducing the use of toxic and waste substances and slowing the depletion of nonrenewable resources

The UN therefore decided to organize the UN Conference on Environment and Development (UNCED) also referred to as the Earth Summit held in Rio de Janeiro in June 1992 Government leaders, business leaders and private groups met to consider how the world can move towards sustainable development The outcome of the Earth Summit conference was *Agenda 21* a "global consensus and political commitment at the highest level' on how governments enterprises non-governmental organizations, and all sectors of human life and action can co-operate to solve the crucial environmental problems of our time which threaten human life and society

The Secretary General of UNCED wanted to ensure that business would participate in the process of discussion and decision making He therefore asked a leading Swiss industrialist to be his principal adviser on business issues This industrialist performed this role by establishing the Business Council on Sustainable Development (BCSD) This BCSD published its important report *Changing Course*, but also decided to approach the ISO to discuss the development of environmental standards

In parallel with these developments, the International Chamber of Commerce (ICC) developed the Business Charter for Sustainable Development in 1990 which was launched the following year at the Second World Industry Conference on Environmental Management (WICEM) The ICC Business Charter contains 16 principles of sound environmental management

In another initiative, the chemical industry, concerned about its deteriorating public image, launched its Responsible Care Programme, beginning in Canada in 1984 and now a condition of membership of the Chemical Manufacturers Association Its approach is based firmly on the principles of total quality management, as well as assessment of actual and potential health, safety and environmental impacts of activities and products, and the provision of information to interested parties

Since the mid-80's in the west and more recently in Central and East European countries, industry is taking a more pro-active stance and is recognizing that sound environmental management on a voluntary basis can enhance corporate image, increase profits and competitiveness, reduce costs and obviate the need for further legislative measures by the authorities Evidence of this is seen in the move towards "green products' with the increasing use of "life cycle analysis" - looking at the environmental impact of a product "from cradle to grave ' It has also produced a number of environmental management tools such as environmental auditing and environmental management systems These tools largely started as voluntary in-company initiatives but are now affecting the policies and regulatory approach of the European Union (EU), governments and the risk management policies of national and international banks and insurance companies

2 4 2 Success of the ISO 9000 Standards

ISO 14000 is largely a by-product of its predecessor ISO 9000 The ISO 9000 series established standards for quality management and product quality assurance which companies all over the world are striving to attain Over 45 000 companies worldwide are currently registered to this standard Compliance with the standard has become an important strategic business factor in remaining competitive in today s marketplace Using ISO 9000 registration activity as a benchmark quality appears to be at the forefront of business concerns heading into the next century

If quality is important to business the issue of environmental performance — how a business relates to the environment — is no less so To a large extent the issue of the environment has become prominent because of the ever-widening spectrum of stakeholder parties who monitor environmental performance and are seeking a corporate commitment for improvement ISO 14000 has been developed largely due to the growing need for improved business environmental performance

The 9000 series standards do not dictate how a company should manage its business, but, like ISO 14000, determines if important management systems are in place and fully operational The similarities between the two standards include

- the primary emphasis in not on technical but on organizational solutions,
- the management of the whole process is the subject of the systems,
- various elements of the production chain have to cooperate to achieve the overall goal of the system,
- the development of the system is motivated more by external rather than internal incentives,
- many of the system elements are identical (policy, corrective mechanisms, internal control, information as a basis for control), as well as many of the instruments (policy statements, reporting, audits, measurements, records)

The links and broad technical correspondences between ISO 14001 and ISO 9001 are presented in Appendix A (Annex B of the ISO 14001 document)

The elements of the 9000 management system include policies for quality objective achievement, process and improvement monitoring and system review ISO 9000 is concerned solely with *quality* management systems (QMS) that emphasize product quality, while ISO 14000 is concerned primarily with *environmental* management systems (EMS) that emphasize industrial discharge control However because of the similarities between the two systems firms that have already been certified under the ISO 9000 series will likely be able to adopt ISO 14000 more readily (and with less capital expenditure) than others

The use of voluntary international standards for trade relations is becoming more and more widespread The General Agreement on Tariffs and Trade (GATT) officially favors the use of international standards in its agreement on Technical Barriers to Trade (TBT) Also standards development at national and European levels are affecting industry worldwide the main developments being the recognition of the British Standard for EMS (BS 7750) in many countries and the implementation of the Eco Management and Audit Scheme (EMAS) in the EU Certification under the ISO 14001 standard is accepted by BS 7750 and EMAS standards

2 4 3 ISO 14000 Approval Status

A new ISO technical committee (TC207) was established to develop the ISO 14000 standards, and six international subcommittees plus a working group" were set-up SC1 Environmental Management Systems, SC2 Environmental Auditing and Related Environmental Investigations,

SC3 Environmental Labeling, SC4 Environmental Performance Evaluation SC5 Life-Cycle Assessment, SC6 Terms and Definitions, and WG1 Environmental Aspects in Product Standards Most of these subcommittees have their own international working groups Furthermore, most ISO members have parallel national committees, referred to as Technical Advisory Groups or TAGs, which have their own "SubTAGs" with subordinate "Task Groups '

TC207 met in Toronto in June 1993, in Australia in May 1994 and in Oslo in June 1995 At the meeting in Oslo, five draft international standards were approved by the committee and submitted to the full ISO membership for approval subject to voting that ended in February 1996 These status of these standards is presented below

ISO 14001 Environmental management systems — Specification with guidance for use, laying out the basic framework for adequate environmental management systems

Status Passed, published and available September 1996

ISO 14004 Environmental management systems — General guidelines on principles, systems and supporting techniques

Status Passed published and available September 1996

ISO 14010 Guidelines for environmental auditing — General principles

Status Passed published, and available November 1996

ISO 14011 Guidelines for environmental auditing — Audit procedures — Auditing of environmental management systems

Status Passed published and available November 1996

ISO 14012 Guidelines for environmental auditing — Qualifications criteria for environmental auditors

Status Passed published and available November 1996

2 5 WHY IS ISO 14000 IMPORTANT FOR EGYPT?

Globalization has made developing countries especially export-oriented ones like Egypt, highly sensitive to international market access issues Companies are concerned that if they are not certified to ISO 14000, they will lose existing or potential markets This fear stems from business experience with the ISO 9000 standard for quality management systems that became an

inherent market obligation in certain sectors ISO 9000 certified firms often make certification a condition for supplier firms, creating a multiplier effect Such a condition can be helpful if the customer firm can thus get a quality assurance or performance specification as has always been the intention of the ISO series Thus, ISO 14000 can improve the competitiveness of national Egyptian firms in a global marketplace Firms that are serious about adopting environmental management systems and "continually improve," as required by ISO 14000 may gain a competitive advantage as cleaner production continues to translate into production efficiencies and economies These market dynamics could well come into play in the near term and persuasively demonstrate that environmental management systems can produce positive business as well as environmental benefits

The government of Egypt is also in a position to use ISO 14000 as a way to reinforce the current effort to strengthen the country's environmental programs Some of the developers of ISO 14000 argued that it might provide some alternatives to "command-and-control" (CAC) regulation For example by allowing firms to self-register themselves (or register by third party) under the ISO 14000 series, and conduct self-monitoring of their practices, government might be able to focus limited enforcement resources on less environmentally committed industries and thereby broaden prospects for compliance in the regulated community "Enforcement discretion" is a basic compliance strategy employed by regulatory agencies worldwide

CHAPTER 3
REQUIREMENTS OF ISO 14000

3.1 INTRODUCTION

This chapter describes ISO 14001, the specification standard of the ISO 14000 series, and ISO 14004, the guidance standard of the environmental management system Specified components for the EMS are discussed, and links to other international standards are presented

The primary use of ISO 14001 is for third-party registration, self-declaration and contractual purposes are likely to be secondary This standard contains the requirements against which companies will be audited for registration purposes and self-declaration purposes

ISO 14004 the guidance standard, offers examples and descriptions related to the development and implementation of environmental management systems and principles It also discusses how to coordinate the environmental system with other management systems ISO 14004 is a management tool intended for voluntary rather than mandatory use

The standard is applicable to all types of organizations and is written to accommodate diverse geographical cultural, and social conditions It applies to environmental aspects which the organization can control and over which it can be expected to have an influence As mentioned previously it does not specify environmental performance criteria For this reason, registration does not guarantee that a particular facility has achieved the best possible environmental performance, only that it has developed an EMS based on the specifications of ISO 14001 Although continual improvement refers to the management system and not environmental performance it is expected that improved environmental management will lead to improved environmental performance

Annex A of ISO 14001 emphasizes that the purpose of an EMS is to provide an organization with a process with which to achieve and control a desired level of performance The actual level of performance is driven by economic regulatory and other circumstances Although the standard does not guarantee optimal environmental outcomes an effective EMS can improve long term environmental performance To achieve performance objectives ISO 14001 states that the EMS should encourage organizations to consider implementation of best available technology where appropriate and where economically viable However the use of best available technology is not a requirement of ISO 14001

The standard does not address occupational health and safety management requirements However the standard does not prevent organizations from incorporating health and safety issues

into their EMS programs Organizations may adapt an EMS from existing environmental, health and safety programs or ISO 9000 system ISO 14001 does not require companies to establish an EMS independent of existing management systems

When an organization registers to ISO 14001 or self-declares compliance it declares that a specific EMS complies with the standard The EMS can cover either the entire organization a specific facility or operating unit, or several facilities It is the organization s responsibility to determine the scope of the EMS and to which activities, process and products it applies

3.2 REQUIREMENTS

Clause 4 1 of ISO 14001 presents requirements for an EMS This section requires companies to establish and maintain an EMS that includes all requirements described in the standard ISO 14004 provides a five-step process for establishing an EMS

- environmental policy,
- planning,
- implementation and operation,
- checking and corrective action, and
- management review

3 2 1 Environmental Policy

Clause 4 2 specifies that the first step in designing an EMS is to define an environmental policy and ensure commitment to it ISO 14001 defines an environmental policy as a statement made "by the organization of its intentions and principles in relation to its overall environmental performance " This policy provides a sense of the organization s direction and commitment to the environment and a framework for setting goals and objectives

Example of policy statements include

- Company X is committed to protecting the environment and the health and safety of all its employees and customers

- Company X's plants and products comply with all applicable governmental standards as well as Company X s internal standards and policies '

- ' Company X is dedicated to implementing methods and strategies for preventing pollution, reducing waste and conserving resources "

For companies without an environmental policy, the most important area to focus on will be regulatory compliance or areas of potential environmental liability The policy can refer to guiding environmental principles developed by industry associations, government, and public interest groups Environmental policy can consider the organization's mission, core values the requirements of interested parties, and specific local or regional conditions and will respond to financial and business requirements This policy is usually set organization-wide by the owners board of directors, or other governing body, and top management is responsible for formulating implementing, and modifying the policy It is important that the policy be clear, undergo periodic review and be revised to reflect changing conditions The guidance standard advises organizations that haven't developed a policy to begin where they can achieve obvious benefits For example, organizations can focus on regulatory compliance, identify and limit sources of liability, or identify more efficient ways to use materials and energy

ISO 14001 requires that all policies

- be appropriate to the nature, scale, and environmental impacts of the organization's activities, products and services,
- include a commitment to continual improvement,
- include a commitment to prevention of pollution,
- include a commitment to comply with relevant legislation regulations, and other requirements to which the organization subscribes,
- provide a framework for setting and reviewing environmental objectives and targets,
- be documented, implemented maintained and communicated to all employees and
- be made available to the public

Compliance pollution prevention and continuous improvement provide the foundation for EMS as specified bv the standards ISO 14001 registration is not a substitute for but instead is complementarv to compliance with national laws and regulations Pollution prevention in the context of ISO 14001 is defined as the use of processes practices materials or products that avoid reduce or control pollution which mav include recycling treatment process changes control mechanisms efficient use of resources and material substitution This definition offers organizations flexibility in interpreting the kinds of pollution methods which can be used to fulfill requirements Finallv the ultimate purpose of improving the system is to improve the environmental performance however the standard targets process rather than performance

Organizations can declare compliance with requirements which include internal polices such as those for health and safety existing audit program standards, corporate emergency response

policies and others Effective policy statements can be general but should be presented in statements which can be translated into clear objectives and measurable targets

Policies require commitment from the top management of the organization Without such commitment, policies lose value It is the role of top management to communicate the environmental policies and its commitment to them to all employees The message must make the point that achieving the policy is the responsibility of every member of the organization To generate support for the policy, management may offer rewards for achieving environmental objectives

3 2 2 Planning

The planning phase has five steps

1 Identify environmental aspects of the organization's activities, products and services that it can control and influence

2 Determine which are associated with significant environmental impacts

3 Identify and maintain access to legal and all other requirements that apply to the environmental aspects of the activities, products and services

4 Establish objectives and targets

5 Establish the EMS

Step 1 Environmental Aspects

Clause 3 3 of ISO 14001 defines environmental aspect as an ' element of an organization s activities products and services which can interact with the environment and adds that a significant environmental aspect is an environmental aspect that has or can have a significant environmental impact '

The specification standard in clause 4 3 1 requires that the organization establish and maintain an up-to-date procedure to identify the environmental aspects of its activities products and services There is a limit to the aspects which the organization can control If an organization does not have control over the environmental impacts caused by customer use then it would not consider them in its EMS It is possible to focus on environmental aspects by working back from regulatory and legal requirements or legal and business exposure that affects the organization s activities It is also possible to focus on products and services that change the environment Choices include activities that generate air emissions, water releases, contamination of land, solid

waste or any use of raw materials and other natural resources Companies can also examine the results of environmental risk assessments, any information, if available, about previous environmental incidents, and all existing environmental management practices

The process of identifying environmental aspects encourages employees to broaden their perspective on environmental impact issues The analysis can involve the use of life cycle methodology operations that may not have been considered "environmental " such as research and design (R&D) (environmental considerations of product design), purchasing (evaluating alternative raw materials), or office operations (housekeeping and recycling) There are also environmental aspects in planning for new construction projects or modifications to existing projects The process of identifying environmental aspects is ongoing and requires up-to-date information

Step 2 Environmental Impacts

Impacts are defined in ISO 14001 as "any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products and services " While aspects are interactions with the environment, impacts are the changes in the environment resulting from that interaction ISO 14004 notes this cause and effect relationship The aspect is the cause, the environmental impact is the impact For example, an aspect is air emissions, its impact is the increase in the level of the emission in the environment of the plant The guidance standard suggests a four-step procedure for identifying aspects and impacts

1 Select an activity or process
2 Identify all possible environmental aspects of the activity or process
3 Identify potential or actual impacts associated with the aspect
4 Evaluate significance of impacts

To evaluate significance, the guidance notes the following factors

- the scale of the impact
- its severity,
- the probability of its occurrence and
- the duration of its impact

The process for identifying environmental aspects should consider normal operating conditions and foreseeable emergency situations

Step 3 Legal and Other Requirements

Clause 4 3 2 of ISO 14001 requires organizations to be able to track the legal and other requirements that apply to the environmental aspects of its activities, products and services This includes requirements associated with an activity and those related to products and services Other requirements can include industry codes of practice, nonregulatory guidelines and agreements with public authorities (consent decrees) It can also include internal requirements such as supplier and contractor requirements and pollution prevention programs In addition it can include international agreements, such as environmental treaties, or international guidelines such as the 16 principles of the International Chamber of Commerce's Business Charter for Sustainable Development

Step 4 Objectives and Targets

Clause 3 7 defines an environmental objective as an "overall environmental goal, arising from the environmental policy that an organization sets itself to achieve, and which is quantified where practicable " The primary requirement (ISO Clause 4 3 3) is to "establish and maintain documented environmental objectives and targets at each relevant function and level within the organization ' Objectives and targets can apply across the organization or on a site-specific or activity-specific basis Overall objectives are then linked to specific targets for every level of the organization An overall objective of a 50% reduction in wastewater may translate into specific reduction targets applicable for each operation or each plant

Objectives are long-term goals and targets are short-term steps which move forward in achieving an objective Targets should be specific measurable and have specific timeframes The following provides examples of objectives and targets

- Objective reduce use of chemical solvents and substitute biodegradable cleaners
- Target by the end of 1997 reduce use of chemical solvents 80% versus 1995 total chemical solvent usage

- Objective reduce waste produced per quantity of finished product
- Target by the end of 1998 reduce waste 10% versus 1995 total yearly waste

- Objective reduce air pollution
- Target by the end of 1998 reduce CO emissions 20% versus 1995 total CO_2 emissions

- Objective increase recycling
- Target by the end of 1997 increase the use of recycled material in packaging 50% versus the amount of recycled material in packaging in 1995

- Objective increase employee training and awareness of environmental issues

- Target by the end of 1997, increase the number of environmental training hours per employee 50% versus hours trained in 1995

The ISO 14004 guidance document suggests that organizations enlist the help of those employees responsible for achieving the objectives and targets to assist in developing them and also to consider the views of interested external parties

Organizations can also use the following concepts

- *Environmental Performance Evaluation (EPE)* Specific measures of performance include

  - waste produced per quantity of finished product
  - percent of waste recycled
  - specific quantities of pollutants
  - acres of land area set aside for wildlife habitat
  - number of regulatory violations

  These indicators can create the basis for an ongoing environmental performance evaluation process that can provide useful input to the EMS

- *Best Available Technology* ISO 14001 does not require organizations to use best available technology where economically viable (EVABAT) However, the standard offers EVABAT as an option "where economically viable, cost effective and judged appropriate by the organization "

- *Environmental Cost Accounting* According to the standard an organization "shall consider financial, operational and business requirements " This does not mean that ISO 14001 requires the use of environmental cost accounting methods to track the costs and benefits of environmental performance (i e pollution control waste and disposal) However, the organization is free to use these techniques if it finds them useful

- *Pollution Prevention* The standard specifically requires an organization to set objectives and targets for the prevention of pollution in line with policy

Step 5 *Environmental Management Program*

According to Clause 4 3 4 the organization must

- designate responsibility for achieving objectives and targets at each relevant function and level

- provide the means of fulfilling the objectives and targets, and
- designate a time frame within which they will be achieved

The EMS specifies the who, what, how, and when of the environmental management function for an organization It can be divided into individual processes and procedures applicable to sites and facilities within a site The ISO 14004 guidance standard emphasizes that employees at all levels should be accountable within the scope of their responsibilities, for environmental performance that supports the EMS One example follows

- Policy reduce pollution
- Objective (a) reduce chemical emission into body of water (b) from site (c)
- Target reduce chemical emissions 20% by the end of 1996
- Action Plan substitute a biodegradable chemical for the toxic chemical in use, managed by individual (d) at a cost of (x) using the technical resources (y and z), completion date January 1, 1998

It is important to note that the means to fulfill objectives refers to all necessary resources that include people, skills, technology, financial resources, and so on According to Annex A, the EMS usually covers planning design materials, production processes marketing and disposal stages For new installations or larger modifications, the EMS can include planning, design construction commissioning operations and also decommissioning In addition, new activities may require environmental reviews

Flexibility is critical ISO 14001 Clause 4 3 4 requires the EMS program to be amended when new developments occur The EMS can be independent of or integrated into the organization s overall management system Addressing the environmental aspects of the organization s activities does not necessarily require a separate EMS process Further the standard does not require detailed EMS plans separate from general company planning More EMS planning will be required if an organization has minimal management systems in place A key theme is the alignment of the EMS with other management elements such as operational controls resource allocation information systems training and development measurement and monitoring systems and communication and reporting programs This flexibility makes it possible for small and medium-size organizations which lack resources and personnel to implement an EMS without the administrative work

3 2 3 Implementation and Operation

ISO 14001 Clause 4 4 addresses implementation in seven components

1 structure and responsibility,
2 training, awareness and competence,
3 communications,
4 EMS documentation,
5 document control,
6 operational control, and
7 emergency preparedness and response

Component 1 *Structure and Responsibility*

ISO 14001 Clause 4 4 1 requires the organization to

- define, document and communicate roles, responsibilities and authorities to implement the EMS, and
- provide human, financial and technical resources necessary to do so

The standard also requires management to appoint a "specific management representative(s), irrespective of other responsibilities" to ensure that the program be maintained and implemented Further, this individual is responsible for reporting on the performance of the EMS to top management The selection of this individual is flexible

- in large organizations there can be several designated representatives,
- in smaller organizations there may be only one and that person may be the owner, and
- the representative can be the chief environmental officer or an environmental committee that includes managers from across all corporate functions

In addition ISO 14004 emphasizes that the management representative should have sufficient authority responsibility and resources to make sure the EMS is implemented effectively

It is important to note that environmental performance is not solely the environmental manager s responsibility, the entire organization is involved An effective EMS extends environmental responsibilities beyond the traditional environmental units of the organization Managers across the organization must ensure compliance to the EMS and assign responsibilities to employees whose work is relevant to the environmental objectives

Communication is critical All employees must understand their role in achieving the targeted environmental performance This will be a challenge for organizations that have little experience in managing environmental issues or that have compartmentalized management of such issues to the environmental department All employees must become aware of the potential environmental aspects of their jobs

Culture change is inevitable Individuals will be encouraged to consider new or additional environmental issues in their jobs For example

- sales and marketing people may consider environmental issues in product marketing
- the R&D department may incorporate environmental concerns in product design
- the purchasing department may examine the supplier network and at the types of products and services they buy and
- financial management may develop an environmental cost accounting system

As ISO 9000 requires that quality shift from one person's to everyone's responsibility, ISO 14001 requires the same shift to achieve environmental performance targets

Component 2 *Training, Awareness, and Competence*

ISO 14001 Clause 4 4 2 requires that the organization develop procedures to identify training needs and ensure that all personnel "whose work may create a significant impact upon the environment" receive appropriate training In addition to employee commitment the EMS requires extensive employee competence Training will vary bv position The standard requires that all employees or members of the organization be made aware of

- their roles and responsibilities within the context of the EMS
- significant environmental impacts actual or potential of their work activities
- the importance of conforming with environmental policies procedures and EMS requirements
- environmental benefits of improved personal performance and
- consequences of violating procedures

ISO 14004 notes that organizations with effective training programs

- identify training needs,
- develop training plans,
- verify that the training program conforms to regulatory and other requirements,
- provide the training,
- document the training and
- improve the training program

The standards do not require an organization to monitor the training of its contractor workers However, Annex A suggests that the organization should require contractors to "demonstrate that their employees have the requisite training " This requires that the contractor offer some evidence of training to the organization

Component 3 Communications

ISO 14001 Clause 4 4 3 requires that the organization establish procedures to

- communicate internally between the various levels and functions of the organization and
- receive, document and respond to "relevant communication from external interested parties" on environmental aspects and the EMS

Open internal communication is critical to an effective EMS Such communication can include the results of EMS monitoring audits and management reviews This type of internal communication motivates employees helps solve problems and raises awareness

External communication requires greater attention to detail The broad and open disclosure that results in discovering environmental problems and solving them may also create information that not all companies want to disclose externally This is especially applicable to companies that operate in a strict regulatory environment The standard requires that the communication be relevant and that it responds to interested parties The implication is that an organization decides what is relevant communication it need not respond to every and any request for information

Environmental Reporting Communication with external interested parties is to be reactive and passive — if someone requests relevant information, the organization is to respond It is important to note that external communication can generate a useful dialogue with interested parties, companies may include information about environmental impacts associated with their

operations These procedures should involve necessary communication with public authorities regarding issues such as emergency planning

The United Kingdom's 7750 regulation and the EU's EMAS regulation require that companies publish a register of their significant environmental effects ISO 14001 is different in this regard it does not prescribe such requirements However, many companies publish detailed environmental "annual reports " These reports often contain detailed information about environmental policies, objectives, and performance In some countries, reporting is required for regulatory purposes Some companies have established other methods of communication such as toll-free telephone numbers for questions and complaints and company newsletters The objective of external reporting is to demonstrate management commitment address questions and concerns pro-actively and encourage acceptance of the company's environmental policies

Component 4 EMS Documentation

Clause 4 4 4 requires that the organization establish and maintain information that describes the ' core elements of the management system and their interaction" and that provides "direction for related documentation " The information can be in paper or electronic form Documentation is vital to providing structure to the EMS

While the documentation need not actually contain all operating procedures it should point users to where that information may be found The related information can include internal operating procedures, internal standards process information work instructions, site emergency plans records etc It can be integrated and shared with other information systems within the organization It is common for organizations to create an EMS manual that provides the basics, such as the environmental policies objectives targets key roles and major responsibilities The manual references related documentation and other aspects of the organization s management system

ISO 9000 establishes a documentation hierarchy consisting of four layers Each layer develops a steadily increasing level of detail about company operations and methods These layers are

- *policy manual* — contains the basic policies objectives and targets and other general information about the EMS program
- *company operating procedures* — describes the overall flow of activities
- *work instructions* — specifies detailed activity guidelines
- *records* — includes all documentation needed to demonstrate compliance with the EMS and its requirements

ISO 9000 has been criticized for the massive amounts of seemingly useless documentation required ISO 14001 only requires that an organization document those aspects of its operations that demonstrate to an auditor that the system is in place and functioning effectively The Annex to ISO 14001 emphasizes that the primary focus of the standard is on effective implementation of the EMS

Component 5 Document Control

ISO 14001 Clause 4 4 5 requires the organization to set up clear procedures to control all documents required by the ISO 14001 standard The procedure must produce documents that

- can be located,
- are legible, identifiable dated and maintained in an orderly manner
- are periodically reviewed, revised and approved for adequacy,
- are updated and available to everyone who needs them at all essential locations,
- are maintained for a specified period and removed from use when obsolete, and
- if obsolete, but retained for legal and/or auditor knowledge, are identified as such

Component 6 Operational Control

ISO 14001 Clause 4 4 6 requires that organizations identify and plan the activities and operations ' associated with the identified significant environmental aspects in line with its policy objectives and targets " These activities were defined in the setting of policies, objectives and targets and range from R&D and product design through production marketing customer service and final product disposal The objective of controls is to ensure that environmental performance meets the objectives and targets To achieve operational control organizations

- preparing documented procedures for the activities and operations to ensure that they do not deviate from policies objectives and targets
- specify operating criteria and
- establish and communicate relevant procedures to suppliers and contractors that relate to the significant environmental aspects of goods and services used by the organization

It is important to note that documented procedures are not necessary only to ' cover situations where their absence could lead to deviations from the environmental policy and objectives and targets "

Suppliers and Contractors ISO 14001 focuses on communicating relevant procedures and requirements to contractors and suppliers rather than on evaluating and selecting subcontractors as in ISO 9001 According to Clause 4 4 6, organizations are required to establish and maintain "procedures related to the identifiable significant environmental aspects of goods and services used by the organization and communicating relevant procedures and requirements to suppliers and contractors " This involves communicating requirements for raw materials, procedures for proper disposal of waste products, storage procedures and similar activities However, if in the course of setting up an EMS a company evaluates its raw materials usage and decides to substitute another raw material, this could involve selecting a new supplier

Component 7 Emergency Preparedness and Response

Clause 4 4 7 requires the organization to establish and maintain procedures to identify the potential for and the response to accidents and emergency situations The organization should also be prepared to prevent and mitigate associated environmental impacts In addition the organization must review and revise its emergency preparedness procedures and test when practical The ISO 14004 guidance specifies that emergency plans can include

- assigning authority and responsibility,
- developing procedures for providing emergency services,
- methods to react to different types of emergencies,
- information on hazardous materials
- internal and external emergency communication and
- training for emergency preparedness and response

These plans should be related to existing company procedures for health and safety

3 2 4 Checking and Corrective Action

The next step in implementing an EMS is to check and monitor the system discover problems and correct them ISO 14001 Clause 4 5 describes four aspects of the process

1 Measure, monitor and evaluate environmental performance

2 If problems occur, apply corrective and preventive action

3 Maintain environmental records to demonstrate conformance of the EMS to ISO 14001 requirements

4 Audit the environmental management system

Component 1 Monitoring and Measurement

The notion that "one can manage only what one can measure" is critical to environmental performance evaluation ISO 14001 Clause 4 5 1 requires documented procedures for

- recording information to track performance, operational controls, and conformance with objectives and targets,
- calibrating and maintaining monitoring equipment such as instruments, test equipment, software, and hardware sampling to ensure reliability,
- maintaining calibration and maintenance records, and
- periodically evaluating compliance with relevant environmental legislation and regulations

Environmental Performance Evaluation The EPE standards help companies identify appropriate environmental performance indicators These are specific descriptions of performance, such as the volume of raw material per unit output or kilogram of air emissions per unit of production Performance indicators provide input into the monitoring and measurement process and provide useful information to track performance

Compliance Audits The standard does not specifically require compliance auditing but specifies that an organization must have procedures to ensure compliance with relevant environmental legislation and regulation ' This omission was done to maintain flexibility and avoid the confusion associated with the various meanings of compliance auditing around the world

Component 2 Corrective and Preventive Action

The focus for correcting and preventing problems is on root cause analysis assessing the disease, not just the symptoms The idea is not just to identify the problem but to understand why it

occurred and to change the system so that it does not recur ISO 14001 Clause 4 5 2 requires that the organization establish procedures for

- defining responsibility and authority for handling and investigating nonconformances
- acting to mitigate the resulting impacts on the environment,
- initiating and completing corrective and preventive action, and
- implementing and recording changes to documented procedures that result from corrective and preventive action

According to the standard the corrective or preventive action ' taken to eliminate the causes of actual and potential noncomformances shall be appropriate to the magnitude of problems and commensurate with the environmental impact encountered " This leaves great flexibility in the scope and complexity of procedures

Component 3 *Records*

The standards require the organization to maintain appropriate records to demonstrate conformance The organization must develop procedures for identifying, maintaining, and disposing of environmental records According to ISO Clause 4 5 3 environmental records include training records and the results of audits and reviews Records provide the evidence of the ongoing operations of the EMS Records can include additional items such as

- legislative and regulatory requirements
- inspection, maintenance and calibration records
- incident reports,
- reports of environmental audits and reviews
- contractor and supplier information and
- emergency response records

The standard also specifies that environmental records must be "legible identifiable, traceable readily retrievable and protected against damage deterioration or loss " The Annex to ISO 14001 notes that companies should take into account confidential business information in the records management process

It is important to note that information technology can make an EMS more efficient Environmental information management systems have been developed to keep track of all the data Effective information management is critical to effective environmental management

Component 4 Environmental Management System Audit

ISO 14001 Clause 4 5 4 requires that the organization conduct audits of the EMS This is a system audit rather than an audit for compliance with laws and regulations The primary objective of the audit is to ensure that the EMS "conforms to planned arrangements for environmental management including the requirements of this standard," and has been properly implemented and maintained The other objective is to provide information on its results to management In addition, the standard emphasizes that the audit program and its scheduled frequency be based on the "environmental importance of the activity concerned and the results of previous audits "

The audit procedure should cover the scope of the audit, its frequency and its methods Procedures should also include responsibilities and requirements for conducting audits and reporting results Annex A adds that the procedures should cover auditor competence and can be conducted by internal or external personnel It is important that the auditor be impartial and objective System audits for ISO 9000 and ISO 14001 can be performed at the same time, where possible

3 2 5 Management Review

The final step is to review the EMS ISO Clause 4 6 requires that top management review the EMS whenever it determines appropriate "to ensure its continuing suitability adequacy and effectiveness " Management must collect the information necessary for a comprehensive evaluation and document the review The review accomplishes the following

- examination of EMS audit results
- consideration of changing circumstances
- assessment of the organization s commitment to continual improvement and
- identification of possible changes in policy objectives and other EMS elements

The Annex specifies that not all EMS components need to be reviewed at one time In addition, reviews of policies, objectives and procedures should be carried out by the level of management that defined them "Changing circumstances" can include

- changes in legislation,
- varying expectations of interested parties,
- changes in the organization's products or activities,
- technological advances,
- marketing information and
- feedback from environmental incidents

Further, management should plan corrective and preventive action to improve the EMS and should ensure that actions were taken and were effective The results of the management review may drive changes in policy which can cause changes in the EMS

The management review and the EMS audit are different The EMS audit can include conclusions about improving the EMS if requested by management However, it is not the auditor s job to review the EMS specifically Top management is responsible for making decisions on the EMS using information from the audit, the environmental performance evaluation system and any other sources necessary

3 3 OTHER INTERNATIONAL STANDARDS

ISO 14000 is not the first initiative to improve industrial environmental management, however, it is now the recognized standard for environmental management Other related initiatives have been developed and implemented the greatest efforts being in the U S , Canada and Great Britain The more widely known programs are described below

3 3 1 Chemical Industry Initiatives

The tragic toxic release by Union Carbide in Bhopal India in 1984 sparked efforts by chemical industry associations to improve environmental management In the aftermath of this tragedy the Canadian Chemical Producers Association developed a voluntary industry initiative for continuing improvement in chemical manufacturing known as Responsible Care The Chemical Manufacturers Association in the U S embraced this initiative soon after the "Codes of Management Practices' included in Responsible Care especially those on pollution prevention, process safety community awareness and emergency response are directly applicable to ISO 14001 implementation (Cichowicz, p 5)

Further, the Canadian Chemical Distributors Association (CACD) and the National Association of Chemical Distributors (NACD) in the U S adopted their own voluntary approach to continuous improvement in chemical distribution, the Responsible Distribution Process The "Codes and Elements" of Regional Distribution establish targets for performance improvement in environmental areas, in including waste reduction, emergency response and handling and storage (Cichowicz, p 5)

3 3 2 BS 7750 and NSF 110

BS 7750 is the British standard for environmental management systems It was adopted in 1994 and has been used as a base reference document in the development of ISO 14001 NSF 110 the U S standard for environmental management systems, was formalized in 1995

3 3 3 Eco-Management and Audit Scheme (EMAS)

The EU has developed regulations on a variety of issues and has created EMAS to protect the environment, promote free trade, and foster sustainable development EMAS establishes a voluntary process for companies to assess and ultimately improve in environmental performance EMAS is compatible with ISO 14001 but has some additional requirements More importantly, it has the potential to become mandatory throughout the EU as early as 1998 Companies with facilities located within the EU have been advised to become familiar with EMAS (Cichowicz, p 5)

EMAS makes adherence to a formal environmental management system and auditing mandatory and requires that organizations make independently verifiable public statements regarding their environmental performance (Tibor, p 80) Participation in the program entitles a company to register a site on an EU-authorized list of participating sites and to use an EU-approved statement of participation and graphic to publicize inclusion in the program EMAS objectives are to

- promote continuous improvements in environmental performance by establishing policies programs and management systems
- perform systematic objective and periodic evaluation of these elements and
- provide relevant information about these activities to the public

In addition to manufacturing industries the scheme also applies to the electrical gas steam and waste disposal sectors

Reasons to participate extend beyond the possibility of EMAS becoming mandatory Market pressures may encourage companies to register as part of EMAS In addition, public

procurement policies may cause companies to register The Dutch government has already started giving preference to companies that are registered to an EMS standard as a condition for receiving construction and operating permits Further, a number of member states are considering the "deregulatory' potential of EMAS — participation in the scheme is likely to mean fewer inspection visits by the regulators, more rapid processing of license application

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CHAPTER 4
BLUEPRINT FOR ADDRESSING ISO 14000

4 1 INTRODUCTION

To date, much of the discussion on the emerging ISO 14000 series, and especially the ISO 14001 Environmental Management System Standard, has focused on what the standard means and how it has been developed Little has been said about how companies might go about considering the pros and cons of implementing ISO 14001, or practical steps they might take to implement the standard if that is their decision This "blueprint" is designed to provide guidance in this untended arena

The blueprint is designed for larger companies with corporate and decentralized business unit managers and environmental staff Nevertheless the basic approaches also apply to smaller firms, and the blueprint should be useful to them provided that adjustments are made for smaller size and fewer resources

The blueprint offers a specific approach, though many alternative approaches are possible Our belief is that managers will welcome concrete guidance on this matter, will better appreciate alternative courses of action if they have at least one approach firmly in mind, and will be able to find useful approaches and information in this document even if they have already taken some of the steps suggested

4 2 BLUEPRINT

PHASE I UNDERSTAND THE ISSUE

1 The senior environmental officer or individual responsible for environmental management (' environmental management) of the company should designate and provide support for a corporate ISO team leader This individual should review ISO 14001 documents and commentary develop an understanding of the issue and with assistance as required prepare materials and programs needed to inform managers about ISO 14001 and its significance The products developed should be tailored to the company and might include

A A written overview of ISO 14001 and other initiatives of the 14000 series, combined with copies of draft standards and other key documents issued by TC207 or its subcommittees or work groups

B Questions and answers on key issues

C Other instructional materials, such as video tapes or CD-ROM programs

PHASE II COMPARE THE COMPANY ENVIRONMENTAL MANAGEMENT SYSTEM AND ISO 14001

1 Environmental management should distribute the ISO 14001 diagnostic questionnaire (Appendix B) to all business unit managers and task them to work with the ISO team leader and business unit environmental managers in responding to the questions asked and providing documents requested

2 Business unit environmental managers should review responses to the diagnostic questionnaire, including documents provided, and forward them to the ISO team leader for integration and evaluation

3 The ISO team leader should

A Summarize responses to the diagnostic questionnaire

B Review the consistency of the assertions made with the underlying documentation provided

C Provide top environmental management with information from A and B combined with preliminary findings

PHASE III CONDUCT GAP ANALYSIS

1 After receiving feedback from environmental management the ISO team leader should assess the current EMS against the ISO 14001 standards and identify gaps where implementation of the standards would require change and investment This will generally entail

A Initial review by the ISO team leader followed by a meeting and presentation to business unit environmental managers

B Based on feedback from this meeting, preparation of a more definitive assessment of the changes needed for ISO conformance at different levels of organization within the company, and an approximation of the costs of such changes

PHASE IV EVALUATE BENEFITS AND COSTS

1 Establish a team to analyze the costs and benefits of implementing the ISO 14001 standard and make recommendations across business units on whether to pursue registration/certification, self-determination and declaration of conformance, or to "wait and see "

A The chief executive officer should form a multi-disciplinary team with participation from all internal potentially affected parties to avoid alienation and generate support for the effort

B The team should be chaired by a senior officer of the company to take ownership of and champion the process, and provide credibility

2 The team should identify the interests of company stakeholders in ISO conformance and registration/certification Stakeholders to consider in this process include

A Internal

a facility management
b corporate management
c corporate environment, health and safety (EHS) staff
d facility EHS staff
e legal
f administration
g human resources

B External

a customers
b shareholders
c regulators
d local communities
e other public interests
f vendors

3 The team should review company experience, if any, with ISO 9000 including

A Certification/registration experience

a countries where the company is certified/registered
b business units and facilities that are certified/registered
c cost of certification/registration
d experience with loss of certification/registration

B Known benefits of certification/registration, including

a Customer procurement requirements

i government agencies

ii other customers, including those whose procurement requirements are prompted by their own ISO implementation

b insurance carrier requirements
c lender requirements
d investment requirements
e other values distinguishing the company from its competition

4 Assess the likelihood that similar arrangements will develop and be called for under ISO 14001 (as is the case for ISO 9000) and consider additional benefits that may be secured by ISO 14001 certification/registration, including

A Reduced regulation

B Diminished fines

a reduced exposure to environmental remediation and tort liability

b increased administrative efficiency in environmental management

c reduced environmental management costs through pollution prevention and overall enhanced environmental performance

d enhanced image and possible market share through recognition for environmental leadership

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5 Based on the review under c and d above and other intelligence on customer, regulatory, and industry expectations, forecast as specifically and quantitatively as possible the benefits of ISO 14001 certification/registration, including

A Sales that are likely to be contingent on certification/registration, considering current and planned product and service lines, geographic markets, and major customers

B Other competitive advantages in sales

C Reduction in regulatory burden

6 Estimate the costs of the ISO 14001 certification/registration process using ISO 9000 registration costs as a guide, combined with the cost of changes to the environmental management system needed for conformance with ISO 14001

7 Review the merits of ISO 14001 certification/registration and external audit compared with internal reviews of conformity and self-declaration Consider also a strategy of initial self-declaration followed by subsequent certification/registration

8 Compare and summarize the benefits and costs of ISO implementation and make recommendations to top management on strategy

9 By discussion, memorandum and presentation, assist top management in reaching a decision on whether to implement ISO 14001 and in communicating that decision and its basic parameters to employees and other stakeholders

PHASE V IMPLEMENTING ISO 14001

1 Referencing a mandate from top management the senior environmental officer should move forward with an action plan to achieve conformance with ISO 14001 He or she should secure the participation of business unit top management and key corporate functional area leaders and

A Establish process improvement teams as needed for changes in functional areas and facilities or other business units

B Identify lead individuals and process improvement team members composed of internal stakeholders for each significant area of needed improvement

C Assign team responsibilities and draw clear communications lines

D Task process improvement teams with maximizing the value of ISO 14001 standardization for fundamental stakeholders identified by the company (see Phase 4 above)

2 Process improvement teams should

A Formulate action plans with objectives and action items

B Establish time lines with milestones, and structure challenges to allow effective contributions from key individuals

C Review progress with status reports to top environmental management

D Assess implementation completeness and advise how to proceed

3 Functional areas that may require attention under ISO 14001 may include, for example

A Developing or refining a system for assessing the effects of company activities on the environment Such a system should be tailored to the company's activities and impacts and need not be based on any existing public system However the company should review existing approaches for environmental impact assessment (EIA) such as

a the EU Eco-Management and Audit Scheme (EMAS) register of environmental effects

b national or regional environmental impacts assessment policies, such as the U S National Environmental Policy Act and EIA policies developed by the EU and the OECD

c environmental impact assessment policies of the World Bank, International Finance Corporation, and regional development banks such as the Asian Development Bank European Bank for Reconstruction and Development and the Inter-American Development Bank)

B Developing a comprehensive environmental policy This policy should be tailored to the company s vision culture activities and impacts and need not be based on any existing policies However, the company should review

a policies and practices already adopted by the company
b practices of other leading companies

c the Business Charter for Sustainable Development[1]
d the CERES Principles[2]
e the PERI guidelines [3]

C Formulating objectives, measurables and targets for implementation of the comprehensive environmental policy These should

a be tailored to the culture of the company and its operations, organization and way of doing business, and tap the creativity of employees

b take into account reviews of existing approaches developed by leading companies and industry associations, such as the Global Environmental Management Initiative (GEMI) and the Chemical Manufacturers Association (CMA) Responsible Care Program

D Providing adequate resources and incentives for achieving the objectives and targets

E Implementing a system for monitoring and checking on implementation of the EMS overall on a routine basis, including

a mechanisms for routine EMS compliance monitoring and for corrective action reporting (ideally automated)

b document control policies and procedures as specified by ISO 14001

c periodic environmental compliance audits

F Implementing a program for audit of the EMS as a whole including progress on its commitment to continual improvement, and for effectively reporting the results of such audits to top management

[1] ISO 14004 pages 43 and 44

[2] Available from CERES 711 Atlantic Avenue Boston MA 02111

[3] Public Environmental Reporting Initiative (PERI) Guidelines made public via letter of David Buzzelli The Dow Chemical Company 14 June 1993

PHASE VI CONDUCT AN AUDIT OF THE ENVIRONMENTAL MANAGEMENT SYSTEM

1 After phase V is completed and experience on implementation is gained conduct an audit to review how well the EMS system is being implemented and how well the system conforms with ISO 14001 Unless the marketplace demands immediate certification/registration, the initial audit should be based on a full year's experience and should be internal

2 Report results of the audit to top management and consider whether

A Adjustments are needed to implement the EMS system more effectively

B The EMS system should be revised to more effectively implement ISO 14001 and other company objectives

C A self-declaration of conformity with ISO 14001 should be made for the company as a whole or for any subsidiaries

D An application should be made for certification/registration and an external audit undertaken for the company as a whole or for any subsidiaries

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CHAPTER 5
THE IMPACTS OF ISO 14000 ON GOVERNMENT

5 1 INTRODUCTION

The institutional and environmental modifications required by ISO 14000 will be much greater in developing countries than in developed nations Most industrialized countries have strict existing environmental regulations incorporated into their country's legal framework In these countries, ISO 14000 is perceived as being a useful complement to complex (and often more expensive) CAC techniques which *externally* compel the same result for an enterprise as ISO 14000 seeks to compel *internally* In Egypt, however, as well as in many other developing countries, the ISO 14000 standard may be used to enhance regulatory systems that are either not yet fully in place or weak in their environmental compliance requirements

5 2 IMPLEMENTING REGULATIONS

The principal use of ISO 14001 was anticipated by its developers to be third-party registration The requirements of the standard then, are designed to be objectively audited (by a third-party) against existing environmental legislation To implement the ISO 14001 standard, a company would record all of the regulations that it must comply with (*planning*), and then establish objectives and targets based on legislative goals such as monitoring and numeric standards (either achieving compliance or moving past compliance by some factor that the organization chooses — *implementation*)

If properly managed, the standard could catalyze a substantial strengthening of the existing environmental institutions in Egypt Thus while the private sector acts independently of regulation to position itself in the marketplace through a certification process the public sector (government) should find itself on a parallel track seeking authority and resources to enhance its legitimate responsibilities in standard-setting and compliance monitoring Each sector following its own interests responsibly thereby reinforces the other s goal The goal for each sector whether motivated by economic interests or public accountability is the same responsible management of industrial discharges

5.3 ESTABLISHING NATIONAL CERTIFICATION BODIES AND AN AUDITING REGIMEN

If ISO 14000 is adopted as a national agenda, and especially if compliance with the requirements of this standard becomes a mandatory business practice, a national certification body will have to be established This organization will accredit registrars who will certify firms under ISO 14000 It is imperative that certification from this body be internationally recognized The credibility of ISO 14000 in these countries, in fact, will largely be dependent on the competence of this institution ISO credibility will also hinge on country-to-country certification consistency Like certification, the auditing system for ISO 14000 has implications for the success and integrity of the EMS The International Auditor Training and Certification Association (IATCA) has been formed to develop international requirements for quality management system audits While this body can be used as a model to develop an Egyptian national auditing regimen, it will be a futile effort if the authority to impose the agenda of these auditors is not vested in the proper ministry and/or agency

There are three ways that an enterprise can verify its managerial and organizational commitment to the requirements of ISO 14001 self-certification, customer certification or third-party certification by a registrar Third-party registration is the assessment of an EMS by independent auditors that are associated with an organization qualified to perform EMS audits The five steps that a firm must complete before being certified under ISO 14000 include the following application, initial review of documents, preassessment, assessment, and registration For international trade relations, third-party certification will be the only acceptable method of establishing registration under ISO 14000 Some issues of concern include

- Consistent interpretation of the standards,
- Accreditation of the registrars (certification bodies),
- Competence of ISO 14000 auditors,
- Recognition of ISO 14000 registration certificates worldwide, and
- Establishment of national certification bodies in many countries to regulate the registration process

The credibility of the ISO 14000 series will depend largely on the competence of the ISO 14000 registrar For this reason national certification bodies have been created in several countries around the world In the U S one such task group is working to develop an EMS auditing protocol document that offers auditors guidance in auditing an environmental management system The group is looking at each element in the ISO 14001 EMS specification and identifying how to evaluate whether the specific EMS element required is in place and possible

Because environmental issues are increasingly critical to everyone s job, from the highest manager right down to the trainee machine operator, the success of the Environmental Management System will depend on how well it is received by those who must implement it Therefore, the success of the EMS is dependent upon the commitment and backing of senior management as well as the eventual informed participation of the employees who must implement the system by following the established procedures, and whose alertness will ensure the improving environmental performance of the enterprise

For relevant ISO 14000 case studies, see Appendix E For additional sources of information see Appendix F

CHAPTER 7
CLOSING REMARKS

The purpose of the training course and manual is to provide background information on ISO 14000, an introduction to the components of an environmental management system and a blueprint for moving forward with ISO 14001 This document presents ISO 14001 as one version of an environmental management system The system codified in ISO 14001 is not the most effective EMS but will likely evolve into the most recognized form of an EMS It is important to understand that it is possible to have an EMS without being ISO 14001 certified Certification will be important for some companies and not so important for others However, all companies can benefit from developing an environmental management system In establishing an EMS, consider the following closing remarks taken from the UNEP/ICC/FDIC EMS Training Resource Kit

> *The greatest challenge facing most enterprises wishing to better manage their environmental performance is usually the need to change the enterprise s culture and the attitudes of the people that manage and work in it*
>
> *Because environmental issues can impact virtually any aspect of an enterprise s organization and business many people are today confronted with issues they never imagined of relevance to themselves or their jobs Even in enterprises with a track record of proactive environmental management such issues have traditionally been entrusted to a specific function within the enterprise (usually a group or division responsible for environment health and safety) As a result other managers and personnel have not felt personally responsible or even involved in dealing with environmental issues and problems*
>
> *This is not necessarily because people are hostile to the idea of improving environmental performance but usually because little has been done to explain to them how they can make a difference in their daily working lives Perhaps more importantly little has been done to explain ways in which their jobs and activities have important environmental implications for the enterprise and how their efforts in managing environmental risks associated with their activities can contribute to the overall business goals of the enterprise*

sources of information to assist the auditor in making the determination To develop the auditing procedure further, pilot audits are being conducted A pilot audit is implemented when a company volunteers to conduct a "trial run" of a suggested policy by a regulatory body, before final implementation

The Committee for European Standardization (CEN) developed the EN 45000 series In this series, the *EN 45012 General Criteria for Certification Bodies Operating Quality System Certification* establishes the criteria for registrars Presently, this standard is being adopted for use with ISO 14000 Further ISO's Committee on Conformity Assessment (CASCO) has developed several accreditation and certification guidelines such as *ISO/IEC Guide 48 Guidelines for a Third-Party Assessment* and *Registration of a Supplier's Quality System*

It is clear that differences in environmental regulations could interfere with the acceptance of ISO 14001 certification from country to country In response to this problem, a proposal for an international system of recognition of ISO 9000 registration certificates has been developed This Quality System Assessment Recognition has been developed in hopes of having a single ISO 9000 registration certificate that is recognized and accepted around the world, regardless of the site or client specifics If this pilot program is successful, a similar system will be developed for 14001

5 4 EGYPTIAN ENVIRONMENTAL LEGISLATION

The Egyptian regulatory agencies should utilize the ISO 14000 series as a tool to further empower the evolving legal framework

Egyptian environmental legislation of various types dates from 1941 However, it has been assessed as "inadequate, unrealistic and unenforceable, lacking adequate financial support and sufficient institutional capacity for effective monitoring and enforcement" (PRIDE, 1992) Before 1994, only three pieces of Egyptian legislation had a measurable impact on the country's environmental resources Presidential Decree 631 (1982) which established the Egyptian Environmental Affairs Agency (EEAA) Law 48 (1982) which is the basic law protecting the Nile River and its waterways and Law 102 (1983) which made possible the establishment of natural reserves

Decree No 8 for 1983, regarding the protection of the River Nile and waterways from pollution is the executive regulation for Law No 48 for 1982 An elaborate system of pollution permits was established in this decree Mechanisms for monitoring these permits and standards for compliance were also included in the text Enforcement of these regulations is largely the responsibility of the Ministry of Irrigation with advice/counsel from the Ministry of Health The Water Surfaces Police, a division of the Ministry of Interior, also assists in enforcing this decree Fines for non-compliance can range up to 2,000 E£ for stationary establishments

In 1994, a new, comprehensive Environmental Conservation Law was passed This Law No 4 for the Year 1994 created a new EEAA, replacing the one established by Presidential Decree 631 The new EEAA is answerable directly to the prime minister, and is charged with monitoring and auditing Egyptian industries against the requirements of the newly enacted environmental legislation Assistance in these tasks is provided by the other Egyptian ministries

Law No 4 establishes an intricate web of standards, permitting systems, monitoring programs, and enforcement mechanisms The EEAA, in coordination with the Ministry of Justice (among others) has the authority to take action against those activities that violate provisions of the law In addition to shutting down these activities, fines for non-compliance ranging from 10 to 20 000 E£ can be levied Evidence suggests, however, that these fines are rarely collected

Additional authority under Law No 4 should be sought to enable the EEAA to administer a third-party certification process for industry

5 5 COSTS TO GOVERNMENT ENVIRONMENTAL MANAGEMENT INSTITUTIONS

The cost implications to environmental management institutions in Egypt are largely dependent on whether or not the government funds an ISO 14000 national certification body and/or auditing regimen If enterprises are allowed to self-certify or customer certify themselves to ISO 14000, the government need only incur the cost of institutional support and document and registration control (provided that firms will have to inform a regulatory body when they have been fully certified under this system — a likely requirement) If, however, national certification instituted and auditing regimens are established, the government will have to allocate a considerable amount of money to those organizations This venture will require salary payments to a host of auditors and registrars, in addition to any standard overhead expenditures (office space, training, etc) that are required Payments to the government from firms receiving registration audits however will offset this amount to an as yet undetermined degree

5 6 ACTION PLAN FOR THE GOVERNMENT

There are several steps that need to be taken by the Egyptian government to prepare for certification under the ISO 14000 environmental management system

In the short term i e within one year from deciding to adopt the ISO 14000 series into the national agenda the Government of Egypt (the Egyptian Environmental Affairs Agency) should proclaim the country's intentions regarding the standard The government should answer the following question will ISO 14000 be meaningfully integrated into the environmental regulatory system, or is the country seeking certification simply to encourage its industries to

adopt environmentally benign practices? The government also needs to assess the state of the environment in order to establish a degradation baseline so that progress can be charted into the future

If the Egyptian government decides that the standard should be integrated into the regulatory system, it should begin, in the medium term (1-3 years), the implementation of a national certification program and auditing regimen There are national certification/accreditation bodies that are currently operating world-wide Some of the more influential of these organizations include the United Kingdom's Accreditation Service (UKAS), and the Dutch Council for Certification (RvC) in the Netherlands Egypt might consider these organizations as models when creating its own certification bodies and auditing regimens

In the long-term (3-5 years), the Egyptian government will need to assess (1) whether progress has been made in improving the environment, measuring from the earlier establishment of a baseline and (2) the performance of its certification body and auditing regimen (if developed) If the system is executing its goals in an efficient manner, no institutional changes will be warranted If, however, system failures are apparent (either organizationally or environmentally), the government should conduct a thorough examination of its program to determine the causes and sources of the breakdowns If this inspection does not reveal any relevant data, outside consultants and/or auditing bodies should be hired to assess the system so that problems can be identified and quickly corrected The government must also continue to strengthen its environmental agency (EEAA) with the legal authority and necessary resources to credibly challenge industry to establish appropriate regulatory targets and goals and be institutionally equipped to monitor and enforce those regulatory targets

CHAPTER 6
THE IMPACTS OF ISO 14000 ON INDUSTRY

6 1 INTRODUCTION

ISO 14000 is currently being adopted by institutions world-wide Though 14001 and 14004 have only recently been published, and other 14000 series documents only exist in the form of a Draft International Standard (DIS) at present, this system is rapidly gathering support as a tool for the implementation of good environmental practices that support the ultimate goal of "sustainable development " In anticipation of the possible global adoption of the EMS standards sometime before the year 2003, many firms are voluntarily conforming their practices to comply with the requirements of ISO 14000 As one industry leader expressed, "No one wants to be first, but no one can afford to be last " (Cichowicz, p 9) This chapter focuses on the anticipated effects on Egyptian businesses of ISO 14001, since it is expected to be the only standard in the ISO 14000 series against which companies (or individual facilities) will be reviewed

6 2 IMPACTS ON TRADE

If ISO 14000 behaves similarly to ISO 9000, it is probable that certification under this standard will become a prerequisite for contracts with many international firms This will make registration essential for enterprises in Egypt that intend to bid for contracts from these multi-nationals The market pressure that induces ISO certification will affect all companies along the supply chain, not just the exporting organization

In 1993/94 Egypt had a trade deficit of E£ 19 995 million Seven of Egypt s ten main trading partners comprising approximately 56% of its total export market (see Table 1) are currently reviewing ISO 14000 These countries include the U S and the EU member-countries Registering under ISO 14000 and strengthening these export relations might reverse the trend of Egypt s deteriorating export competitiveness

Investors environmental groups and concerned citizens that demand sound corporate environmental management systems can accept ISO 14000 registration as a demonstration of a company s commitment to and credibility for environmental issues Certification under this standard tempers the concerns of stakeholders and allows firms to engage new export markets in the EU previously deemed inaccessible by ISO 14000's trade barrier

Table 1 Egypt's Main Export Trading Partners (% of total)

Exports to	1991	1992	1993
Italy	14 8	20 6	17 8
USA	7 6	8 2	12 9
India	0 7	0 5	8 4
France	5 9	6 2	5 7
United Kingdom	2 2	3 3	5 5
Germany	3 7	4 7	5 2
Spain	4 8	6 9	4 5
Greece	3 8	5 2	4 4
Former Soviet Union [a]	6 3	2 4	3 1
Singapore	6 8	5 3	1 9
Other	43 4	36 7	30 6

[a] Russia from 1992

Source EIU *Country Profile — Egypt*

The driving forces that might encourage Egypt to adopt the ISO 14000 series are the accompanying trade implications As previously mentioned, non-tariff trade barriers under the international trade rules could be established by this standard Those countries that do not "voluntarily" accept the certification requirements (by third-party registration in this case) will likely be barred from trading with ISO 14000-certified countries Since EU firms have been instructed by their governing organizations to familiarize themselves with the standard, Egyptian industry may be well advised likewise to accustom itself to this system if it wishes to maintain a viable relationship with their primary trading partners

About 86% of all major Egyptian exported products are industrial goods (petroleum and products cotton yarn and textiles foodstuffs chemicals and engineering and metallurgical goods) Thus the firms that should be selected to begin Egypt s adoption of ISO 14000 should (1) manufacture industrial goods (2) have strong management capabilities and (3) be large scale contractors in the international market

ISO 14000 also offers a unique avenue for export promotion By quickly establishing third party certification, Egypt would likely gain a trade advantage over its competitors in North Africa and the Middle East that have yet to satisfy ISO s requirements This could lead to a substantial increase in exports

6.3 MANAGEMENT CHOICES AND IMPACTS

ISO 14000 purposely refrains from designing a specific environmental management model for industrial firms Instead, it establishes management objectives, targets, and responsibilities and references management tools such as structure, training, communications document control operational control, and emergency preparedness The enterprise is expected to organize itself to meet its environmental needs with the same urgency that it organizes itself to meet its marketing, research, financial, communications, and other business needs Certification will determine the sufficiency of the management effort And attaining the objective of measurable environmental improvement, in turn, will determine the effectiveness of the management emphasis Ultimately, then, the ISO 14000 series identifies effective management as the key to environmental success and insists on the involvement of senior management to attain it

At a more particular level, the specific design of the EMS depends on a variety of factors — sectoral market, environmental and economic, to name the most obvious The first consideration of industrial firms in developing countries will be the nature of the ISO 14001 international market in specific-market sectors Certain sectors and sub-sectors may adopt ISO 14001 and others will find it inadvisable to do so

Export oriented firms in Egypt should consult with their customers and suppliers to determine interest, benefits, and disadvantages The investigation should not be casual since it often reveals that initial costs can be repaid very quickly and savings effected thereafter on myriad efficiencies This can be the case with or without certification Thus, firms should check to see whether environmental management is important in their sector and, separately, whether ISO 14000 is becoming important in the minds of their customers In other words a firm does not need ISO certification to address its independently perceived exposures to environmental liability

In sectors where customers or suppliers require environmental protection several approaches short of ISO certification are possible One is to negotiate specific standards and conditions into customer or supplier contracts much like certain multinationals do for the disposal of certain hazardous wastes or for worker safety standards and conditions for the safe transfer of chlorine gas

In relationships where customers inspect their suppliers and certain environmental and quality obligations expected of suppliers have benefits for the customer suppliers might be able to negotiate either an EMS or a more limited kind of environmental performance so that all the costs are not borne by the supplier Phased in arrangements can also be negotiated by the supplier In some cases, the customer might agree to help the supplier develop an EMS

Another approach to certain Egyptian enterprises is to develop their own monitoring and compliance system Thus, they are reasonably prepared at least in several important respects if called upon to meet specific environmental objectives or even ISO 14001 certification

Still another approach is to put an EMS in place for a firm's own management reasons, e g reductions in disposal costs and/or liability insurance and an increase in worker and community satisfaction It should be appropriate to the size and environmental complexity of the firm, and executives may need assistance in determining the most appropriate level of volunteerism for such an EMS Smaller firms with links to larger ones can ask for assistance Thus, if a supplier or customer does ask about the firm's environmental practices, clear answers will be available

If the Egyptian firm determines that ISO 14001 certification is appropriate, it should first examine the benefits and limitations of self-certification and determine whether an accredited international or domestic certifier is best and choose one In addition, firms should encourage their trade associations to formulate an environmental policy statement so that firms within a given sector and country can accept the same definition of environmental protection in their EMS

6 4 IMPACTS ON THE INTERNAL ORGANIZATION OF AFFECTED INDUSTRIES

Before beginning the ISO 14000 registration process, industry should understand the importance of internal organizational changes that adoption of the standard would compel How industry functions, and its role in the Egyptian industrial economy could be affected by this standard The industry must understand that the management of its impacts on the environment may require internal re-engineering in order to better address these economic, political social, and regulatory challenges

Firms without environmental management personnel (the majority in Egypt) will need to hire new staff or re-define existing job requirements to manage the EMS Internal industrial reorganizations required for the implementation of ISO 14000 focus initially on the designation of a head environmental manager In larger firms an entire team of employees might be required for proper engineering of the system In SMEs the environmental manager could be a single individual (perhaps even the owner) Regardless of the selection made it is imperative that the environmental team/individual have full support of top management It will be a worthless venture to employ environmental management personnel and not afford them the necessary power to implement their programs Details of the person or team selected and attendant duties of the position however are site-specific

6.5 COST IMPLICATIONS OF ISO CERTIFICATION

Financial data regarding capital expenditures required from environmental management institutions and export-oriented firms for certification under ISO 14000 is fairly limited due to the relative newness of the standard The majority of the scant existing information comes from the U S and the EU countries where the preliminary drafts of this systems have been analyzed with respect to cost implications Further, evaluating costs from the regulation of firms under the ISO 9000 series and other EMS programs can help industry develop preliminary estimates for the amounts of capital expenditures that are necessary for the implementation of this system

6 5 1 Costs of Doing Business in Europe EMAS

A parallel environmental effort produced an EU directive in June 1993 which outlined a plan for voluntary participation by companies in an "Eco-Management and Audit Scheme" known as EMAS Although ISO 14000 and EMAS are "voluntary" in principle, the same incentives for conformance that applied to ISO 9000 are also likely to apply to them

EMAS is detailed and sophisticated Although compatible with ISO 14000 EMAS has additional requirements For example, organizations seeking certification under EMAS must develop a "register" of environmental effects caused by their activities These effects must be addressed by an environmental management system described in a facility's "environmental statement," which then must by "verified" by an independent auditor

ISO 14000 allows companies to choose self-certification or third-party certification Several key non-European ISO members resisted adding the mandatory third-party auditor platform of EMAS to the ISO standards platform for fear that the procedure may become too bureaucratic and time-consuming Other businesses have voiced concerns regarding the possibility that their audit results could be used against them by environmentalists and regulators Much discussion in the past year has focused on guidance for ISO 14001 contained in its Annex A and in ISO 14004 ISO 14004 suggests details similar to those contained in the EMAS system However, ISO 14004 is not binding guidance At this point many expect that ISO 14001 will be interpreted to conform with EMAS within the European Union

6 5 2 Costs to Export-Oriented Firms

Registration costs generally fall into two categories internal implementation costs and external costs (i e the hiring of consultants and the cost of a registration audit) The cost of a registration audit according to a ' very rough estimate ranges from US$10 000 to US$30,000, depending on the size of the facility and the nature of its operations (Tibor, pg 183)

Companies that implemented ISO 9000 will generally have a less taxing capital burden due to the existing ISO managerial structure that has been established For SMEs without ISO 9000 experience, US$50,000 to US$100,000 will be the likely investment for certification However, some evidence suggests that the costs could be considerably lower, ranging from only US$10 000 to US$50,000 Joel Charm, Director of Health, Safety, and the Environment at AlliedSignal commented on the relatively small amount of money that it might take to obtain certification under ISO 14000 in his remark, "The process simply requires [the firms] to put in an effective management system, which isn't all that costly to implement, it doesn't require investment in technology " Considering the current environmental compliance enforcement practices in Egypt, a wide range of costs might initially be expected until the regulatory picture becomes more predictable and management expectations by regulators becomes more certain Additionally annual expenditures aimed at maintaining registration (which generally expires after three years) will cost roughly US$25,000

6 5 3 Financial Benefits

There are many indirect and direct financial benefits that can result from implementing an EMS Cost savings and profit increases will result from proactive management of environmental liabilities and through the prudent development of resource conservation and pollution prevention Other economic benefits resulting from ISO 14000 include

- Diminished fines for non-compliance due to a simplification of the compliance challenge through an understandable and orderly EMS implementing process
- Reduced exposure to environmental remediation and tort liability,
- Increased administrative efficiency in environmental management,
- Reduced environmental management costs through pollution prevention and overall enhanced environmental performance,
- Enhanced image and possible market share through recognition of environmental leadership
- Sales that are likely to be contingent on certification/registration considering current and planned product and service lines geographic markets and major customers and
- Other competitive advantages in sales due to the fostering of good public relations and community and customer support

6.6 ACTION PLAN FOR INDUSTRY

When preparing for ISO certification, there will be a range of actions that should be undertaken by Egyptian industry Each action will have different resource demands and different timing requirements

The first preparatory step for an Egyptian industry is to adopt an environmental policy The policy is generally presented in a simple statement that declares the firm's intentions and principles in relation to its overall environmental performance Importantly the policy must be derived from, and supported by, top management (i e , owners and/or board of directors) The second action generally taken is to document each of the firm's environmental aspects (elements of an organization's products activities and services which can interact with the environment), environmental impacts (any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's products, activities and/or services), legal requirements (as for example, documented in Egypt's Law No 48/1982 and Law No 4/1994), and objectives and targets

After the firms have completed those actions enumerated in the short-term agenda (0-1 years) an environmental management program should be established in the medium term (1-3 years) This EMS should specify the who what, how, and when of the environmental management function for the organization Further this system should designate responsibility for achieving objectives and targets, provide the mechanisms necessary for fulfilling the objectives and establish a time frame within which they should be achieved Once the EMS has been established, the implementation and operation phase can commence This phase which will carry over into the long-term action phase, includes the following seven components structure and responsibility, training awareness and competence, communications EMS documentation document control, operational control, and emergency preparedness and response

Egyptian industry should continue with the implementation and operation phase in the long-term (3-5 years) The checking and correction phase should then follow In this stage the system is subjected to the following procedures measuring monitoring and evaluation of environmental performance application of corrective and preventive action if problems occur maintenance of environmental records, and auditing of the environmental manual The industrial organization should then conduct a thorough review (by the top management) of the EMS If executed efficiently this review will accomplish the following complete examination of the EMS auditing results consideration of changing circumstances, assessment of the organization s commitment to continual improvement and identification of possible changes in policy objectives and other EMS elements

APPENDIX A
ISO 14001 STANDARDS

INTERNATIONAL STANDARD

ISO 14001

First edition
1996-09-01

Environmental management systems — Specification with guidance for use

Systemes de management environnemental — Specification et lignes directrices pour son utilisation

ANSI American National Standards Institute
The Official U S Representative to ISO

ISO

Reference number
ISO 14001 1996(E)

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Annexes

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies) The work of preparing International Standards is normally carried out through ISO technical committees Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee International organizations governmental and non governmental in liaison with ISO, also take part in the work ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote

International Standard ISO 14001 was prepared by Technical Committee ISO/TC 207 *Environmental management* Subcommittee SC 1 *Environmental management systems*

Annexes A B and C of this International Standard are for information only

Introduction

Organizations of all kinds are increasingly concerned to achieve and demonstrate sound environmental performance by controlling the impact of their activities products or services on the environment taking into account their environmental policy and objectives They do so in the context of increasingly stringent legislation the development of economic policies and other measures to foster environmental protection and a general growth of concern from interested parties about environmental matters including sustainable development

Many organizations have undertaken environmental "reviews" or "audits" to assess their environmental performance On their own however these "reviews" and "audits" may not be sufficient to provide an organization with the assurance that its performance not only meets but will continue to meet its legal and policy requirements To be effective they need to be conducted within a structured management system and integrated with overall management activity

International Standards covering environmental management are intended to provide organizations with the elements of an effective environmental management system which can be integrated with other management requirements, to assist organizations to achieve environmental and economic goals These Standards like other International Standards are not intended to be used to create non tariff trade barriers or to increase or change an organization s legal obligations

This International Standard specifies the requirements of such an environmental management system It has been written to be applicable to all types and sizes of organizations and to accommodate diverse geographical cultural and social conditions The basis of the approach is shown in figure 1 The success of the system depends on commitment from all levels and functions especially from top management A system of this kind enables an organization to establish and assess the effectiveness of procedures to set an environmental policy and objectives achieve conformance with them and demonstrate such conformance to others The overall aim of this International Standard is to support environmental protection and prevention of pollution in balance with socio-economic needs It should be noted that many of the requirements may be addressed concurrently or revisited at any time

There is an important distinction between this specification which describes the requirements for certification/registration and/or self declaration of an organization s environmental management system and a non certifiable guideline intended to provide generic assistance to an organization for implementing or improving an environmental management system Environmental management encompasses a full range of issues including those with strategic and competitive implications Demonstration of successful implementation of this International Standard can be used by an organ

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ization to assure interested parties that an appropriate environmental management system is in place

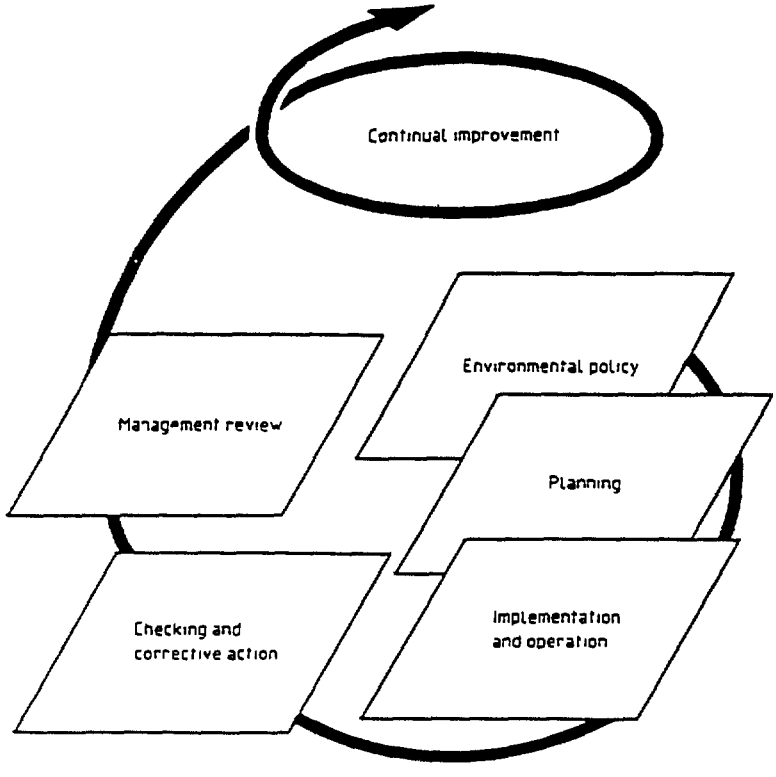

Figure 1 — Environmental management system model for this International Standard

Guidance on supporting environmental management techniques will be contained in other International Standards

This International Standard contains only those requirements that may be objectively audited for certification/registration purposes and/or self declaration purposes Those organizations requiring more general guidance on a broad range of environmental management system issues should refer to ISO 14004 1996 *Environmental management systems — General guidelines on principles systems and supporting techniques*

It should be noted that this International Standard does not establish absolute requirements for environmental performance beyond commitment in the policy to compliance with applicable legislation and regulations and to continual improvement Thus two organizations carrying out similar activities but having different environmental performance may both comply with its requirements

The adoption and implementation of a range of environmental management techniques in a systematic manner can contribute to optimal outcomes for all interested parties However adoption of this International Standard will not in itself guarantee optimal environmental outcomes In order to achieve environmental objectives the environmental management system should encourage organizations to consider implementation of the best available technology where appropriate and where economically viable In addition

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tne cost effectiveness of such technology should be fully taken into account

This International Standard is not intended to address and does not include requirements for, aspects of occupational health and safety management however, it does not seek to discourage an organization from developing integration of such management system elements Nevertheless the certification/registration process will only be applicable to aspects of the environmental management system

This International Standard shares common management system principles with the ISO 9000 series of quality system Standards Organizations may elect to use an existing management system consistent with the ISO 9000 series as a basis for its environmental management system It should be understood, however, that the application of various elements of the management system may differ due to different purposes and different interested parties While quality management systems deal with customer needs environmental management systems address the needs of a broad range of interested parties and the evolving needs of society for environmental protection

The environmental management system requirements specified in this International Standard do not need to be established independently of existing management system elements In some cases it will be possible to comply with the requirements by adapting existing management system elements

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Environmental management systems — Specification with guidance for use

1 Scope

This International Standard specifies requirements for an environmental management system to enable an organization to formulate a policy and objectives taking into account legislative requirements and information about significant environmental impacts It applies to those environmental aspects which the organization can control and over which it can be expected to have an influence It does not itself state specific environmental performance criteria

This International Standard is applicable to any organization that wishes to

a) implement maintain and improve an environmental management system

b) assure itself of its conformance with its stated environmental policy

c) demonstrate such conformance to others

d) seek certification/registration of its environmental management system by an external organization

e) make a self-determination and self-declaration of conformance with this International Standard

All the requirements in this International Standard are intended to be incorporated into any environmental management system The extent of the application will depend on such factors as the environmental policy of the organization the nature of its activities and the conditions in which it operates This International Standard also provides in annex A informative guidance on the use of the specification

The scope of any application of this International Standard must be clearly identified

NOTE — For ease of use the subclause of the specification and annex A have related numbers thus for example 4 3 3 and A.3 3 both deal with environmental objectives and targets and 4 5 4 and A.5 4 both deal with environmental management system audit

2 Normative references

There are no normative references at present

3 Definitions

For the purposes of this International Standard the following definitions apply

3 1
continual improvement
process of enhancing the environmental management system to achieve improvements in overall environmental performance in line with the organization s environmental policy

NOTE — The process need not take place in all areas of activity simultaneously

3 2
environment
surroundings in which an organization operates including air water land natural resources flora fauna humans and their interrelation

NOTE — Surroundings in this context extend from within an organization to the global system

3 3
environmental aspect
element of an organization s activities products or services that can interact with the environment

NOTE — A significant environmental aspect is an environmental aspect that has or can have a significant environmental impact

3 4
environmental impact
any change to the environment, whether adverse or beneficial wholly or partially resulting from an organization's activities, products or services

3 5
environmental management system
the part of the overall management system that includes organizational structure planning activities responsibilities practices procedures processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy

3 6
environmental management system audit
a systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organization s environmental management system conforms to the environmental management system audit criteria set by the organization and for communication of the results of this process to management

3 7
environmental objective
overall environmental goal arising from the environmental policy that an organization sets itself to achieve and which is quantified where practicable

3 8
environmental performance
measurable results of the environmental management system related to an organization s control of its environmental aspects based on its environmental policy objectives and targets

3 9
environmental policy
statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets

3 10
environmental target
detailed performance requirement quantified where practicable applicable to the organization or parts thereof that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives

3 11
interested party
individual or group concerned with or affected by the environmental performance of an organization

3 12
organization
company corporation, firm enterprise authority or institution or part or combination thereof whether incorporated or not public or private that has its own functions and administration

NOTE — For organizations with more than one operating unit a single operating unit may be defined as an organization

3 13
prevention of pollution
use of processes, practices materials or products that avoid, reduce or control pollution which may include recycling treatment process changes control mechanisms efficient use of resources and material substitution

NOTE — The potential benefits of prevention of pollution include the reduction of adverse environmental impacts improved efficiency and reduced costs

4 Environmental management system requirements

4 1 General requirements

The organization shall establish and maintain an environmental management system the requirements of which are described in the whole of clause 4

4 2 Environmental policy

Top management shall define the organization s environmental policy and ensure that it

a) is appropriate to the nature scale and environmental impacts of its activities products or services
b) includes a commitment to continual improvement and prevention of pollution
c) includes a commitment to comply with relevant environmental legislation and regulations and with other requirements to which the organization subscribes
d) provides the framework for setting and reviewing environmental objectives and targets
e) is documented implemented and maintained and communicated to all employees
f) is available to the public

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4 3 Planning

4.3 1 Environmental aspects

The organization shall establish and maintain (a) procedure(s) to identify the environmental aspects of its activities, products or services that it can control and over which it can be expected to have an influence, in order to determine those which have or can have significant impacts on the environment The organization shall ensure that the aspects related to these significant impacts are considered in setting its environmental objectives

The organization shall keep this information up-to-date

4.3.2 Legal and other requirements

The organization shall establish and maintain a procedure to identify and have access to legal and other requirements to which the organization subscribes, that are applicable to the environmental aspects of its activities, products or services

4.3 3 Objectives and targets

The organization shall establish and maintain documented environmental objectives and targets, at each relevant function and level within the organization

When establishing and reviewing its objectives an organization shall consider the legal and other requirements its significant environmental aspects, its technological options and its financial operational and business requirements and the views of interested parties

The objectives and targets shall be consistent with the environmental policy including the commitment to prevention of pollution

4.3 4 Environmental management programme(s)

The organization shall establish and maintain (a) programme(s) for achieving its objectives and targets It shall include

a) designation of responsibility for achieving objectives and targets at each relevant function and level of the organization

b) the means and time-frame by which they are to be achieved

If a project relates to new developments and new or modified activities products or services programme(s) shall be amended where relevant to ensure that environmental management applies to such projects

4 4 Implementation and operation

4 4 1 Structure and responsibility

Roles, responsibility and authorities shall be defined documented and communicated in order to facilitate effective environmental management

Management shall provide resources essential to the implementation and control of the environmental management system Resources include human resources and specialized skills, technology and financial resources

The organization's top management shall appoint (a) specific management representative(s) who, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for

a) ensuring that environmental management system requirements are established, implemented and maintained in accordance with this International Standard,

b) reporting on the performance of the environmental management system to top management for review and as a basis for improvement of the environmental management system

4 4.2 Training, awareness and competence

The organization shall identify training needs It shall require that all personnel whose work may create a significant impact upon the environment, have received appropriate training

It shall establish and maintain procedures to make its employees or members at each relevant function and level aware of

a) the importance of conformance with the environmental policy and procedures and with the requirements of the environmental management system

b) the significant environmental impacts actual or potential of their work activities and the environmental benefits of improved personal performance

c) their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system including emergency preparedness and response requirements

d) the potential consequences of departure from specified operating procedures

Personnel performing the tasks which can cause significant environmental impacts shall be competent on

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the basis of appropriate education training and/or experience

4 4 3 Communication

With regard to its environmental aspects and environmental management system the organization shall establish and maintain procedures for

a) internal communication between the various levels and functions of the organization,

b) receiving documenting and responding to relevant communication from external interested parties

The organization shall consider processes for external communication on its significant environmental aspects and record its decision

4 4 4 Environmental management system documentation

The organization shall establish and maintain information in paper or electronic form to

a) describe the core elements of the management system and their interaction

b) provide direction to related documentation

4 4 5 Document control

The organization shall establish and maintain procedures for controlling all documents required by this International Standard to ensure that

a) they can be located

b) they are periodically reviewed revised as necessary and approved for adequacy by authorized personnel

c) the current versions of relevant documents are available at all locations where operations essential to the effective functioning of the environmental management system are performed

d) obsolete documents are promptly removed from all points of issue and points of use or otherwise assured against unintended use

e) any obsolete documents retained for legal and/or knowledge preservation purposes are suitably identified

Documentation shall be legible dated (with dates of revision) and readily identifiable maintained in an orderly manner and retained for a specified period Procedures and responsibilities shall be established and maintained concerning the creation and modification of the various types of document

4 4 6 Operational control

The organization shall identify those operations activities that are associated with the identified sig cant environmental aspects in line with its policy jectives and targets The organization shall plan th activities including maintenance, in order to ens that they are carried out under specified conditions

a) establishing and maintaining documented p cedures to cover situations where their abser could lead to deviations from the environmer policy and the objectives and targets

b) stipulating operating criteria in the procedures

c) establishing and maintaining procedures rela to the identifiable significant environmental pects of goods and services used by the org ization and communicating relevant procedu and requirements to suppliers and contractors

4 4 7 Emergency preparedness and response

The organization shall establish and maintain p cedures to identify potential for and respond to ac dents and emergency situations and for prevent and mitigating the environmental impacts that may associated with them

The organization shall review and revise where n essary its emergency preparedness and respor procedures in particular after the occurrence of ac dents or emergency situations

The organization shall also periodically test such p cedures where practicable

4 5 Checking and corrective action

4 5 1 Monitoring and measurement

The organization shall establish and maintain doc mented procedures to monitor and measure on regular basis the key characteristics of its operati and activities that can have a significant impact on environment This shall include the recording information to track performance relevant operatic controls and conformance with the organization s vironmental objectives and targets

Monitoring equipment shall be calibrated and m tained and records of this process shall be retai according to the organization s procedures

The organization shall establish and maintain a dc mented procedure for periodically evaluating con ance with relevant environmental legislation regulations

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4.5.2 Nonconformance and corrective and preventive action

The organization shall establish and maintain procedures for defining responsibility and authority for handling and investigat ng nonconformance, taking action to mitigate any impacts caused and for initiating and completing corrective and preventive action

Any corrective or preventive action taken to eliminate the causes of actual and potential nonconformances shall be appropriate to the magnitude of problems and commensurate with the environmental impact encountered

The organization shall implement and record any changes in the documented procedures resulting from corrective and preventive action

4 5 3 Records

The organization shall establish and maintain procedures for the identification maintenance and disposition of environmental records These records shall include training records and the results of audits and reviews

Environmental records shall be legible identifiable and traceable to the activity product or service involved Environmental records shall be stored and maintained in such a way that they are readily retrievable and protected against damage deterioration or loss Their retention times shall be established and recorded

Records shall be maintained as appropriate to the system and to the organization to demonstrate con formance to the requirements of this International Standard

4.5 4 Environmental management system audit

The organization shall establish and maintain (a) programme(s) and procedures for periodic environmental management system audits to be carried out in order to

a) determine whether or not the environmental man agement system
   1) conforms to planned arrangements for en vironmental management including the requirements of this International Standard and
   2) has been properly implemented and main tained and
b) provide information on the results of audits to management

The organization's audit programme including any schedule shall be based on the environmental import ance of the activity concerned and the results of previous audits In order to be comprehensive the audit procedures shall cover the audit scope frequency and methodologies as well as the responsibilities and re quirements for conducting audits and reporting results

4 6 Management review

The organization s top management shall at intervals that it determines review the environmental management system to ensure its continuing suitability ad equacy and effectiveness The management review process shall ensure that the necessary information is collected to allow management to carry out this evaluation This review shall be documented

The management review shall address the possible need for changes to policy objectives and other el ements of the environmental management system in the light of environmental management system audit results changing circumstances and the commitment to continual improvement

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Annex A
(informative)

Guidance on the use of the specification

This annex gives additional information on the requirements and is intended to avoid misinterpretation of the specification This annex only addresses the environmental management system requirements contained in clause 4

A 1 General requirements

It is intended that the implementation of an environmental management system described by the specification will result in improved environmental performance The specification is based on the concept that the organization will periodically review and evaluate its environmental management system in order to identify opportunities for improvement and their implementation Improvements in its environmental management system are intended to result in additional improvements in environmental performance

The environmental management system provides a structured process for the achievement of continual improvement the rate and extent of which will be determined by the organization in the light of economic and other circumstances Although some improvement in environmental performance can be expected due to the adoption of a systematic approach it should be understood that the environmental management system is a tool which enables the organization to achieve and systematically control the level of environmental performance that it sets itself The establishment and operation of an environmental management system will not in itself necessarily result in an immediate reduction of adverse environmental impact

An organization has the freedom and flexibility to define its boundaries and may choose to implement this International Standard with respect to the entire organization or to specific operating units or activities of the organization If this International Standard is implemented for a specific operating unit or activity policies and procedures developed by other parts of the organization can be used to meet the requirements of this International Standard provided that they are applicable to the specific operating unit or activity that will be subject to it The level of detail and complexity of the environmental management system the extent of documentation and the resources devoted to it will be dependent in the size of an organization and the nature of its activities This may be the case in particular for small and medium-sized enterprises

Integration of environmental matters with the overall management system can contribute to the effective implementation of the environmental management system, as well as to efficiency and to clarity of roles

This International Standard contains management system requirements based on the dynamic cyclical process of "plan implement check and review"

The system should enable an organization to

a) establish an environmental policy appropriate to itself

b) identify the environmental aspects arising from the organization s past existing or planned activities, products or services to determine the environmental impacts of significance

c) identify the relevant legislative and regulatory requirements

d) identify priorities and set appropriate environmental objectives and targets

e) establish a structure and (a) programme(s) to implement the policy and achieve objectives and targets

f) facilitate planning control monitoring corrective action auditing and review activities to ensure both that the policy is complied with and that the environmental management system remains appropriate

g) be capable of adapting to changing circumstances

A 2 Environmental policy

The environmental policy is the driver for implementing and improving the organization s environmental management system so that it can maintain and potentially improve its environmental performance The policy should therefore reflect the commitment of top management to compliance with applicable laws and continual improvement The policy forms the basis upon which the organization sets its objectives and targets The policy should be sufficiently clear to be capable of being understood by internal and external interested parties and should be periodically reviewed and revised to reflect changing conditions and information Its area of application should be clearly identifiable

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The organization s top management should define and document its environmental policy within the context of the environmental policy of any broader corporate body of which it is a part and with the endorsement of that body, if there is one

NOTE — Top management may consist of an individual or group of individuals with executive responsibility for the organization

A 3 Planning

A 3 1 Environmental aspects

Subclause 4 3 1 is intended to provide a process for an organization to identify significant environmental aspects that should be addressed as a priority by the organization's environmental management system This process should take into account the cost and time of undertaking the analysis and the availability of reliable data Information already developed for regulatory or other purposes may be used in this process Organizations may also take into account the degree of practical control they may have over the environmental aspects being considered Organizations should determine what their environmental aspects are taking into account the inputs and outputs associated with their current and relevant past activities products and/or services

An organization with no existing environmental management system should initially establish its current position with regard to the environment by means of a review The aim should be to consider all environmental aspects of the organization as a basis for establishing the environmental management system

Those organizations with operating environmental management systems do not have to undertake such a review

The review should cover four key areas

a) legislative and regulatory requirements

b) an identification of significant environmental aspects

c) an examination of all existing environmental management practices and procedures

d) an evaluation of feedback from the investigation of previous incidents

In all cases consideration should be given to normal and abnormal operations within the organization and to potential emergency conditions

A suitable approach to the review may include check lists interviews direct inspection and measurement results of previous audits or other reviews depend on the nature of the activities

The process to identify the significant environmer aspects associated with the activities at operati units should where relevant consider,

a) emissions to air,

b) releases to water

c) waste management

d) contamination of land,

e) use of raw materials and natural resources,

f) other local environmental and community issues

This process should consider normal operating co ditions, shut-down and start-up conditions as well the realistic potential significant impacts associate with reasonably foreseeable or emergency situations

The process is intended to identify significant e vironmental aspects associated with activities pro ucts or services and is not intended to require a d tailed life cycle assessment Organizations do n have to evaluate each product component or ra material input They may select categories of activ ties products or services to identify those aspec most likely to have a significant impact

The control and influence over the environmental a pects of products vary significantly, depending on th market situation of the organization A contractor c supplier to the organization may have comparativel little control while the organization responsible fc product design can alter the aspects significantly b changing for example a single input material Whil recognizing that organizations may have limited cor trol over the use and disposal of their products the should consider where practical proper handling an disposal mechanisms This provision is not intended t change or increase an organisation s legal obligations

A 3 2 Legal and other requirements

Examples of other requirements to which the organ ization may subscribe are

a) industry codes of practice

b) agreements with public authorities

c) non regulatory guidelines

A 3 3 Objectives and targets

The objectives should be specific and targets shoul be measurable wherever practicable and where ap propriate take preventative measures into account

When considering their technological options an organization may consider the use of the best available technology where economically viable, cost-effective and judged appropriate

The reference to the financial requirements of the organization is not intended to imply that organizations are obliged to use environmental cost-accounting methodologies

A.3 4 Environmental management programme(s)

The creation and use of one or more programmes is a key element to the successful implementation of an environmental management system The programme should describe how the organization's objectives and targets will be achieved including time-scales and personnel responsible for implementing the organization's environmental policy This programme may be subdivided to address specific elements of the organization's operations The programme should include an environmental review for new activities

The programme may include where appropriate and practical consideration of planning design production marketing and disposal stages This may be undertaken for both current and new activities products or services For products this may address design materials production processes use and ultimate disposal For installations or significant modifications of processes this may address planning design construction commissioning operation and at the appropriate time determined by the organization decommissioning

A 4 Implementation and operation

A 4 1 Structure and responsibility

The successful implementation of an environmental management system calls for the commitment of all employees of the organization Environmental responsibilities therefore should not be seen as confined to the environmental function but may also include other areas of an organization such as operational management or staff functions other than environmental

This commitment should begin at the highest levels of management Accordingly top management should establish the organization s environmental policy and ensure that the environmental management system is implemented As part of this commitment the top management should designate (a) specific management representative(s) with defined responsibility and authority for implementing the environmental management system In large or complex organizations there may be more than one designated representative In small or medium sized enterprises these responsibilities may be undertaken by one individual Top management should also ensure that appropriate resources are provided to ensure that the environmental management system is implemented and maintained It is also important that the key environmental management system responsibilities are well defined and communicated to the relevant personnel

A 4.2 Training, awareness and competence

The organization should establish and maintain procedures for identifying training needs The organization should also require that contractors working on its behalf are able to demonstrate that their employees have the requisite training

Management should determine the level of experience competence and training necessary to ensure the capability of personnel especially those carrying out specialized environmental management functions

A 4 3 Communication

Organizations should implement a procedure for receiving documenting and responding to relevant information and requests from interested parties This procedure may include a dialogue with interested parties and consideration of their relevant concerns In some circumstances responses to interested parties concerns may include relevant information about the environmental impacts associated with the organization s operations These procedures should also address necessary communications with public authorities regarding emergency planning and other relevant issues

A 4 4 Environmental management system documentation

The level of detail of the documentation should be sufficient to describe the core elements of the environmental management system and their interaction and provide direction on where to obtain more detailed information on the operation of specific parts of the environmental management system This documentation may be integrated with documentation of other systems implemented by the organization It does not have to be in the form of a single manual

Related documentation may include

a) process information

b) organizational charts

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c) internal standards and operational procedures

d) site emergency plans

A 4 5 Document control

The intent of 4 4 5 is to ensure that organizations create and maintain documents in a manner sufficient to implement the environmental management system However the primary focus of organizations should be on the effective implementation of the environmental management system and on environmental performance and not on a complex documentation control system

A 4 6 Operational control

Text may be included here in a future revision

A 4 7 Emergency preparedness and response

Text may be included here in a future revision

A 5 Checking and corrective action

A 5 1 Monitoring and measurement

Text may be included here in a future revision

A 5 2 Nonconformance and corrective and preventive action

In establishing and maintaining procedures for investigating and correcting nonconformance the organization should include these basic elements

a) identifying the cause of the nonconformance

b) identifying and implementing the necessary corrective action

c) implementing or modifying controls necessary to avoid repetition of the nonconformance

d) recording any changes in written procedures resulting from the corrective action

Depending on the situation this may be accomplished rapidly and with a minimum of formal planning or it may be a more complex and long term activity The associated documentation should be appropriate to the level of corrective action

A 5 3 Records

Procedures for identification maintenance and disposition of records should focus on those records needed for the implementation and operation of the environmental management system and for recording the extent to which planned objectives and targets have been met

Environmental records may include

a) information on applicable environmental laws other requirements

b) complaint records

c) training records

d) process information,

e) product information,

f) inspection maintenance and calibration records

g) pertinent contractor and supplier information

h) incident reports

i) information on emergency preparedness and response,

j) information on significant environmental aspects

k) audit results,

l) management reviews

Proper account should be taken of confidential business information

A 5 4 Environmental management system audit

The audit programme and procedures should cover

a) the activities and areas to be considered in audits

b) the frequency of audits

c) the responsibilities associated with managing and conducting audits

d) the communication of audit results

e) auditor competence

f) how audits will be conducted

Audits may be performed by personnel from within the organization and/or by external persons selected by the organization In either case the persons conducting the audit should be in a position to do so impartially and objectively

A 6 Management review

In order to maintain continual improvement suitability and effectiveness of the environmental management system and thereby its performance the organization s management should review and evaluate the environmental management system at defined intervals The scope of the review should be comprehen

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sive though not all elements of an environmental management system need to be reviewed at once and the review process may take place over a period of time

The review of the policy, objectives and procedures should be carried out by the level of management that defined them

Reviews should include

a) results from audits

b) the extent to which objectives and targets have been met

c) the continuing suitability of the environmental management system in relation to changing conditions and information

d) concerns amongst relevant interested parties

Observations, conclusions and recommendations should be documented for necessary action

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Annex B
(informative)

Links between ISO 14001 and ISO 9001

Tables B 1 and B 2 identify links and broad technical correspondences between ISO 14001 and ISO 9001 and *vice versa*

The objective of the comparison is to demonstrate the combinability of both systems to those organizations already operating one of these International Standards and which may wish to operate both

A direct link between subclauses of the two International Standards has only been established if the two subclauses are largely congruent in requirements Beyond that many detailed cross-connections of minor relevance exist which could not be shown here

Table B 1 — Correspondence between ISO 14001 and ISO 9001

ISO 14001 1996		ISO 9001 1994	
General requirements	4 1	4.2 1 1st sentence	General
Environmental policy	4 2	4 1 1	Quality policy
Planning			
Environmental aspects	4 3 1	—	
Legal and other requirements	4 3 2	— 1)	
Objectives and targets	4 3 3	— 2)	
Environmental management programme(s)	4 3 4	—	
	—	4 2 3	Quality planning
Implementation and operation			
Structure and responsibility	4 4 1	4 1 2	Organization
Training awareness and competence	4 4 2	4 18	Training
Communication	4 4 3	—	
Environmental management system documentation	4 4 4	4.2 1 without 1st sentence	General
Document control	4 4 5	4 5	Document and data control
Operational control	4 4 6	4 2 2	Quality system procedures
	4 4 6	4 3 3)	Contract review
	4 4 6	4 4	Design control
	4 4 6	4 6	Purchasing
	4 4 6	4 7	Control of customer-supplied product
	4 4 6	4 9	Process control
	4 4 6	4 15	Handling storage packaging preservation and delivery
	4 4 6	4 19	Servicing
	—	4 8	Product identification and traceability
Emergency preparedness and response	4 4 7	—	
Checking and corrective action			
Monitoring and measurement	4 5 1 1st and 3rd paragraphs	4 10	Inspection and testing
	—	4 12	Inspection and test status
	—	4 20	Statistical techniques
Monitoring and measurement	4 5 1 2nd paragraph	4 11	Control of inspection measuring and test equipment
Nonconformance and corrective and preventive action	4 5 2 1st part of 1st sentence	4 13	Control of nonconforming product
Nonconformance and corrective and preventive action	4 5 2 without 1st part of 1st sentence	4 14	Corrective and preventive action
Records	4 5 3	4 16	Control of quality records
Environmental management system audit	4 5 4	4 17	Internal quality audits
Management review	4 6	4 1 3	Management review

1) Legal requirements addressed in ISO 9001 4 4 4
2) Objectives addressed in ISO 9001 4 1 1
3) Communication with the quality stakeholders (customers)

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Table B.2 — Correspondence between ISO 9001 and ISO 14001

ISO 9001 1994		ISO 14001 1996	
Management responsibility			
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1) Legal requirements addressed in ISO 9001 4 4 4
2) Objectives addressed in ISO 9001 4 1 1
3) Communication with the quality stakeholders (customers)

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Annex C
(informative)

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[5] ISO 9001 1994 *Quality systems — Model for quality assurance in design development, production, installation and servicing*

[6] ISO 14004 1996 *Environmental management systems — General guidelines on principles systems and supporting techniques*

[7] ISO 14010 1996 *Guidelines for environmental auditing — General principles*

[8] ISO 14011 1996 *Guidelines for environmental auditing — Audit procedures — Auditing of environmental management systems*

[9] ISO 14012 1996, *Guidelines for environmental auditing — Qualification criteria for environmental auditors*

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APPENDIX B
ISO 14001 DIAGNOSTIC QUESTIONNAIRE

ENVIRONMENTAL POLICY

1 Does the company have a comprehensive environmental policy, in addition to policies and procedures on specific environmental matters? If yes, provide a copy of the policy and answer the following

   a When was the policy adopted?

   b How was the policy developed?

   c What most senior executive, committee or board approved the policy?

2 Indicate "yes" or "no' as to whether the company management has provided for items 2 a through 2 f in its comprehensive environmental policy or in other written statements of environmental policy or procedure If the answer is "yes," describe and reference how the company has provided for the item or submit underlying documents

   a measures addressing and appropriate to the environmental impacts of its activities,

   b a commitment to continual improvement and prevention of pollution,

   c a commitment to comply with relevant environmental legislation and regulations and with other requirements to which the company subscribes

   d a framework for setting and reviewing environmental objectives and targets

   e mechanisms for documenting and for implementing and maintaining environmental policies and procedures and for communicating environmental policies to employees and

   f a mechanism for making the policy or policies available to the public

IDENTIFICATION OF ENVIRONMENTAL IMPACTS

3 Does the company have a procedure (other than for compliance with legal requirements) to identify the aspects of its activities and services that may have significant environmental impacts and to consider such impacts in setting environmental objectives? If so, describe the procedure and its implementation, and how information is kept up-to-date

IDENTIFICATION OF LEGAL AND OTHER REQUIREMENTS

4 Does the company have a procedure for identifying and keeping up-to-date on legal and other requirements to which its subscribes that are directly applicable to the environmental aspects of its activities, products and services? If "yes," describe and reference the procedure or provide underlying documentation

ENVIRONMENTAL OBJECTIVES AND TARGETS

5 Does the company have documented environmental objectives and targets at each relevant function and level within the organization? If "yes," specify the objectives and targets and provide the date when they were originally adopted as well the dates and content of any subsequent revisions

6 In establishing and reviewing any objectives described in response to question 5, indicate whether the company considered

a legal and other requirements,

b significant environmental aspects of its activities products and services,

c technological options,

d financial, operational and business requirements and

e the views of interested parties

If yes was the answer to any questions 6 a through 6 e summarize the way in which these factors were considered

7 Are all environmental objectives and targets described in question 5 consistent with any comprehensive environmental policy of the company and all of its other environmental policies and procedures?

ISO 14001	Standard that details the basic requirements of an effective EMS system
ISO 14004	Standard that provides general guidelines on principles, systems and supporting techniques for an EMS
ISO 14010	Standard that contains general guidelines and principles for environmental auditing
ISO 14011	Standard that details guidelines for environmental auditing of EMS
ISO 14012	Standard that contains qualifications criteria for environmental auditors
Multimedia	Refers to all environmental media (air, land and water) to which a hazardous substance, pollutant, or contaminant may be discharged, released, or displaced
Pollution Prevention	The use of materials, processes, or practices that reduce or eliminate the creation of pollutants or wastes at the source Pollution prevention includes practices that reduce the use of hazardous and nonhazardous materials, energy, water, or other resources as well as those that protect natural resources through conservation or more efficient use
Qualified Environmental Claim	A qualified claim or environmental claim is one that "is accompanied by an explanatory statement that describes the limits of the claim '
Self-Declaration Environmental Claim	' An environmental claim that is made without independent third-party certification by manufacturers importers distributors retailers or anyone else likely to benefit from such a claim ' Claims can take the form of statements symbols or graphics on product or packaging labels, product literature technical bulletins advertising television and so on
Site	A site according to EMAS refers to ' all land on which the industrial activity under the control of a company at a given location is carried out "

Environmental Management System (EMS)	An environmental management system is "that part of the overall management system which includes organizational structure planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy "
Environmental Management System Audit	This is a "systematic and documented verification process to objectively obtain and evaluate evidence to determine whether an organization's environmental management system conforms to the environmental management system audit criteria" that are set by the organization itself The definition also adds that the results of the EMS audit process must be communicated to management
Environmental Performance	Environmental performance refers to "measurable results of the environmental management system, related to an organization s control of the environmental aspects based on its environmental policy, objectives and targets "
Environmental Policy	The overall environmental intentions and direction of an organization as regards environment, as formally expressed by top management
Environmental Review	"An initial comprehensive analysis of the environmental issues, impacts and performance related to a site '
Explanatory Statement	Any further explanation which is needed so that an environmental claim can be properly understood by a purchaser or consumer
ISO 9000	Standard set by the International Standards Organization (ISO) ISO 9000 provides the organizational structures responsibilities, procedures processes and resources for implementing quality management and quality assurance
ISO 14000 Series	Standards developed by ISO to provide organizations worldwide with a common approach to environmental management The ISO 14000 standards describe the basic elements of an effective environmental management system routinely referred to by the acronym EMS These elements include creating an environmental policy setting objectives and targets, implementing a program to achieve those objectives, monitoring and measuring its effectiveness correcting problems, and reviewing the system to improve its overall environmental performance

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PLAN FOR ACHIEVING ENVIRONMENTAL OBJECTIVES AND TARGETS

8 Does the company have a program or programs for achieving its environmental objectives and targets? If so, please indicate whether responsibility for achieving objectives and targets has been designated at each relevant function and level of the organization, and include

a a description or organization chart explaining the designation of roles, responsibilities and authorities, including

i identification of the most senior management representative or representatives responsible for overall environmental management in the company and for reporting to top management on the performance of the environmental management system,

ii identification of the immediate supervisors of the individuals identified in 8 a i and their positions, and

iii description of the means and frequency with which top management reviews the environmental management system to ensure its continuing suitability, adequacy and effectiveness, including the process through which necessary information is collected to conduct reviews

b A description of the current means and time frame by which objectives and targets are to be achieved, including

i if the time frame has changed over time the date, nature, and reason for each revision from when a time frame was first established through the current time frame and

ii an estimate of full-time equivalent staff commitment and non-labor items and expenses applied to achieving objectives and targets in the current year in the previous year and in the year to come

OPERATIONAL CONTROL

9 Does the company have procedures and programs in place to identify those operations and activities whose environmental aspects are significant to the achievement of the company's environmental policies, objectives and targets? If so, describe them

10 If the answer to question 9 is "yes," in planning for these operations and activities, including maintenance, does the company ensure that they are carried out under specified conditions by

a establishing and maintaining documented procedures whose absence could lead to deviations from the company's environmental policy, objectives and targets,

b stipulating operating criteria in the procedure,

c establishing and maintaining procedures related to the environmental aspects of goods and services used by the company, and communicating relevant procedures and requirements to suppliers and contractors

If questions 10 a through 10 c are answered "yes," provide a description or copy of the procedures or criteria referenced

EMERGENCY PREPAREDNESS AND RESPONSE

11 Does the company maintain procedures to identify the potential for and response to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with such situations? If so, please describe and reference such procedures or provide a copy of them, including any procedures for

a review and revision of emergency preparedness and response procedures, and

b periodic testing of emergency preparedness and response procedures

ENVIRONMENTAL TRAINING, AWARENESS AND COMPETENCE

12 Does the company have an environmental training program? If 'yes' please describe the program and indicate

a whether training is mandatory for all personnel whose work may create a significant impact on the environment and how such personnel are identified and

b whether mechanisms are in place for assuring the personnel identified in 12 a are competent in their jobs at all times on the basis of education training, or experience

13 Indicate whether the company has established and maintains procedures and programs to make employees at each relevant function and level aware of

a the importance of conforming with company environmental policy and procedures and with the requirements of the company environmental management system

b the significant actual or potential environmental impacts of their work activities and the environmental benefits of improved personal performance,

c their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system including emergency preparedness and response requirements, and

d the potential consequences of departure from specified operating procedures

COMMUNICATION

14 Describe procedures in place within the company, if any, for

a internal communications on environmental matters between the various levels and functions of the company,

b receiving, documenting and responding to communications on environmental matters from external interested parties, and

c generally communicating with external parties on environmental aspects of company activities, products and services If such a general plan exists, please describe the process through which it was adopted and the involvement of external parties in the process if any

CHECKING AND CORRECTIVE ACTION

15 Does the company maintain documented procedures to monitor and measure on a regular basis the key characteristics of its operations and activities that can have a significant impact on the environment? If so describe the procedures and key characteristics covered, and indicate whether and how

a information is recorded to track performance and to assess the effectiveness of relevant operational controls and conformance with the company's environmental

policy or policies, objectives and targets,

b procedures are maintained and implemented for calibrating monitoring equipment and for keeping records of calibration, and

c procedures are maintained and implemented for assuring and for periodically evaluating compliance with applicable environmental legislation, regulations permits and other legal requirements

16 Does the company maintain procedures defining responsibility and authority for handling and investigating non-conformance with environmental legal requirements and with the company's environmental policy or policies, objectives and targets? If so, describe and reference or provide a copy of such procedures, and indicate whether they

a define responsibility and authority for taking action to mitigate impacts caused by non-conformance,

b define responsibility and authority for initiating and completing corrective and preventive action appropriate to the magnitude of problems and commensurate with the environmental impact encountered, and

c address the implementation and recording of any changes in documented procedures arising from corrective and preventive action

AUDITS

17 Does the company maintain programs and procedures for periodic environmental management system audits? If so, describe such programs and procedures and include descriptions of procedures for

a audit scope,

b audit frequency

c audit methodology and

d responsibilities for conducting audits and reporting results

18 Indicate whether and how audits

a assess whether or not the company's environmental management system conforms

to planned arrangements for environmental management and whether it effectively serves implementation of the company's environmental policy or policies and achievement of its environmental objectives and targets,

b assess whether or not the company's environmental management system has been properly implemented and maintained, and

c are used to provide information to management on 18 a and 18 b

DOCUMENTATION AND RECORD CONTROL

19 Indicate whether the company maintains information in paper or electronic form to

a describe the core elements of the management system and their interaction, and

b provide direction to related documentation? If the answer to a or b is "yes," please describe how such information is maintained

20 Does the company maintain procedures for controlling all documents and other records pertaining to its environmental management system to ensure that they are

a legible,

b dated,

c identifiable,

d traceable to the activity, product or service involved,

e maintained in an orderly manner

f easily located and retrieved,

g protected against damage deterioration or loss

h retained for a specified period

i periodically reviewed revised as necessary and approved by authorized personnel

j available at all locations where relevant,

k retained for established and recorded lengths of time

l removed from use when obsolete

m archived as necessary and appropriate, and

n generally maintained in a way that demonstrates the implementation of a sound

environmental management system

Briefly describe the document control procedure in place for each question 20 a through 20 n that is answered "yes

APPENDIX C
GLOSSARY OF TERMS[1]

Accreditation	Procedure by which an authoritative body gives formal recognition that a body or person is competent to carry out specific tasks
Certification	Procedure by which a third party gives written assurance that a product, process, or service conforms to specific requirements
Company	Company refers to the "organization which has overall management control over activities at a given site "
Continual Improvement	Continual improvement refers to the "process of enhancing the environmental management system to achieve improvements in overall environmental performance in line with the organization's policy " This process need not take place in all areas of activity simultaneously
Environment	The environment is defined in ISO 14001 as the surroundings in which an organization operates including ' air, water, land, natural resources, flora, fauna humans and their interrelation " The environment extends from within the organization to the global system From a practical point of view, the environment that concerns a company would be the surroundings in which an organization's activities, products and service have significant environmental impact and over which the organization can exercise some reasonable control or influence This influence and control can extend from local through regional and even to global conditions depending on the nature of the organization

[1] Definitions taken from Tibor Tom ISO 14000 A Guide to the New Environmental Standards Irwin Publishing Chicago IL 1996 and U S Environmental Protection Agency Facility Pollution Prevention Guide Pollution Prevention Research Branch Cincinnati Ohio May 1992

Environmental Aspect — An environmental aspect is defined in ISO 14001 as an "element of an organization's activities, products and/or services which can interact with the environment " Companies are responsible for identifying the environmental aspects of their products, processes, and services when setting up an EMS

Environmental Audit — The procedure by which a company's processes and outputs are evaluated to determine their impacts on the environment

Environmental Auditor — A person qualified to perform environmental audits

Environmental Claim — Defined in the ISO/CD 14021 standard as any "environmental declaration that describes or implies by whatever means the effects that the raw material extraction, production, distribution, use, or disposal of a product or service has on the environment " The definition applies to local, regional, and global effects

Environmental Impact — An environmental impact is "any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products and/or services " The environmental aspects of an organization's activities create environmental impacts

Eco-Management and Audit Scheme (EMAS) — The European Community's voluntary participation program that allows industrial companies to evaluate and improve their environmental performance and relay relevant information to the public EMAS makes adherence to formal EMS and auditing mandatory and requires that organizations make independently verifiable public statements regarding their environmental performance Participation in the program entitles a company to register a site on an European Union (EU) authorized list of participating sites and to use an EU-approved statement of participation and graphic to publicize inclusion in the program

Environmental Management Hierarchy — The U S Pollution Prevention Act of 1990 established a hierarchy as national policy The hierarchy follows this order prevent or reduce pollution at the source wherever feasible, recycle in an environmentally acceptable manner pollution that cannot feasibly be prevented, treat pollution that cannot feasibly by prevented or recycled, and dispose of, or otherwise release into the environment, pollution only as a last resort

APPENDIX D
ISO 14004 ENVIRONMENTAL MANAGEMENT SYSTEM GUIDANCE STANDARD

ANSI/ISO 14004-1996

Environmental management systems — General guidelines on principles, systems and supporting techniques

ANSI/ISO 14004-1996

Approved as an American National Standard by

American Society for Quality Control
American Society for Testing & Materials
NSF International

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies) The work of preparing International Standards is normally carried out through ISO technical committees Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee International organizations governmental and non governmental in liaison with ISO also take part in the work ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote

International Standard ISO 14004 was prepared by Technical Committee ISO/TC 207 *Environmental management* Subcommittee SC 1 *Environmental management systems*

Annexes A and B of this International Standard are for information only

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Introduction

0 1 Overview

As concern grows for maintaining and improving the quality of the environ ment and protecting human health organizations of all sizes are increas ingly turning their attention to the potential environmental impacts of their activities products or services The environmental performance of an organi zation is of increasing importance to internal and external interested parties Achieving sound environmental performance requires organizational com mitment to a systematic approach and to continual improvement of the envi ronmental management system (EMS)

The general purpose of this International Standard is to provide assistance to organizations implementing or improving an EMS It is consistent with the concept of sustainable development and is compatible with diverse cultural social and organizational frameworks

It should be noted that only ISO 14001 contains requirements that may be objectively audited for certification/registration purposes or for self declaration purposes Alternatively this International Standard includes examples de scriptions and options that aid both in the implementation of an EMS and in strengthening its relation to the overall management of the organization

An EMS provides order and consistency for organizations to address environ mental concerns through the allocation of resources assignment of respon sibilities and ongoing evaluation of practices procedures and processes

This International Standard considers the elements of an EMS and provides practical advice on implementing or enhancing such a system It also pro vides organizations with advice on how to effectively initiate improve or sus tain an environmental management system Such a system is essential to an organization s ability to anticipate and meet its environmental objectives and to ensure ongoing compliance with national and/or international requirements

Environmental management is an integral part of an organization s overall management system The design of an EMS is an ongoing and interactive process The structure responsibilities practices procedures processes and resources for implementing environmental policies objectives and targets can be coordinated with existing efforts in other areas (e g operations fi nance quality occupational health and safety)

Key principles for managers implementing or enhancing an environmental management system include but are not limited to the following

— Recognize that environmental management is among the highest cor porate priorities

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— Establish and maintain communication with internal and external interested parties

— Determine the legislative requirements and environmental aspects associated with the organization s activities products or services

— Develop management and employee commitment to the protection of the environment with clear assignment of accountability and responsibility

— Encourage environmental planning throughout the product or process life cycle

— Establish a process for achieving targeted performance levels

— Provide appropriate and sufficient resources including training to achieve targeted performance levels on an ongoing basis

— Evaluate environmental performance against the organization s environmental policy objectives and targets and seek improvement where appropriate

— Establish a management process to audit and review the EMS and to identify opportunities for improvement of the system and resulting environmental performance

— Encourage contractors and suppliers to establish an EMS

Organizations can consider the following different uses of the EMS International Standards

— Using ISO 14001 1996 *Environmental management systems — Specification with guidance for use* to achieve third-party certification/registration or self-declaration of an organization s EMS

— Using this International Standard or parts of it to initiate and/or improve its EMS It is not intended for certification/registration purposes

— Using this International Standard as a guideline or ISO 14001 as a specification for second party recognition between contracting parties which may be suitable for some business relationships

— Using related ISO documents

The choice will depend on factors such as

— organization policy

— level of maturity of the organization whether systematic management that can facilitate the introduction of systematic environmental management is already in place

— possible advantages and disadvantages influenced by such things as market position existing reputation and external relations

— size of the organization

This International Standard can be used by organizations of any size Nonetheless the importance of small and medium sized enterprises (SMEs) is being increasingly recognized by governments and business This International Standard acknowledges and accommodates the needs of SMEs

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0 2 Benefits of having an environmental management system

An organization should implement an effective environmental management system in order to help protect human health and the environment from the potential impacts of its activities products or services and to assist in maintaining and improving the quality of the environment

Having an EMS can help an organization provide confidence to its interested parties that

— a management commitment exists to meet the provisions of its policy objectives and targets

— emphasis is placed on prevention rather than corrective action

— evidence of reasonable care and regulatory compliance can be provided and

— the systems design incorporates the process of continual improvement

An organization whose management system incorporates an EMS has a framework to balance and integrate economic and environmental interests An organization that has implemented an EMS can achieve significant competitive advantages

Economic benefits can be gained from implementing an environmental management system These should be identified in order to demonstrate to interested parties especially shareholders the value to the organization of good environmental management It also provides the organization with the opportunity to link environmental objectives and targets with specific financial outcomes and thus to ensure that resources are made available where they provide the most benefit in both financial and environmental terms

The potential benefits associated with an effective EMS include

— assuring customers of commitment to demonstrable environmental management

— maintaining good public/community relations

— satisfying investor criteria and improving access to capital

— obtaining insurance at reasonable cost

— enhancing image and market share

— meeting vendor certification criteria

— improving cost control

— reducing incidents that result in liability

— demonstrating reasonable care

— conserving input materials and energy

— facilitating the attainment of permits and authorizations

— fostering development and sharing environmental solutions

— improving industry government relations

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Environmental management systems — General guidelines on principles, systems and supporting techniques

1 Scope

This International Standard provides guidance on the development and implementation of environmental management systems and principles and their coordination with other management systems

The guidelines in this International Standard are applicable to any organization regardless of size type or level of maturity that is interested in developing implementing and/or improving an environmental management system

The guidelines are intended for use as a voluntary internal management tool and are not intended to be used as EMS certification/registration criteria

2 Normative references

There are no normative references at present

3 Definitions

For the purposes of this International Standard the following definitions apply

3 1
continual improvement
process of enhancing the environmental management system to achieve improvements in overall environmental performance in line with the organization s environmental policy

NOTE — The process need not take place in all areas of activity simultaneously

3 2
environment
surroundings in which an organization operates including air water land natural resources flora fauna humans and their interrelation

NOTE — Surroundings in this context extend from within an organization to the global system

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3 3
environmental aspect
element of an organization s activities products or services that can interact with the environment

NOTE — A significant environmental aspect is an environmental aspect that has or can have a significant environmental impact

3 4
environmental impact
any change to the environment whether adverse or beneficial wholly or partially resulting from an organization s activities products or services

3 5
environmental management system
that part of the overall management system that includes organizational structure planning activities responsibil ities practices procedures processes and resources for developing implementing achieving reviewing and main taining the environmental policy

3 6
environmental management system audit
systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organization s environmental management system conforms to the environmental management sys tem audit criteria set by the organization and for communication of the results of this process to management

3 7
environmental objective
overall environmental goal arising from the environmental policy that an organization sets itself to achieve and which is quantified where practicable

3 8
environmental performance
measurable results of the environmental management system related to an organization s control of its environmen tal aspects based on its environmental policy objectives and targets

3 9
environmental policy
statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets

3 10
environmental target
detailed performance requirement quantified where practicable applicable to the organization or parts thereof that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives

3 11
interested party
individual or group concerned with or affected by the environmental performance of an organization

3 12
organization
company corporation firm enterprise authority or institution or part or combination thereof whether incorporated or not public or private that has its own functions and administration

NOTE — For organizations with more than one operating unit a single operating unit may be defined as an organization

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3 13
prevention of pollution
use of processes practices materials or products that avoid reduce or control pollution which may include recycling treatment process changes control mechanisms efficient use of resources and material substitution

NOTE — The potential benefits of prevention of pollution include the reduction of adverse environmental impacts improved efficiency and reduced costs

4 Environmental management system (EMS) principles and elements

The EMS model (see figure 1) follows the basic view of an organization which subscribes to the following principles

Principle 1 — Commitment and policy

An organization should define its environmental policy and ensure commitment to its EMS

Principle 2 — Planning

An organization should formulate a plan to fulfil its environmental policy

Principle 3 — Implementation

For effective implementation an organization should develop the capabilities and support mechanisms necessary to achieve its environmental policy objectives and targets

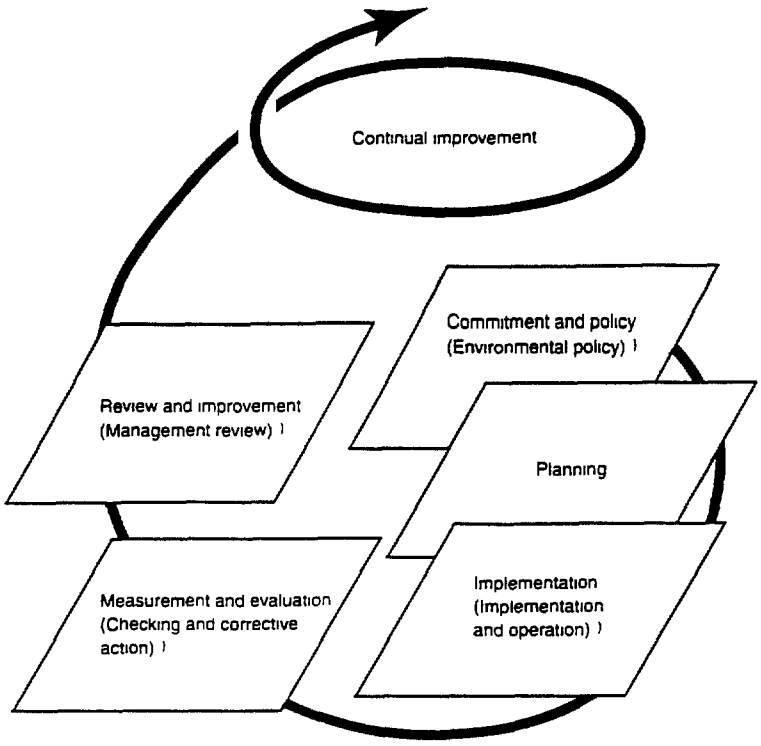
Principle 4 — Measurement and evaluation

An organization should measure monitor and evaluate its environmental performance

Principle 5 — Review and improvement

An organization should review and continually improve its environmental management system with the objective of improving its overall environmental performance

With this in mind the EMS is best viewed as an organizing framework that should be continually monitored and periodically reviewed to provide effective direction for an organization s environmental activities in response to changing internal and external factors Every individual in an organization should accept responsibility for environmental improvements



) Terms used in ISO 14001

Figure 1 — Environmental management system model for this International Standard

4 1 Commitment and policy

Principle 1 — Commitment and policy An organization should define its environmental policy and ensure commitment to its EMS

4 1 1 General

The organization should begin where there is obvious benefit for example by focusing on regulatory compliance by limiting sources of liability or by making more efficient use of materials

As the organization grows in experience and its EMS starts to take shape procedures programmes and technologies can be put in place to further improve environmental performance Then as the EMS matures environmental considerations can be integrated into all business decisions

4 1 2 Top management commitment and leadership

To ensure success an early step in developing or improving an EMS involves obtaining commitment from the top management of the organization to improve the environmental management of its activities products or services The ongoing commitment and leadership of the top management are crucial

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4 1 3 Initial environmental review

The current position of an organization with regard to the environment can be established by means of an initial environmental review The initial review can cover the following

— identification of legislative and regulatory requirements
— identification of environmental aspects of its activities products or services so as to determine those that have or can have significant environmental impacts and liabilities
— evaluation of performance compared with relevant internal criteria external standards regulations codes of practice and sets of principles and guidelines
— existing environmental management practices and procedures
— identification of the existing policies and procedures dealing with procurement and contracting activities
— feedback from the investigation of previous incidents of non compliance
— opportunities for competitive advantage
— the views of interested parties
— functions or activities of other organizational systems that can enable or impede environmental performance

In all cases consideration should be given to the full range of operating conditions including possible incidents and emergency situations

The process and results of the initial environmental review should be documented and opportunities for EMS development should be identified

Practical help—Initial environmental review

An important first step is to develop the list of areas to be reviewed This can include organization activities specific operations or a specific site

Some common techniques for conducting a review include

— *questionnaires*
— *interviews*
— *checklists*
— *direct inspection and measurement*
— *record review*
— *benchmarking*[1]

Organizations including SMEs can consult a number of outside sources such as

— *government agencies in relation to laws and permits*
— *local or regional libraries or databases*
— *other organizations for exchange of information*
— *industry associations*
— *larger customer organizations*
— *manufacturers of equipment in use*
— *business relations (e g with those who transport and dispose of waste)*
— *professional help*

1) Benchmarking is a technique for studying best practice whether within the organization in a competitor s organization or in a different industry to enable the organization to adopt or improve on it

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4 1 4 Environmental policy

An environmental policy establishes an overall sense of direction and sets the principles of action for an organization It sets the goal as to the level of environmental responsibility and performance required of the organization against which all subsequent actions will be judged

A growing number of international organizations including government industry associations and citizens groups have developed guiding principles (see annex A for two examples) Such guiding principles have helped organizations define the overall scope of their commitment to the environment They also help to give different organizations a common set of values Guiding principles such as these can assist the organization in developing its policy which can be as individual as the organization for which it is written

The responsibility for setting environmental policy normally rests with the organization s top management The organization s management is responsible for implementing the policy and for providing input to the formulation and modification of the policy

An environmental policy should consider the following

— the organization s mission vision core values and beliefs

— requirements of and communication with interested parties

— continual improvement

— prevention of pollution

— guiding principles

— coordination with other organizational policies (e g quality occupational health and safety)

— specific local or regional conditions

— compliance with relevant environmental regulations laws and other criteria to which the organization subscribes

Some issues to be considered in environmental policy

1 *Does the organization have an environmental policy that is relevant to its activities products and services?*

2 *Does the policy reflect the organization s values and guiding principles?*

3 *Has the environmental policy been approved by top management and has someone been identified and given the authority to oversee and implement the policy?*

4 *Does the policy guide the setting of environmental objectives and targets?*

5 *Does the policy guide the organization towards monitoring appropriate technology and management practices?*

6 *What commitments are embodied in the environmental policy for example support for continual improvement support for the prevention of pollution monitoring meeting or exceeding legal requirements and consideration of the expectations of interested parties?*

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Practical help — Environmental policy

All activities products or services can cause impacts on the environment The environmental policy should recognize this

A detailed review of the guiding principles in annex A can help in drafting an appropriate policy The issues addressed in the policy depend on the nature of the organization In addition to compliance with environmental regulations the policy can state commitments to

- *minimize any significant adverse environmental impacts of new developments through the use of the integrated environmental management procedures and planning*
- *development of environmental performance evaluation procedures and associated indicators*
- *embody life cycle thinking*
- *design products in such a way as to minimize their environmental impacts in production use and disposal*
- *prevent pollution reduce waste and the consumption of resources (materials fuel and energy) and commit to recovery and recycling as opposed to disposal where feasible*
- *education and training*
- *sharing environmental experience*
- *involvement of and communication with interested parties*
- *work towards sustainable development*
- *encourage the use of EMS by suppliers and contractors*

4 2 Planning

Principle 2 — Planning

An organization should formulate a plan to fulfil its environmental policy

4 2 1 General

The environmental management system elements relating to planning include

- identification of environmental aspects and evaluation of associated environmental impacts
- legal requirements
- environmental policy
- internal performance criteria
- environmental objectives and targets
- environmental plans and management programme

4 2 2 Identification of environmental aspects and evaluation of associated environmental impacts

An organization s policy objectives and targets should be based on knowledge about the environmental aspects and significant environmental impacts associated with its activities products or services This can ensure that the significant environmental impacts associated with these aspects are taken into account in setting the environmental objectives

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The identification of the environmental aspects is an ongoing process that determines the past current and potential impact (positive or negative) of an organization s activities on the environment This process also includes the identification of the potential regulatory legal and business exposure affecting the organization It can also include identification of health and safety impacts and environmental risk assessment

Some issues to be considered in identification of environmental aspects and evaluation of environmental impacts

1 *What are the environmental aspects of the organization s activities products and services?*

2 *Do the organization s activities products or services create any significant adverse environmental impacts?*

3 *Does the organization have a procedure for evaluating the environmental impacts of new projects?*

4 *Does the location of the organization require special environmental consideration for example sensitive environmental areas?*

5 *How will any intended changes or additions to activities products or services affect the environmental aspects and their associated impacts?*

6 *How significant or severe are the potential environmental impacts should a process failure occur?*

7 *How frequently will the situation arise that could lead to the impact?*

8 *What are the significant environmental aspects considering impacts likelihood severity and frequency?*

9 *Are the significant environmental impacts local regional or global in scope?*

Practical help — Identification of environmental aspects and evaluation of associated environmental impacts

The relationship between environmental aspects and environmental impacts is one of cause and effect

An environmental aspect refers to an element of an organization s activity product or service which can have a beneficial or adverse impact on the environment For example it could involve a discharge an emission consumption or reuse of a material or noise

An environmental impact refers to the change which takes place in the environment as a result of the aspect Examples of impacts might include pollution or contamination of water or depletion of a natural resource

The identification of environmental aspects and the evaluation of associated environmental impacts is a process that can be dealt with in four steps

Step 1 — Select an activity a product or service

The selected activity product or service should be large enough for meaningful examination and small enough to be sufficiently understood

Step 2 — Identify environmental aspects of the activity product or service

Identify as many environmental aspects as possible associated with the selected activity product or service

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Step 3 — Identify environmental impacts

Identify as many actual and potential positive and negative environmental impacts as possible associated with each identified aspect

Examples from the three steps above are shown as follows

Activity, product or service	***Aspect***	***Impact***
Activity — Handling of hazardous materials	*Potential for accidental spillage*	*Contamination of soil or water*
Product — Product refinement	*Reformulation of the product to reduce its volume*	*Conservation of natural resources*
Service — Vehicle maintenance	*Exhaust emissions*	*Reduction of air emissions*

Step 4 — Evaluate significance of impacts

The significance of each of the identified environmental impacts can be different for each organization Quantification can aid judgement

Evaluation can be facilitated by considering the following

Environmental concerns

- *the scale of the impact*
- *the severity of the impact*
- *probability of occurrence*
- *duration of impact*

Business concerns

- *potential regulatory and legal exposure*
- *difficulty of changing the impact*
- *cost of changing the impact*
- *effect of change on other activities and processes*
- *concerns of interested parties*
- *effect on the public image of the organization*

4 2 3 Legal and other requirements

The organization should establish and maintain procedures to identify have access to and understand all legal and other requirements to which it subscribes directly attributable to the environmental aspects of its activities products or services

Some issues to be considered in legal and other requirements

1 *How does the organization access and identify relevant legal and other requirements?*

2 *How does the organization keep track of legal and other requirements?*

3 *How does the organization keep track of changes to legal and other requirements?*

4 *How does the organization communicate relevant information on legal and other requirements to employees?*

Practical help — Legal and other requirements

To maintain regulatory compliance an organization should identify and understand regulatory requirements applicable to its activities products or services Regulations can exist in several forms

- *those specific to the activity (e g site operating permits)*
- *those specific to the organization s products or services*
- *those specific to the organization s industry*
- *general environmental laws*
- *authorizations, licenses and permits*

Several sources can be used to identify environmental regulations and ongoing changes including

- *all levels of government*
- *industry associations or groups*
- *commercial databases*
- *professional services*

To facilitate keeping track of legal requirements an organization can establish and maintain a list of all laws and regulations pertaining to its activities products or services

4 2 4 Internal performance criteria

Internal priorities and criteria should be developed and implemented where external standards do not meet the needs of the organization or are non existent Internal performance criteria together with external standards assist the organization in developing its own objectives and targets

Practical help — Internal performance criteria

Examples of areas where an organization can have internal performance criteria might include

- *management systems*
- *employee responsibilities*
- *acquisition property management and divestiture*
- *suppliers*
- *contractors*
- *product stewardship*
- *environmental communications*
- *regulatory relationships*
- *environmental incident response and preparedness*
- *environmental awareness and training*
- *environmental measurement and improvement*
- *process risk reduction*
- *prevention of pollution and resource conservation*
- *capital projects*
- *process change*
- *hazardous material management*
- *waste management*
- *water management (e g waste storm ground)*
- *air quality management*
- *energy management*
- *transportation*

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4 2 5 Environmental objectives and targets

Objectives should be established to meet the organization s environmental policy These objectives are the overall goals for environmental performance identified in the environmental policy When establishing its objectives an organization should also take into account the relevant findings from environmental reviews and the identified environmental aspects and associated environmental impacts

Environmental targets can then be set to achieve these objectives within a specified time-frame The targets should be specific and measurable

When the objectives and targets are set the organization should consider establishing measurable environmental performance indicators These indicators can be used as the basis for an environmental performance evaluation system and can provide information on both the environmental management and the operational systems

Objectives and targets can apply broadly across an organization or more narrowly to site-specific or individual activities Appropriate levels of management should define the objectives and targets Objectives and targets should be periodically reviewed and revised and should take into consideration the views of interested parties

Some issues to be considered in environmental objectives and targets

1 *How do environmental objectives and targets reflect both the environmental policy and significant environmental impacts associated with the organization s activities products or services?*

2 *How have the employees responsible for achieving the objectives and targets had input into their development?*

3 *How have the views of interested parties been considered?*

4 *What specific measurable indicators have been established for objectives and targets?*

5 *How are objectives and targets regularly reviewed and revised to reflect desired improvements in environmental performance?*

Practical help — Objectives and targets

Objectives can include commitments to

- *reduce waste and the depletion of resources*
- *reduce or eliminate the release of pollutants into the environment*
- *design products to minimize their environmental impact in production use and disposal*
- *control the environmental impact of sources of raw material*
- *minimize any significant adverse environmental impact of new developments*
- *promote environmental awareness among employees and the community*

Progress towards an objective can generally be measured using environmental performance indicators such as

- *quantity of raw material or energy used*
- *quantity of emissions such as CO*
- *waste produced per quantity of finished product*
- *efficiency of material and energy use*
- *number of environmental incidents (e g excursions above limits)*
- *number of environmental accidents (e g unplanned releases)*
- *percentage waste recycled*
- *percentage recycled material used in packaging*

— *number of vehicle kilometres per unit of production*
— *specific pollutant quantities e g NO_x SO_2 CO HC Pb CFCs*
— *investment in environmental protection*
— *number of prosecutions*
— *land area set aside for wildlife habitat*

An integrated example

Objective reduce energy required in manufacturing operations

Target achieve ten percent reduction of energy consumption compared to the previous year

Indicator quantity of fuels and electricity per unit of production

4 2 6 Environmental management programme(s)

Within the general planning of activities an organization should establish an environmental management programme that addresses all of its environmental objectives To be most effective environmental management planning should be integrated into the organization s strategic plan Environmental management programmes should address sched ules resources and responsibilities for achieving the organization s environmental objectives and targets

Within the framework provided by the environmental management planning an environmental management pro gramme identifies specific actions in order of their priority to the organization These actions may deal with individ ual processes projects products services sites or facilities within a site

Environmental management programmes help the organization to improve its environmental performance They should be dynamic and revised regularly to reflect changes in organizational objectives and targets

Some issues to be considered in environmental management programme(s)

1 *What is the organization s process for developing environmental management programmes?*
2 *Does the environmental management planning process involve all responsible parties?*
3 *Is there a process for periodic reviews of the programme?*
4 *How do these programmes address the issues of resources responsibility timing and priority?*
5 *How are the environmental management programmes responsive to the environmental policy and general plan ning activities?*
6 *How are the environmental management programmes monitored and revised?*

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Practical help — Environmental management programme

The following is an example of a process for developing an environmental management programme

Commitment and policy	***Planning***	***Example***
Environmental policy commitment 1[1]		*Conserve natural resources*
	Objective 1	*Minimize water use wherever technically and commercially practical*
	Target 1	*Reduce water consumption at selected sites by fifteen percent of present levels within one year*
	Environmental programme 1	*Water reuse*
	Action 1	*Install equipment to recycle water used for rinsing in Process A for reuse in Process B*

1) This iterative process should be repeated for all policy commitments objectives and targets

4 3 Implementation

Principle 3 — Implementation

For effective implementation an organization should develop the capabilities and support mechanisms necessary to achieve its environmental policy objectives and targets

4 3 1 General

The capabilities and support required by the organization constantly evolve in response to the changing requirements of interested parties a dynamic business environment and the process of continual improvement To achieve its environmental objectives an organization should focus and align its people systems strategy resources and structure

For many organizations implementing environmental management can be approached in stages and should be based on the level of awareness of environmental requirements aspects expectations and benefits and the availability of resources

4 3 2 Ensuring capability

4 3 2 1 Resources — Human, physical and financial

The appropriate human physical (e g facilities equipment) and financial resources essential to the implementation of an organization s environmental policies and the achievement of its objectives should be defined and made available In allocating resources organizations can develop procedures to track the benefits as well as the costs of their environmentally or related activities Issues such as the cost of pollution control wastes and disposal can be included

Some issues to be considered in human physical and financial resources

1 *How does the organization identify and allocate the human technical and financial resources necessary to meet its environmental objectives and targets including those for new projects?*

2 *How does the organization track the costs and benefits of environmental activities?*

Practical help — Human, physical and financial resources

The resource base and the organization structure of the small or medium enterprise (SME) can impose certain limitations on implementation In order to manage these constraints the SME should wherever possible consider cooperative strategies with

— *larger client organizations to share technology and know how*

— *other SMEs on a supply chain or local basis to define and address common issues to share know how to facilitate technical development to use facilities jointly to establish a way to study the EMS to collectively engage consultants*

— *standardization organizations SME associations Chambers of Commerce for training and awareness programmes*

— *universities and other research centres to support production and innovation*

4 3 2 2 EMS alignment and integration

To effectively manage environmental concerns the EMS elements should be designed or revised so that they are effectively aligned and integrated with existing management system elements

Management system elements that can benefit from integration include

— organization policies

— resource allocation

— operational controls and documentation

— information and support systems

— training and development

— organization and accountability structure

— reward and appraisal systems

— measuring and monitoring systems

— communication and reporting

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Some issues to be considered in organizational alignment and integration

1 *How has the environmental management system been integrated into the overall business management process?*

2 *What is the process for balancing and resolving conflicts between environmental and other business objec tives and priorities?*

4 3 2 3 Accountability and responsibility

Responsibility for the overall effectiveness of the EMS should be assigned to (a) senior person(s) or function(s) with sufficient authority competence and resources

Operational managers should clearly define the responsibilities of relevant personnel and be responsible and ac countable for effective implementation of the EMS and environmental performance Employees at all levels should be accountable within the scope of their responsibilities for environmental performance in support of the overall environmental management system

Some issues to be considered in accountability and responsibility

1 *What are the responsibilities and accountability of personnel who manage perform and verify work affecting the environment and are these defined and documented?*

2 *What is the relationship between environmental responsibility and individual performance and is this periodi cally reviewed?*

3 *How do the responsible and accountable personnel*

- *obtain sufficient training resources and personnel for implementation?*
- *initiate action to ensure compliance with environmental policy?*
- *anticipate identify and record any environmental problems?*
- *initiate recommend or provide solutions to those problems?*
- *verify the implementation of such solutions?*
- *control further activities until any environmental deficiency or unsatisfactory condition has been corrected?*
- *obtain appropriate training to act in emergency situations?*
- *gain an understanding of the consequences of non compliance?*
- *gain an understanding of the accountability that applies to them?*
- *encourage voluntary action and initiatives?*

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Practical help — Accountability and responsibility

To ensure effective development and implementation of an EMS it is necessary to assign appropriate respon sibilities One possible approach for developing environmental responsibilities is indicated below It should be recognized that companies and institutions have different organizational structures and need to understand and define environmental responsibilities based upon their own work processes

The following is a sample model of environmental responsibilities

Sample environmental responsibilities	***Typical person(s) responsible***
Establish overall direction	*President chief executive officer (CEO) board of directors*
Develop environmental policy	*President CEO chief environmental manager*
Develop environmental objectives targets and programmes	*Relevant managers*
Monitor overall EMS performance	*Chief environmental manager*
Assure regulatory compliance	*Senior operating manager*
Ensure continual improvement	*All managers*
Identify customers expectations	*Sales and marketing staff*
Identify suppliers expectations	*Purchasers buyers*
Develop and maintain accounting procedures	*Finance/accounting managers*
Comply with defined procedures	*All staff*
NOTE — In the case of SMEs the person responsible can be the owner	

4 3 2 4 Environmental awareness and motivation

Top management has a key role to play in building awareness and motivating employees by explaining the organi zation s environmental values and communicating its commitment to the environmental policy It is the commitment of the individual people in the context of shared environmental values that transforms an environmental manage ment system from paperwork into an effective process

All members of the organization should understand and be encouraged to accept the importance of achieving the environmental objectives and targets for which they are responsible and/or accountable They in turn should en courage where necessary the other members of their organization to respond in a similar manner

Motivation to continually improve can be enhanced when employees are recognized for achieving environmental ob jectives and targets and encouraged to make suggestions that can lead to improved environmental performance

Some issues to be considered in environmental awareness and motivation

1 *How has top management established reinforced and communicated organizational commitment to the envi ronmental policy?*

2 *To what extent do employees understand accept and share the environmental values of the organization?*

3 *To what extent do shared environmental values serve to motivate environmentally responsible action?*

4 *How does the organization recognize employees environmental achievements?*

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4 3 2 5 Knowledge, skills and training

The knowledge and skills necessary to achieve environmental objectives should be identified These should be considered in personnel selection recruitment training development of skills and ongoing education

Appropriate training relevant to the achievement of environmental policies objectives and targets should be provided to all personnel within an organization Employees should have an appropriate knowledge base which includes training in the methods and skills required to perform their tasks in an efficient and competent fashion and knowledge of the impact their activities can have on the environment if performed incorrectly

The organization should also ensure that contractors working at the site provide evidence that they have the requisite knowledge and skills to perform the work in an "environmentally responsible manner"

Education and training is needed to ensure that employees have appropriate and current knowledge of regulatory requirements internal standards and the organization s policies and objectives The level and detail of training may vary according to the task

Training programmes typically have the following elements

— identification of employee training needs
— development of a training plan to address defined needs
— verification of conformance of training programme to regulatory or organizational requirements
— training of target employee groups
— documentation of training received
— evaluation of training received

Some issues to be considered in knowledge skills and training

1 *How does the organization identify environmental training needs?*
2 *How are the training needs of specific job functions analysed?*
3 *Is training developed and reviewed and modified as needed?*
4 *How is the training documented and tracked?*

Practical help — Knowledge, skills and training

Examples of the types of environmental training which can be provided by the organization are as follows

Type of training	*Audience*	*Purpose*
Raising awareness of the strategic importance of environmental management	*Senior management*	*To gain commitment and alignment to the organization s environmental policy*
Raising general environmental awareness	*All employees*	*To gain commitment to the environmental policy objectives and targets of the organization and instil a sense of individual responsibility*
Skills enhancement	*Employees with environmental responsibilities*	*To improve performance in specific areas of the organization e g operations research and development and engineering*
Compliance	*Employees whose actions can affect compliance*	*To ensure regulatory and internal requirements for training are met*

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4 3 3 Support action

4 3 3 1 Communication and reporting

Communication includes establishing processes to report internally and where desired externally on the environ mental activities of the organization in order to

— demonstrate management commitment to the environment

— deal with concerns and questions about the environmental aspects of the organization s activities products or services

— raise awareness of the organization's environmental policies objectives targets and programmes

— inform internal or external interested parties about the organization s environmental management system and performance as appropriate

Results from EMS monitoring audit and management review should be communicated to those within the organiza tion who are responsible for performance

The provision of appropriate information to the organization s employees and other interested parties serves to mo tivate employees and encourage public understanding and acceptance of the organization s efforts to improve its environmental performance

Some issues to be considered in communication and reporting

1 *What is the process for receiving and responding to employee concerns?*

2 *What is the process for receiving and considering the concerns of other interested parties?*

3 *What is the process for communicating the organization s environmental policy and performance?*

4 *How are the results from EMS audits and reviews communicated to all appropriate people in the organization?*

5 *What is the process for making the environmental policy available to the public?*

6 *Is internal communication adequate to support continual improvement around environmental issues?*

Practical help — Communication and reporting

a) *Items that can be included in reports*

— *organization s profile*

— *environmental policy objectives and targets*

— *environmental management processes (including interested party involvement and employee recog nition)*

— *environmental performance evaluation (including releases resource conservation compliance prod uct stewardship and risk)*

— *opportunities for improvement*

— *supplementary information such as glossaries*

— *independent verification of the contents*

b) *It is important to remember for both internal and external environmental communication and reporting*

— *two way communication should be encouraged*

— *information should be understandable and adequately explained*

— *information should be verifiable*

— *the organization should present an accurate picture of its performance*

— *information should be presented in a consistent form (e g similar units of measurement to allow for comparison between one period and another)*

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c) An organization can communicate environmental information in a variety of ways

- *externally through an annual report regulatory submissions public government records industry as sociation publications the media and paid advertising*
- *organization of open days the publication of telephone numbers where complaints and questions can be directed*
- *internally through bulletin board postings, internal newspapers meetings and electronic mail messages*

4 3 3 2 EMS documentation

Operational processes and procedures should be defined and appropriately documented and updated as necessary The organization should clearly define the various types of documents which establish and specify effective opera tional procedures and control

The existence of EMS documentation supports employee awareness of what is required to achieve the organiza tion s environmental objectives and enables the evaluation of the system and environmental performance

The nature of the documentation can vary depending on the size and complexity of the organization Where elements of the EMS are integrated with an organization s overall management system the environmental documentation should be integrated into existing documentation For ease of use the organization can consider organizing and maintaining a summary of the documentation to

- collate the environmental policy objectives and targets
- describe the means of achieving environmental objectives and targets
- document the key roles responsibilities and procedures
- provide direction to related documentation and describe other elements of the organization s management sys tem where appropriate
- demonstrate that the environmental management system elements which are appropriate for the organization are implemented

Such a summary document can serve as a reference to the implementation and maintenance of the organization s environmental management system

Some issues to be considered in EMS documentation

1. *How are environmental management procedures identified documented communicated and revised?*
2. *Does the organization have a process for developing and maintaining EMS documentation?*
3. *How is EMS documentation integrated with existing documentation where appropriate?*
4. *How do employees access EMS documentation needed to conduct their job activities?*

Practical help — EMS documentation

Documents can be in any medium and should be useful and easily understood

All documentation should be dated (with dates of revision) readily identifiable organized and retained for a specified period The organization should ensure that

- *documents can be identified with the appropriate organization division function activity and/or contact person*
- *documents are periodically reviewed revised as necessary and approved by authorized personnel prior to issue*
- *the current versions of relevant documents are available at all locations where operations essential to the effective functioning of the system are performed*
- *obsolete documents are promptly removed from all points of issue and points of use*

4 3 3 3 Operational control

Implementation is accomplished through the establishment and maintenance of operational procedures and controls to ensure that the organization s environmental policy objectives and targets can be met

Practical help — Operational control

The organization should consider the different operations and activities contributing to its significant environmental impacts when developing or modifying operational controls and procedures Such operations and activities may include

- *research and development design and engineering*
- *purchasing*
- *contracting*
- *handling and storage of raw materials*
- *production and maintenance processes*
- *laboratories*
- *storage of products*
- *transportation*
- *marketing advertising*
- *customer service*
- *acquisition construction or modification of property and facilities*

Activities can be divided into three categories

- *activities to prevent pollution and conserve resources in new capital projects process changes and resources management property (acquisitions divestitures and property management) and new products and packaging*
- *daily management activities to assure conformance to internal and external organizational requirements and to ensure their efficiency and effectiveness*
- *strategic management activities to anticipate and respond to changing environmental requirements*

4 3 3 4 Emergency preparedness and response

Emergency plans and procedures should be established to ensure that there will be an appropriate response to unexpected or accidental incidents

The organization should define and maintain procedures for dealing with environmental incidents and potential emergency situations The operating procedures and controls should include where appropriate consideration of

- accidental emissions to the atmosphere
- accidental discharges to water and land
- specific environment and ecosystem effects from accidental releases

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The procedures should take into account incidents arising or likely to arise as consequences of

— abnormal operating conditions

— accidents and potential emergency situations

Practical help — Emergency preparedness and response

Emergency plans can include

— *emergency organization and responsibilities*

— *a list of key personnel*

— *details of emergency services (e g fire department spill clean up services)*

— *internal and external communication plans*

— *actions taken in the event of different types of emergencies*

— *information on hazardous materials including each material s potential impact on the environment and measures to be taken in the event of accidental release*

— *training plans and testing for effectiveness*

4 4 Measurement and evaluation

Principle 4 — Measurement and evaluation

An organization should measure monitor and evaluate its environmental performance

4 4 1 General

Measuring monitoring and evaluating are key activities of an environmental management system which ensure that the organization is performing in accordance with the stated environmental management programme

4 4 2 Measuring and monitoring (ongoing performance)

There should be a system in place for measuring and monitoring actual performance against the organization s environmental objectives and targets in the areas of management systems and operational processes This includes evaluation of compliance with relevant environmental legislation and regulations The results should be analysed and used to determine areas of success and to identify activities requiring corrective action and improvement

Appropriate processes should be in place to ensure the reliability of data such as calibration of instruments test equipment and software and hardware sampling

Identifying appropriate environmental performance indicators for the organization should be an ongoing process Such indicators should be objective verifiable and reproducible They should be relevant to the organization s activities consistent with its environmental policy practical cost effective and technologically feasible

NOTE — Examples of environmental performance indicators are shown in Practical help — Objectives and targets (4 2 5)

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Some issues to be considered in measuring and monitoring

1 *How is environmental performance regularly monitored?*

2 *How have specific environmental performance indicators been established which relate to the organization s objectives and targets and what are they?*

3 *What control processes are in place to regularly calibrate and sample measuring and monitoring equipment and systems?*

4 *What is the process to periodically evaluate compliance with relevant legal and other compliance?*

4 4 3 Corrective and preventive action

The findings conclusions and recommendations reached as a result of measuring monitoring audits and other reviews of the environmental management system should be documented and the necessary corrective and preventive actions identified Management should ensure that these corrective and preventive actions have been implemented and that there is systematic follow up to ensure their effectiveness

4 4 4 EMS records and information management

Records are evidence of the ongoing operation of the EMS and should cover

— legislative and regulatory requirements
— permits
— environmental aspects and their associated impacts
— environmental training activity
— inspection calibration and maintenance activity
— monitoring data
— details of non conformance incidents complaints and follow up action
— product identification composition and property data
— supplier and contractor information
— environmental audits and management reviews

A complex range of information can result The effective management of these records is essential to the successful implementation of the EMS The key features of good environmental information management include means of identification collection indexing filing storage maintenance retrieval retention and disposition of pertinent EMS documentation and records

Some issues to be considered in EMS records and information management

1 *What environmental information does the organization need to manage effectively?*

2 *What capability does the organization have to identify and track key indicators of performance and other data necessary to achieve its objectives?*

3 *How does the organization s record/information management system make information available to the employees who need it when they need it?*

4 4 5 Audits of the environmental management system

Audits of the EMS should be conducted on a periodic basis to determine whether the system conforms to planned arrangements and has been properly implemented and maintained

Audits of the EMS can be carried out by organization personnel and/or by external parties selected by the organization In any case the person(s) conducting the audit should be in a position to do so objectively and impartially and should be properly trained

The frequency of audits should be guided by the nature of the operation in terms of its environmental aspects and potential impacts Also the results of previous audits should be considered in determining frequency

The EMS audit report should be submitted in accordance with the audit plan

4 5 Review and improvement

Principle 5 — Review and improvement

An organization should review and continually improve its environmental management system with the objective of improving its overall environmental performance

4 5 1 General

A continual improvement process should be applied to an environmental management system to achieve overall improvement in environmental performance

4 5 2 Review of the environmental management system

The organization s management should at appropriate intervals conduct a review of the EMS to ensure its continuing suitability and effectiveness

The review of the EMS should be broad enough in scope to address the environmental dimensions of all activities products or services of the organization including their impact on financial performance and possibly competitive position

The review of the EMS should include

- a review of environmental objectives targets and environmental performance
- findings of the EMS audits
- an evaluation of its effectiveness
- an evaluation of the suitability of the environmental policy and the need for changes in the light of
  - changing legislation
  - changing expectations and requirements of interested parties
  - changes in the products or activities of the organization
  - advances in science and technology
  - lessons learned from environmental incidents
  - market preferences
  - reporting and communication

Some issues to be considered in the review of the EMS

1 *How is the EMS periodically reviewed?*

2 *How are the appropriate employees involved in the review of the EMS and follow up?*

3 *How are the views of interested parties taken into account in the EMS review?*

4 5 3 Continual improvement

The concept of continual improvement is embodied in the EMS It is achieved by continually evaluating the environmental performance of the EMS against its environmental policies objectives and targets for the purpose of identifying opportunities for improvement (see figure 1)

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The continual improvement process should

— identify areas of opportunity for improvement of the environmental management system which lead to improved environmental performance

— determine the root cause or causes of nonconformances or deficiencies

— develop and implement (a) plan(s) of corrective and preventive action to address root cause(s)

— verify the effectiveness of the corrective and preventive actions

— document any changes in procedures resulting from process improvement

— make comparisons with objectives and targets

Some issues to be considered in corrective and preventive action and continual improvement

1 *What process does the organization have to identify corrective and preventive action and improvement?*

2 *How does the organization verify that corrective and preventive actions and improvements are effective and timely?*

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Annex A
(informative)

Examples of international environmental guiding principles

Guiding principles are formal declarations that express the basis on which an environmental policy can be built and which provide a foundation for action

A 1 The Rio Declaration on Environment and Development

The United Nations Conference on Environment and Development having met at Rio de Janeiro from 3 to 14 June 1992 reaffirming the Declaration of the United Nations Conference on the Human Environment adopted at Stock holm on 16 June 1972 and seeking to build upon it with the goal of establishing a new and equitable global part nership through the creation of new levels of co-operation among States key sectors of societies and people working towards international agreements which respect the interests of all and protect the integrity of the global environ mental and developmental system recognizing the integral and interdependent nature of the Earth our home pro claims that

Principle 1

Human beings are at the centre of concerns for sustainable development They are entitled to a healthy and pro ductive life in harmony with nature

Principle 2

States have in accordance with the Charter of the United Nations and the principles of international law the sov ereign right to exploit their own resources pursuant to their own environmental and developmental policies and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction

Principle 3

The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations

Principle 4

In order to achieve sustainable development environmental protection shall constitute an integral part of the devel opment process and cannot be considered in isolation from it

Principle 5

All States and people shall co operate in the essential task of eradicating poverty as an indispensable requirement for sustainable development in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world

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Principle 6

The special situation and needs of developing countries particularly the least developed and those most environmentally vulnerable shall be given special priority International actions in the field of environment and development should also address the interests and needs of all countries

Principle 7

States shall co operate in a spirit of global partnership to conserve protect and restore the health and integrity of the Earth s ecosystem In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command

Principle 8

To achieve sustainable development and a higher quality of life for all people States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies

Principle 9

States should co operate to strengthen endogenous capacity building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge and by enhancing the development adaptation diffusion and transfer of technologies including new and innovative technologies

Principle 10

Environmental issues are best handled with the participation of all concerned citizens at the relevant level At the national level each individual shall have appropriate access to information concerning the environment that is held by public authorities including information on hazardous materials and activities in their communities and the opportunity to participate in decision making processes States shall facilitate and encourage public awareness and participation by making information widely available Effective access to judicial and administrative proceedings including redress and remedy shall be provided

Principle 11

States shall enact effective environmental legislation Environmental standards management objectives and priorities should reflect the environmental and developmental context to which they apply Standards applied by some countries can be inappropriate and of unwarranted economic and social cost to other countries in particular developing countries

Principle 12

States should co operate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries to better address the problems of environmental degradation Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided Environmental measures addressing transboundary or global environmental problems should as far as possible be based on an international consensus

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Principle 13

States shall develop national law regarding liability and compensation for the victims of pollution and other environ mental damage States shall also co-operate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activ ities within their jurisdiction or control to areas beyond their jurisdiction

Principle 14

States should effectively co operate to discourage or prevent the relocation and transfer to other States of any activi ties and substances that cause severe environmental degradation or are found to be harmful to human health

Principle 15

In order to protect the environment the precautionary approach shall be widely applied by States according to their capabilities Where there are threats of serious or irreversible damage lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation

Principle 16

National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments taking into account the approach that the polluter should in principle bear the cost of pollution with due regard to the public interest and without distorting international trade and investment

Principle 17

Environmental impact assessment as a national instrument shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority

Principle 18

States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States Every effort shall be made by the international commu nity to help States so afflicted

Principle 19

States shall provide prior and timely notification and relevant information to potentially affected States on activities that can have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith

Principle 20

Women have a vital role in environmental management and development Their full participation is therefore essen tial to achieve sustainable development

Principle 21

The creativity ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all

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Principle 22

Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices States should recognize and duly support their identity culture and interest and enable their effective participation in the achievement of sustainable development

Principle 23

The environment and natural resources of people under oppression domination and occupation shall be protected

Principle 24

Warfare is inherently destructive of sustainable development States shall therefore respect international law providing protection for the environment in times of armed conflict and co-operate in its further development as necessary

Principle 25

Peace development and environmental protection are interdependent and indivisible

Principle 26

States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations

Principle 27

States and people shall co-operate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development

A 2 International Chamber of Commerce (ICC) Business Charter for Sustainable Development

1 Corporate Priority

To recognize environmental management as among the highest corporate priorities and as a key determinant to sustainable development to establish policies programs and practices for conducting operations in an environmentally sound manner

2 Integrated Management

To integrate these policies programs and practices fully into each business as an essential element of management in all its functions

3 Process of Improvement

To continue to improve policies programs and environmental performance taking into account technical developments scientific understanding consumer needs and community expectations with legal regulations as starting point and to apply the same environmental criteria internationally

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4 Employee Education

To educate train and motivate employees to conduct their activities in an environmentally responsible manner

5 Prior Assessment

To assess environmental impacts before starting a new activity or project and before decommissioning a facility or leaving a site

6 Products or services

To develop and provide products or services that have no undue environmental impact and are safe in their intended use that are efficient in their consumption of energy and natural resources and that can be recycled reused or disposed of safely

7 Customer Advice

To advise and where relevant educate customers distributors and the public in the safe use transportation storage and disposal of products provided and to apply similar considerations to the provisions of services

8 Facilities and Operations

To develop design and operate facilities and conduct activities taking into consideration the efficient use of energy and materials the sustainable use of renewable resources the minimization of adverse environmental impact and waste generation and the safe and responsible disposal of residual wastes

9 Research

To conduct or support research on the environmental impacts of raw materials products processes emissions and wastes associated with the enterprise and on the means of minimizing such adverse impacts

10 Precautionary Approach

To modify the manufacture marketing or use of products or services or the conduct of activities consistent with scientific and technical understanding to prevent serious or irreversible environmental degradation

11 Contractors and Suppliers

To promote the adoption of these principles by contractors acting on behalf of the enterprise encouraging and where appropriate requiring improvements in their practices to make them consistent with those of the enterprise and to encourage the wider adoption of these principles by suppliers

12 Emergency Preparedness

To develop and maintain where significant hazards exist emergency preparedness plans in conjunction with the emergency services relevant authorities and the local community recognizing potential transboundary impacts

13 Transfer of Technology

To contribute to the transfer of environmentally sound technology and management methods throughout the industrial and public sectors

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14 Contributing to the Common Effect

To contribute to the development of public policy and to business governmental and intergovernmental programs and educational initiatives that will enhance environmental awareness and protection

15 Openness to Concerns

To foster openness and dialogue with employees and the public anticipating and responding to their concerns about potential hazards and impacts of operations products wastes or services including those of transboundary or global significance

16 Compliance and Reporting

To measure environmental performance to conduct regular environmental audits and assessments of compliance with company requirements legal requirements and these principles and periodically to provide appropriate informa tion to the Board of Directors shareholders employees the authorities and the public

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Annex B
(informative)

Bibliography

[1] ISO 14001 1996 *Environmental management systems — Specification with guidance for use*

[2] ISO 14010 1996 *Guidelines for environmental auditing — General principles*

[3] ISO 14011 1996 *Guidelines for environmental auditing — Audit procedures — Auditing of environmental management systems*

[4] ISO 14012 1996 *Guidelines for environmental auditing — Qualification criteria for environmental auditors*

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APPENDIX E
CASE STUDIES[1]

1 Gaining the Competitive Edge Through EMS Case Study of an Indian Company

2 Introduction of an EMS in a Chemical and Metallurgical Works Company, USTI NAD LABEM, Czech Republic

3 Environmental Audit of an Indian Textile Mill, Bombay, India

[1] These case studies are taken from the United Nations Environment Program's manual Environmental Management System Training Resource Kit

GAINING THE COMPETITIVE EDGE THROUGH EMS: CASE STUDY OF AN INDIAN COMPANY

Provided by Confederation of Indian Industry
New Delhi, India

THE COMPANY PROFILE

Indfos Industries, established in 1962, is a medium-sized engineering company based in Northern India Located in an industrial area within the watershed of the Ganges River and its tributary the Yamuna Indfos manufactures a wide range of automatic controls for domestic appliances air conditioning and refrigeration systems and industrial instrumentation The company has 576 employees working in two shifts The Ganges is considered a sacred river and it has a religious significance for most Indians It is worshiped as a goddess, and a holy dip in the river is practically mandatory for all devout Hindus Owing to the religious sentiment attached to this river Indfos along with several hundred other companies located along its banks, has been under pressure not to pollute the river One environmental lawyer is currently pursuing litigation in the supreme court to prevent such pollution Recently the court ordered the closure of 84 industrial enterprises on account of inadequate effluent treatment facilities Indfos already has an effluent treatment plant to treat waste water, based on the principles of chemical treatment The manufacturing process at Indfos involves operations such as plating painting and welding The basic raw materials include brass and copper Raw materials are first pressed Then, if necessary they go on to the welding shop and then to the plating shop In the plating shop components are degreased and then subjected to acid pickling After pickling, they are rinsed under running water and are ready for plating Depending on the raw material they are either zinc plated or tin plated Zinc plating involves the use of zinc cyanide a hazardous material with the potential to seriously impact safety health and the environment (SHE) After plating, components are passivated in chromic acid The components are then rinsed and dried in a centrifugal drier

THE ECO JOURNEY

Indfos is an environmentally conscious company Its managing director Mr Avininder Singh served for three years as chairman of the Confederation of Indian Industry s (CII) National Committee for Environment He currently serves as chairman of CII s National Renewable Energy Committee

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It was through his close involvement in CII's environmental initiatives that Indfos was introduced to the concept of the environmental management system

The process began in early 1994, when a team of environmental professionals conducted an application-oriented training programme on waste minimization at Indfos As a result, Indfos was able to reduce its raw water consumption by almost 75%, through the recycling of treated water, the plugging of leaks etc It was also successful in reducing the use of lubricating oils by minimizing waste This, in fact, eliminated the need for a second effluent treatment plant, which the company had been operating up to that time

Since then, Indfos has been "hooked" on waste minimization - a good example of how, through one small success, a company can gain the confidence, motivation, experience and enthusiasm to take on bigger challenges Unfortunately, the company's subsequent efforts in waste minimization were only partially successful They soon realized that total employee involvement through a structured programme was going to be necessary It was then, almost five months later, that the company decided that an EMS would be the most appropriate tool for institutionalizing their hitherto sporadic efforts

EVOLUTION OF THE EMS

At Indfos commitment from the top was strong and obvious The challenge was to instill the same enthusiasm and commitment on the shop floor With this as its aim Indfos began designing a SHE Management System as per British standard BS 7750 From the outset, the main objectives were to establish the system and to integrate it into the daily running of the business

Interestingly the prime motivation for establishing an EMS was not to get the "green" certification Instead, the decision as to whether or not to seek certification was to be taken only after the system had been established and had started delivering results

A core team consisting of senior managers from various areas of plant operation was put together to design the various system elements A dynamic young manager from the corporate office was chosen as the management representative for the process One person was designated to co-ordinate the work of the core team the manger in charge of environmental affairs who was also to take care of plant maintenance an the running of the effluent treatment facilities

The Initial Environmental Review

The team began with an initial environmental review The approach was three-fold

- To identify regulatory obligations and the status of compliance
- To identify critical effects of their operations/activities on SHE
- To identify areas of possible improvement

Some important discoveries were made The most startling was that Indfos had been operating without regulatory consent for air emissions and water discharges, which should have been renewed on an annual basis In India as in many other countries, companies have to obtain consent from regulatory agencies prior to starting operations Thereafter, consent must be renewed periodically Indfos had not obtained consent for several years Clearly, few people had been aware that the company was operating without the necessary consent before the initial review was undertaken This realization came as a shock and put great pressure on management and responsible personnel to get their act together The obtaining of this consent became the project's first milestone

Obtaining a consent involves a lot of paperwork in terms of completing application forms With the assistance of the CII's Environment Division, all of the formalities were completed, including the testing of samples of effluent by a laboratory accredited by the state pollution control board Through this combined effort Indfos was granted water and air consent in about three months' time This became a source of motivation to personnel who could see first-hand how the company had been brought into line with the relevant regulations

The core team now concentrated on addressing the problems highlighted by the initial environmental review, which included

- The use of hazardous chemicals and their potential impact, e g , chemical fumes in the working environment

- Inadequate SHE training of plant personnel - poor housekeeping

- Waste due to improper handling of input resources

SHE Policy

The first step was to formulate a policy which would state the intention of Indfos to address these problems Here there were two schools of thought within the company One section of the employees felt that the policy should only address environment issues The majority of the employees on the other hand were convinced that there exists a natural synergy between safety health and the environment and that the policy as well as the system should incorporate all three elements Thus the decision was taken to include all three in the policy The company came up with its policy during a day-long session supported by the CII, in which 20 senior managers participated This brainstorming session was structured to encourage, through exercises, the free flow of ideas The entire group was split into four teams which worked out independent policy

statements These were then shared with all of the participants The policy which was ultimately selected was one which had been written in the local language and which could be understood by the workers The English translation of the policy is included at the end of this case study

SHE Objectives and Targets

With the SHE policy now laid down, the core-team started to define the specific targets and objectives to be achieved in order to implement the policy Senior managers were involved in this process as well, ensuring high-level commitment from the outset All defined targets were to be SMART (Specific, Motivating, Achievable, Recordable and Time Bound) Some of the participants were over-enthusiastic and suggested targets which were not achievable In most cases, the targets were not specific and so it was difficult to evolve an action plan to achieve them In certain cases, the participants set targets to be implemented "with immediate effect though it was later recognized that a certain minimum amount of time would be required Employee motivation and involvement in the target-setting exercise was very high

It is interesting to note that these targets focus on improving efficiency and resource conservation, which can also mean financial benefits for the company

The Management Programme

In the next phase, a detailed action plan was worked out for reaching each target Here a very interesting methodology called Result-Oriented Project Planning was used With the help of this tool detailed activities for reaching each target were drawn up and the responsibility for each activity was allocated Financial and infrastructural support requirements were also specified In some cases it was evident that a financial investment would be necessary to achieve a given target In such cases the decision to go ahead was based on whether or not the return on the investment both in financial and environmental terms outweighed the initial investment

PROGRESS SO FAR

Managers started implementing action plans in their respective areas immediately once the core team started writing the procedures In fact even now with the system not yet formalized remarkable progress has been made towards reaching the targets In just two months the consumption of chemicals such as chromic an nitric acid was reduced by 20% by implementing simple measures like better handling and storage practices This resulted in financial savings as well

Energy consumption has been brought down by 10%, the ultimate target being a 20% reduction by December 1995 This has been achieved through the maintenance of a more efficient power factor, resulting in lowered maximum demand charges

Once the benefits of a well-designed system had become evident, lower-level employees started taking a keener interest in the process The fact that the system has started delivering results even before the preparatory process has been completed speaks for the extent of the involvement among employees

Indfos is at present continuing to write the various procedures and also designing the SHE manual as per the requirements of BS 7750 Care is being taken to specify the operational parts in simple language Each procedure address operational control, verification procedure, corrective action to be taken in case of non-compliance and also defines the investigative mode to prevent re-occurrence of non-compliance on the same grounds The SHE system is expected to be in place by September 1995

INDFOS INDUSTRIES SAFETY, HEALTH AND ENVIRONMENTAL POLICY

The Objective	Safe products and processes Green and clean environment
The Route	Minimum consumption of energy resources through continuous improvement
The Base	Healthy employees
The Duty	Compliance with the law

INDFOS INDUSTRIES SHE OBJECTIVES AND TARGETS

Flowing out of its SHE policy Indfos Ghaziabad has set the following objectives

- Indfos will pursue practices that improve the work environment and make it safe and healthy for its employees
- Indfos will actively work towards reducing the use of hazardous substances and chemicals
- Indfos will create and implement programmes to increase resource-use efficiency in all areas including energy and water

- Indfos is committed to sensitizing its employees to all aspects of SHE

In order to accomplish the above objectives, Indfos must achieve the following time-bound targets

- To eliminate major accidents completely and reduce minor accidents by 50% and to reduce the emission of dust and fumes in the working environment to the level of IS/OSHA standards by 31st December 1995

- To substitute the use of hazardous with non-hazardous substances by 20% by weight/by volume and reduce total consumption of all chemicals by 20% by weight/volume by 31st December 1995

- To reduce energy consumption by 20% by 31st December 1995

- To achieve level "3" in housekeeping throughout the company and level "4" in toilets and canteen areas To plant one sapling per employee and to provide safe drinking water as per IS standard to every employee by 31st December 1995

- 400 green KAIZENS on SHE and also half-day environmental awareness training to all employees by 31st December 1995

INTRODUCTION OF AN EMS IN A CHEMICAL AND METALLURGICAL WORKS COMPANY, USTI NAD LABEM, CZECH REPUBLIC

Provided by TC Jazky a Management (Training Center for Languages and Management) Prague, Czech Republic

United Chemical and Metallurgical Works J S Company - Spolchemie a s

Owner	50% Investment Privatization Funds
	26% Individual Shareholders
	10% Health Insurance Company
Years in existence	founded 1856
Number of	Employees 2,500
	Products 1,000
	Annual sales 3 2 bill CZK = USD 110 million

Main type of clients other local or national industries, multinational companies, government consumers, etc

Business goals of the enterprise for the next two years Development of resins and dyestuffs

Materials used	Organic and inorganic chemicals
Wastes produced	Solid 21 000 tons
Consists of	Dangerous 4 800 tons
	Special 1 000 tons
	Other 15 000 tons

Methods of waste disposal used Landfilling, Incineration, Recycling, Water treatment plant

Types of emissions to air Total 485 tons

Consists of SO_2, HF, Hg solvents NH_3 acids hydroxides

Permits required (that is for manufacturing for water use, for waste disposal for emissions to air or water etc) Company s activities must comply with 85 different environmental laws

Regulatory authorities Ministry of Environment Ministry of Public Health Local and regional authorities

Other sources of pollution in the area of the enterprise Industrial area of the Black Triangle

THE PROCESS OF IMPLEMENTATION OF THE EMS PROGRAMME

The Company s commitment to initiate the process of implementation of EMS was expressed by the General Director in November 1993 (among the first three companies in CZ) and the decision was made to start the programme when there is enough human resources capacity to carry it out

The sources of information about the concept were the Czech Business Council for Sustainable Development and the EMS programme of the Czech Environment Management Center (CEMC) The company is a member of both of these organizations

Substantial efforts had been made in the Company in the process leading to Quality certification according to ISO 9000

The Company's Environmental Policy was being elaborated at that period

A contract was signed after a series of presentations by CEMC and the Training Center for Languages and Management (TC JaM) in September 1994 between the Company and TC JaM for implementation of

Step 1 The initial assessment of environmental performance At the same time a plan was made for

Step 2 Integration of the assessment results into the Company s Environmental Policy and design of projects to address the identified priority problems

Step 3 Implementation of the projects designed in Step 2, their integration into the process of continuous improvement of the management system, integration of the results of the assessment on lower management levels

Step 4 Verification and certification of EMS system

An estimate was made that the process will take about three years

Step 1 was completed in January 1995 The assessment was carried out at the level of top management with a team of 24 managers in key positions in the company It was coordinated by the Deputy Director for Quality and Environment and led by TC JaM trainers

An adapted Czech version of the GEMI Environmental Self-Assessment Program manual was used as the main tool for the assessment A considerable amount of background information had to be provided on both the contents of the GEMI text (to explain abstract formulations) and on the methodology

The following priority problems were identified for Step 2

1 Allocate clearly responsibilities for environmental issues
2 Improve communication in the company - both vertical and horizontal
3 Improve control mechanisms also to be used for prevention
4 Increase motivation and awareness

5 Improve effective use of energy and raw materials
6 Improve marketing and connect it to other company activities and departments
7 Carry out safety and research connected with products
8 Involve employees, communication and feedback

In the end, the assessment team recommended that the issues 1 2 and 8, as well as

- Clear communication of the company's development policy throughout the company
- Preventive role for research and development
- More time for managers to spend on processing information and self-development
- Improved public relations activities, be given top priority in Step 2

Implementation of Step 2 began in April 1995 with the signature of a contract between the company and TC JaM, the consultants By late-July, two projects had been designed on allocating environmental responsibilities using LogFRAME methodology and were approved by the General Director The Environmental Policy Statement is being modified and a plan has been developed for communicating it within and outside the company

AN ENVIRONMENTAL AUDIT OF A TEXTILE MILL IN BOMBAY, INDIA

Provided by Century Textiles and Industries Limited
Bombay, India

BACKGROUND

Century Textiles and Industries Limited was established in Bombay in 1897 The company is the largest exporter of 100% cotton fabrics to various countries around the world Century Textile Mills a unit of Century Textiles and Industries, employs 7,000 workers One of the oldest textile mills in Bombay, it currently features state-of-the-art production facilities turning out quality grey goods and processed cloth

In 1986 Century spent about Rs 40 lakhs on the installation of the Effluent Treatment Plant Operation and maintenance costs come to an additional Rs 55 000 per year

Century Textile Mills are conscious of their responsibility towards maintaining a clean environment and have, as a matter of policy, incorporated several measures to eliminate or minimize environmental damage caused by their manufacturing activities

THE PROJECT

Century Textiles and Industries Limited appointed Associated Industrial Consultants (India) Private Limited to prepare an environmental statement for Century Textile Mills in Bombay The firm carried out studies and plant visits during the month of April 1994 Their report was based on their observations of various parameters at or near the plant during that time

PROJECT RESULTS

Water and Raw Materials Consumption

The manufacture of yarn from cotton includes several separate processes and requires a large amount of water at each stage The majority of water is consumed as steam There are also several washing stages Water is also used to maintain specific conditions of humidity during spinning and weaving and for cooling According to the final audit results the mill consumes 11 51 liters of water per meter of cloth produced

The main raw material used during this process is cotton Other raw materials include chemicals, dyes and reagents Raw materials were found to be consumed at a rate of about 0 291 kg per meter of cloth produced

Pollution Discharge into the Environment

Air Emissions Air pollutants are generated from the boiler stack, blow room stacks and tin smithy shop Cotton dust generated in the blow room, and by mixing and waste opening machines are collected with the hoods and down draft fans Dust laden air is passed through filters before being discharged and suction units are fitted to all winding machines Boilers are fired with LSHS fuel which is much cleaner than furnace oil Regular stack monitoring and analysis of samples is carried out monthly by an approved laboratory and results submitted as per the Air Act of 1981 The mill was found to be in compliance with all the relevant standards for air emissions

Liquid Effluent The combined effluent from different processes are treated at the effluent treatment plant Treated effluent was found to meet prescribed standards and water conservation measures have now been consciously implemented These include counter-current washing conservation and precise application of sizing agents, instrument-controlled humidification in the spinning section and other measures to avoid the generation of excessive effluent

Solid Wastes Solid wastes including dust, seeds and twigs from raw cotton are disposed of by municipal collection

Hazardous Wastes The only hazardous waste generated was sludge from the effluent treatment plant (about 1 500 kg/day) which is then sent along with other solid wastes to municipal dumps Efforts are currently underway either to bring sludge generation into compliance with standards or to obtain the relevant exceptional authorization from the Maharashtra State Pollution Control Board

Additional Measures

Based on the findings set out in the Environmental Statement some specific actions have been initiated for improving the quality of the environment

Noise levels were recorded at between 64 and 71 (dB(A) While these levels were below the limit specified by MPCB of 75 dB(A) ear muffs and plugs have now been provided to all workers attending to the looms where the noise level is high

Sodium sulphide is used to convert water-insoluble sulphur dyes to water-soluble compounds before their application to textile materials Sodium sulphide has now been replaced with "Hydrol This includes the complete coloring process This has resulted in more comfortable

working conditions for employees and a cleaner environment Effluent toxicity has been reduced, meaning an improvement for affected marine life

This work has been recognized by the United Nations Environment Programme under the Cleaner Production Programme The recognition of the United Nations was noted in the press and also given coverage by Delhi television in its English and Hindi news bulletins Century now has an active safety and environmental management plan Safety audit and housekeeping surveys are regularly conducted for all departments and there is an in-house safety training programme A disaster Management Plan has been developed for preparedness in the event of an emergency occurring at the plant, and staff have been appointed to various positions of responsibility with respect to both safety and environmental issues

APPENDIX F
INFORMATION SOURCES

United Nations Environment Program - Industry and Environment Office
UNEP's Paris-based Industry and Environment office functions as a catalyst to bring together industry, governments and non-governmental organizations to work together towards environmentally sound forms of industrial development One of the main goals is to help formulate policies strategies and management tools for sustainable industrial development To achieve this end, UNEP IE is active in training, technical cooperation and information transfer in many industrial sectors

The Cleaner Production Programme
The Cleaner Production Programme was established in 1989 to promote pollution prevention and the efficient use of raw materials With the assistance of expert working groups, the CP programme transfers information through the publication of case studies and an information clearinghouse Through training sessions and demonstration projects it builds the national capacity needed to put that information to work and help industry and governments develop their competitive edge through cleaner production **The APELL Programme** - Awareness and Preparedness for Emergencies at Local Level - seeks to prevent the occurrence and minimize the impacts of industrial accidents It assists decisionmakers and technical personnel to increase community awareness of hazardous installations and to prepare response plans in case unexpected events should endanger life, property or the environment Information is disseminated through a network of national APELL focal points a handbook, and reports In 1991 UNEP IE was mandated to develop the clearinghouse function envisaged in the Montreal Protocol on Substances that Deplete the Ozone Layer Among the main elements of the **OzonAction** Programme is a computerized clearinghouse (OAIC) training activities and publications of relevant technical documents

UNEP IE also publishes a series of technical reports on environmental management in various industrial sectors most recently on tanneries electronics tourism and transport Reports are also prepared on environmental management tools and cross-sectoral issues including environmental auditing environmental reporting and waste management In addition the Industry and Environment quarterly journal provides a forum for the exchange of research and experience presenting articles for and by those working in industry, governments and academia

UNEP IE experience over the past twenty years has shown that environmental performance is

now an important element of international competitiveness, and makes good business sense it leads to more efficient processes, products and services

For further information, please contact

United Nations Environment Programme (UNEP)
Industry and Environment
Tour Mirabeau, 39-43 quai Andre Citroen
75739 Paris Cedex 15, France
Telephone 33-1-44371450 Fax 33-1-44371474
E-mail unepie@unep fr

International Chamber of Commerce (ICC)

The International Chamber of Commerce (ICC), which was founded in 1919, has 7,500 members in 130 countries, comprising companies, business associations and chambers of commerce Its basic mission is to advance the interests of business throughout the world, and in particular through the promotion of private enterprise and the encouragement of cross-border trade and investment The ICC is unique in being the only business representative organization whose membership is both global and multi-sectoral Enjoying Category 1 consultative status within the UN system and close working relations with many other nongovernmental and intergovernmental organizations (ISO, WTO, IMF, World Bank, etc), it is recognized officially as the spokesman for world business on a broad range of international policy matters

The ICC has been increasingly active in the environment field for 25 years already - notably through its Commissions on the Environment and on Energy, two closely-linked research and policy-formulating bodies composed of business experts from among the ICC's worldwide membership In 1984, the ICC took the initiative jointly with UNEP of organizing the first World Industry Conference on Environmental Management In April 1991 it organized the very successful WICEM II to assess the progress of business in improving environmental management practices in recent years and to establish an agenda for further action in the years ahead including towards the UN Conference on Environment and Development (UNCED - June 1992 in Rio) The ICC Business Charter for Sustainable Development, presented at WICEM II was a landmark document in helping business worldwide in defining their sustainable development agenda

At Rio itself the ICC organized a three-day Industry Forum to discuss and assess the progress made by business in meeting environmental challenges

The undertaking of this Kit was therefore a natural step in providing business with a tool to help implement the ICC Business Charter and achieve the objectives of other voluntary initiatives such the ISO standards It is a tool that aids the promotion of private enterprise and the

encouragement of cross-boarder trade and investment - fundamental conditions for achieving sustainable development

For further information, please contact

International Chamber of Commerce
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F-75008 Paris, France
Telephone 33-1-49532808 Fax 33-1-49532859

(FIDIC) International Federation of Consulting Engineers
Founded in 1913, FIDIC, the Federation Internationale des Ingenierus-Conseils is the international representative body of the consulting engineering industry Its membership consists of 63 national associations of consulting engineers representing more than 40,000 members employing about 400,000 staff worldwide Membership in FIDIC is restricted to one association per country and demands compliance with professional competence, stringent statutes, bylaws and a professional code of conduct Sustainable development plays a significant role in FIDIC's consultant services around the globe FIDIC also recognizes its obligations to developing countries and is preparing proposals for training, technology-transfer, mentors and other assistance programmes on a volunteer basis

In 1990 FIDIC took an important step in its commitment to sustainable development with the publication of its Policy Statement of Consulting Engineers and the Environment This statement provides a general framework for integrating environmental concerns into the decision making process However, progress in achieving sustainable development is proving to be very slow Additional bottlenecks in the industrial field are the lack of environmental management skills possible conflict with the market place and a traditional reluctance to accept change In order to further improve the transition to sustainable development in practice the FIDIC Standing Committee on the Environment prepared in 1994 "Consulting Engineers and the Environment Guide for Actions This document provides a more detailed analysis of recommended practice for consulting engineers worldwide The guide drew key concepts from several documents including the principles of the Rio Declaration and the contents of Agenda 21 The decision to join UNEP and the ICC to develop this Environmental Management System Training Resource Kit was therefore a logical consequent step

For further information please contact

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THE ENVIRONMENTAL POLLUTION PREVENTION PROJECT (EP3)

The Environmental Pollution Prevention Project (EP3) is a five-year program sponsored by the United States Agency for International Development (USAID) to address urban and industrial pollution and environmental quality in developing countries The objectives of the program are

- to establish sustainable pollution prevention programs in developing countries
- to transfer urban and industrial pollution prevention expertise and information
- to support efforts to improve environmental quality

EP3 was launched in spring 1993 The Project operates though a contract with RCG/Hagler Bailly Inc and 16 subcontractors, a cooperative agreement with the Water Environment Federation, and an interagency agreement with the U S EPA Activities in developing countries are initiated through buy-in agreements with USAID country missions The first country to host EP3 activities was Chile, where an EP3 office was established in fall 1993 Since then, EP3 operations have begun in Tunisia, Egypt, Ecuador and Indonesia EP3 offices in each country develop partnerships with environmental NGOs, government agencies, and industry associations

EP3's objectives are achieved through several activities

- on-site industrial assessments to identify pollution prevention opportunities
- institutional support to help industry and governments develop and implement programs to manage industrial waste and pollution
- an EP3 headquarters clearinghouse and in-country clearinghouses to disseminate pollution prevention-related materials
- training for environmental professionals

EP3's pollution prevention assessments for industrial facilities are conducted by teams of U S industry facility specialists pollution prevention experts and local environmental consultants The U S experts are made available on either a paid or pro bono basis To provide this expertise the Coalition for International Environmental Research and Assistance (CIERA) and the Water Environment Federation (WEF) have worked with EP3 to develop an extensive network of environment and industry experts who are available to participate in these assessments Through their interaction with facility managers and local consultants these experts help to build pollution prevention knowledge in the host country

The pollution prevention assessments are conducted in such industrial sectors as textiles,

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leather tanning, food processing, metal finishing, printing, paper/paperboard and chemicals Generally, EP3 targets its assessments in small- to medium-sized facilities that present pollution prevention opportunities The assessment's recommendations focus on low- or no-cost management practices and operational improvements, and on medium-level capital equipment and process modifications with projected cost savings and environmental benefits Local EP3 staff help the facilities with the implementation of these recommendations

Training workshops and seminars are conducted to transfer the results of the facility assessments to the remainder of the industrial sector Inherent to the goals of EP3 is the creation of demand for pollution prevention EP3 achieves this objective by demonstrating the environmental and economic benefits of pollution prevention and developing a supply of local professionals trained in pollution prevention techniques As such, industry management and local environmental professionals are trained in the principles of pollution prevention, environmental cost accounting, and facility assessments Through its network of clearinghouses, EP3 also provides access to pollution prevention and clean technology information