

An aerial photograph of a village built on stilts over a river. The houses have various roof types, including corrugated metal and thatched. The river is filled with floating green vegetation, likely water hyacinths. The sky is blue with some clouds.

OVERVIEW OF ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEMS



What is an Environmental Management System (EMS)?

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

What is an EMS?

Unofficial Definition

- ➔ A complete 'box of tools' to be used by organizations to improve all activities that may affect the environment
- ➔ The toolbox contains:
 - » environmental plans, knowledge, and awareness
 - » competent individuals with clear responsibilities
 - » consistent procedures for all operations
 - » regular checks on performance
 - » rapid response to correct and prevent problems
 - » effective internal and external communications

What or Who is ISO?

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

- Federation of National Standards agencies from 136 countries
- Founded in 1947; headquarters in Geneva
- Develops international standards in all technical areas except electrical and electronics engineering (responsibility of IEC)
- ISO means 'equal' (as in isobar, isotherm, isometric, isosceles, isomer, isotope)

Objective of ISO

- Promote development of standardization in the world with the aim of easing international exchange of goods and services
- Develop cooperation in intellectual, scientific, technological, and economic activities

Mekong River Basin Members of ISO

- **Cambodia:** ISC, Industrial Standards Bureau
- **Thailand:** TISI, Thai Industrial Standards Institute
- **Vietnam:** TCVN, Directorate for Standards and Quality

International Organization for Standardization

- Has published approximately 13,000 industrial standards, e.g:
 - » film speed
 - » credit/phone card size and thickness
 - » freight containers
 - » screw thread dimensions
 - » paper size (A4, legal, letter)
 - » book catalogue codes (ISBN numbers)
 - » sampling, testing, analysis of air, water, soil

Plus

Management System Standards:

- Quality (ISO 9000 series, 1987, 1994, 2000)
- Environmental Management (ISO 14000 series, 1996)
- These are intended for use by all types and sizes of organizations (e.g., private sector manufacturing and service companies, government agencies, and NGOs)

ISO Standards

Intended to:

- Make development, manufacture, and supply of products and services more efficient, safer, and cleaner
- Make trade between countries easier and fairer
- Safeguard users and consumers of products and services
- Make life simpler

ISO 14000 Series of Standards and Guidelines

Intended to be:

- Relevant in all countries
- Cost-effective, non-prescriptive, flexible
- Usable by all types and sizes of organization
- Suited to the needs of users and the public
- Practical, useful, and useable
- Suitable for internal or external verification

What is ISO 14001?

A **VOLUNTARY** international standard which:

- defines the components required for a good environmental management system (EMS)
- provides a framework for continual improvement of environmental performance
- can be assessed by an independent agency and awarded certification/registration recognized worldwide

What ISO 14001 is Not

- Prescriptive
- Legal document
- Guarantee of trouble-free environmental performance or compliance with laws and regulations
- Certificate of approval by ISO
- Certification that a product is environmentally friendly
- Government inspected or approved

Benefits from ISO 14001

- Strategic approach to environmental performance - use vision and initiative
- Helps to provide order and consistency in environmental performance
- Less need for government 'command and control' mode of regulation
- Demonstrates 'Reasonable Care' and 'Due Diligence'
- Improved risk management

More Benefits from ISO 14001

- Usually results in savings through:
 - » Reduced waste handling and disposal costs
 - » Savings in raw material costs
 - » Reduction in energy use
- Lower use of natural resources → → → sustainable development
- Better reputation with government regulators, employees, customers, public, neighbours, NGOs

Yet More Benefits from ISO 14001

- Expanded market and investment opportunities - competitive advantage
- Independent third-party certification of the EMS recognized worldwide
- Team work leading to better sharing of information
- Better control of emissions
- Improved environmental performance

Reasons for ISO 14001 Registration

- Streamline environmental effort (35%)
- Senior management directive (26%)
- Competitive advantage (21%)
- Customer pressure (16%)

Obstacles to ISO 14001 Implementation

- Insufficient resources (35%)
- Lack of management support (27%)
- Cost of certification and maintaining the environmental management system (24%)
- Incorporating ISO 14001 requirements with existing management system (12%)

Registration/Certification to ISO 14001

- Done by independent, accredited body
- Accreditation done by country's National Standards agency, which in turn is a member of ISO
- International Accreditation Forum (IAF) attempts to achieve consistent standards of assessment worldwide

ISO 14001 Registrations

- ➔ Total worldwide to end of 2000: 22,897 in 98 countries
- ➔ Increase in certificates in 2000: 8,791
- ➔ Country with the most ISO 14001 certificates:
 - » Japan 5,556
 - » Thailand 310
 - » Vietnam 9

Establishing or Improving an EMS

Key requirements:

- Understanding by the organization's top management of the resources needed for an effective EMS
- Commitment and support from top management
- Provision of resources (e.g., people, time, money, equipment) by management
- Honest assessment of environmental and business goals, and willingness to follow through on commitments

Core Themes of ISO 14001

- Think **PREVENTION** before cure or correction
- Environmental performance is **EVERYONE'S** responsibility
- Improving awareness and understanding helps to improve performance
- Top management must lead by example
- Environmental management is risk management
- Continual improvement never ends

More Core Themes of ISO 14001

- In a system, everything depends on everything else; **all** components must work well for the system to work
- ISO 14001 is not a once-and-for-all event; it is a continuing cycle of improving the system and environmental performance

Recommended Initial Goals

- Focus on complying with existing laws and regulations
- Reduce environmental risks and legal liabilities
- Improve efficiency of raw material use

Key Issues

- The goal of ISO 14001 is continual improvement of environmental management using a system consisting of:
 - » Environmental Policy
 - » Planning
 - » Implementation
 - » Checking and Corrective Action
 - » Management Review

- ISO 14001 involves a cycle of Plan → Implement → Check → Review

More Key Issues

- ➔ ISO 14001 core themes include:
 - » Prevention of pollution
 - » Shared responsibility for environmental management
 - » Leadership by top management
 - » Interdependence of all elements of the EMS
 - » Well-managed systems and procedures in support of quality performance

ISO 14001 Environmental Policy

- A statement of intentions and principles to guide environmental performance
- A framework for action; gives the overall direction for activities in the organization
- Motivator for implementing and maintaining the environmental management system
- All subsequent actions are judged against intentions stated in the policy

Environmental Policy (Cont'd)

Other possible considerations:

- Sustainable development principles
- Use of Best Economically Achievable Technology to reduce pollution
- Use of environmental performance evaluation
- Life cycle thinking
- Product and process design to minimize environmental impacts

Environmental Policy (Cont'd)

The policy should be:

- Clear, concise, motivating, authentic, reflecting the organization's guiding principles, beliefs, ethics and values
- Consistent with other organizational policies, mission or vision statements
- Relevant to all areas of the operation, from raw material supplies to finished product or service

ISO 14001 Environmental Aspects says:

The organisation shall establish and maintain (a) procedure(s) to identify the environmental aspects of activities, products, or services that it can control and over which it can be expected to have an influence, to determine those which have, or can have, significant impacts on the environment

Environmental Aspects

- Features of a company's operations, processes, activities, products, or services that can have an impact (good or bad) on the environment

Examples:

- » use of raw materials
- » use of resources
- » discharges to water, air, or land
- » filling a storage tank with chemical or oil
- » noise emissions
- » effects of products when used

What is an Environmental Impact?

- A change (negative or positive) in the environment caused by an environmental aspect
- The environment includes:
 - » air, water (i.e., surface and ground), land
 - » natural resources and raw materials
 - » animals, plants, people, organisms
 - » local, regional, and global issues
 - » interactions between any of these

Environmental Impact Examples

- Reduced oxygen in a river due to waste water discharge
- Contamination of the air by particulate and/or gas (such as sulphur dioxide, carbon dioxide, nitrogen oxides)
- Ground contamination by oil or chemical
- Destruction of wildlife habitat
- Recycling of paper, metal, plastic, glass

Reasons for Identifying Environmental Aspects

- Guide the setting of new environmental objectives and targets as part of the commitment to continual improvement
- Focus operational controls on significant environmental aspects
- Reduce risks from significant environmental aspects
- Identify training needs

Acceptable Risk

- The organization's management determines what is an acceptable level of risk, taking into account the:
 - » magnitude and frequency of potential environmental impacts
 - » possible effects on legal liability, community, business, image, public relations

Key Issues

- ➔ Have a systematic process for identifying all environmental aspects and impacts
- ➔ Clearly assign responsibility, authority, and accountability for the process
- ➔ Include:
 - » start-up and shut-down conditions
 - » emergency situations
 - » other types of potential abnormal conditions
 - » previous activities at the site

More Key Issues

- Then assess risks to identify which are significant impacts and aspects
- Define criteria for assessing significance
- Define frequency with which environmental aspects will be reviewed (i.e., keep them up-to-date)
- Review environmental aspects whenever there is a change to any raw material, process, product, or activity

ISO 14001 Legal and Other Requirements says:

The organization shall establish and maintain a procedure to 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

What are Legal Requirements?

- Relevant national, regional, and local laws and regulations
- Government operating permits, licences, and approvals
- Relevant international standards and conventions
- Contracts and other documents that include legal obligations

Examples of “Other Requirements”

- Industry codes of practice
- Non-regulatory standards (e.g., ISO 14001)
- Agreements with public authorities
- Company policies and procedures
- Voluntary compliance agreements

Importance of Legal and Other Requirements

- Conformance with legal and other requirements is a core commitment in the Environmental Policy
- Legal and other requirements must be considered when setting environmental objectives and targets
- Failure to comply with legal and other requirements can be very costly to the organization

Summary of Legal and Other Requirements

- Organization must have a procedure to identify, access, and keep up-to-date legal and other requirements relevant to its environmental aspects
- Responsibility should be assigned for maintaining the procedure, and for communicating legal and related information to those who need it

Summary of Legal and Other Requirements (Cont'd)

- Personnel whose activities may affect the environment should be made aware of legal and other requirements relevant to their job responsibilities
- The Environmental Policy commits the organization to compliance with legal and other requirements
- Consideration of legal and other requirements is essential when setting environmental objectives and targets

ISO 14001 Objectives and Targets says:

- The organization shall establish and maintain documented environmental objectives and targets at each relevant function and level within the organization
- The objectives and targets shall be consistent with the environmental policy, including the commitment to prevention of pollution

"Objectives" Defined

- Environmental goals (preferably quantified) that an organization sets in order to achieve continual improvement and prevention of pollution as stated in its Environmental Policy

Example: Reduce emissions of sulphur dioxide from manufacturing operations by 20% by the end of 2003

More Examples of Environmental Objectives

Reduce:

- Quantities of wastes sent to landfill
- Energy use (electricity, coal, fuel oil, gas)
- Volume of water used in manufacturing process
- Loadings of effluent contaminants discharged
- Emissions of gases and particulates to atmosphere

"Targets" Defined

- Specific and (where possible) measurable performance requirements set for the organization, internal departments, groups or individuals, that will lead to the achievement of an Objective

Examples of Targets

- By June 2002, identify emission control technologies to achieve 20% reduction
- Conduct cost-benefit analyses of emission control technologies by September 2002
- Select emission control technology and award contract for installation by March 2003
- Install and commission emission control equipment by December 2003

Key Issues

- Setting environmental objectives and targets is a foundation for continual improvement and prevention of pollution
- Objectives and targets should be documented, maintained, specific, achievable and, whenever possible, measurable
- Targets should support the achievement of objectives in each division, department and at each level of responsibility

More Key Issues

- Environmental objectives and targets should address legal compliance, significant environmental aspects and the views of interested parties, taking into account technological options, financial, operational, and business requirements
- An interested parties survey can yield valuable information, and is good for business and community relations

ISO 14001 Environmental Management Programs says:

The organization shall establish and maintain programs for achieving its objectives and targets, including:

- (a) designation of responsibility for achieving objectives and targets at each level and function of the organization
- (b) the means and time-frame by which they are to be achieved

Environmental Management Programs

An environmental management program (EMP) is an **action plan** specifying:

- **How** objectives and targets will be accomplished
- **Who** is responsible for achieving them
- **Who** will manage and supervise the activities
- **Who** will carry out the work
- **What** they will do

Environmental Management Programs (Cont'd)

- **What** resources are needed (e.g., people, skills, equipment, time, money)
- **When** the tasks will be completed (i.e., a schedule)

Key Issues

- Environmental management programs are detailed action plans for achieving objectives and targets
- EMP specify resources, responsibilities, schedule (who does what, how, and by when)
- Key performance indicators help to track progress in EMP
- EMP must be kept up-to-date (i.e., maintained) by regular review and revision

ISO 14001 Structure and Responsibility says:

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

What are Roles, Responsibilities, and Authority?

- **Role** is the position an individual occupies with an organization (job title), and the relationship of that position to others in the organization
- **Responsibilities** are the assigned duties and obligations of an individual in a role
- **Authority** is the power and influence an individual has to carry out responsibilities

What is Meant by “Defined, Documented, and Communicated”?

- **Defined:** the organization has identified the positions and responsibilities required to effectively plan, implement, and maintain the EMS
- **Documented:** roles, responsibilities and authority have been written down
 - » e.g., job descriptions, organization charts, operating procedures, memoranda

What is Meant by “Defined, Documented, and Communicated”? (Cont'd)

- **Communicated:** roles, responsibilities and authorities have been made known and are understood by all personnel

ISO 14001 Structure and Responsibility also says:

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 Most Important Ingredient in an EMS



Top Management's Role



- Build awareness of, and motivation for, environmental protection
- Communicate environmental values and commitment to the environmental policy
- Integrate environmental awareness into the organizational culture

Individual's Role

It is the commitment of individuals with shared values that transforms an EMS from procedures and documents into a way of life at work

Key Issues

Ingredients of an effective EMS:

- Clear vision and purpose communicated
- People, responsibilities, resources, leadership, and structure aligned properly
- Strong leadership from top management and the environmental management representative
- Each person in the organization fulfilling their roles and responsibilities in the EMS

More Key Issues

- In an EMS, **EVERYONE** has a role to play and responsibilities to meet
- Responsibilities and reporting structures for the EMS must be clearly defined
- Management must make available adequate resources (e.g., people, time, money, equipment)

ISO 14001 Training, Awareness and Competence says:

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

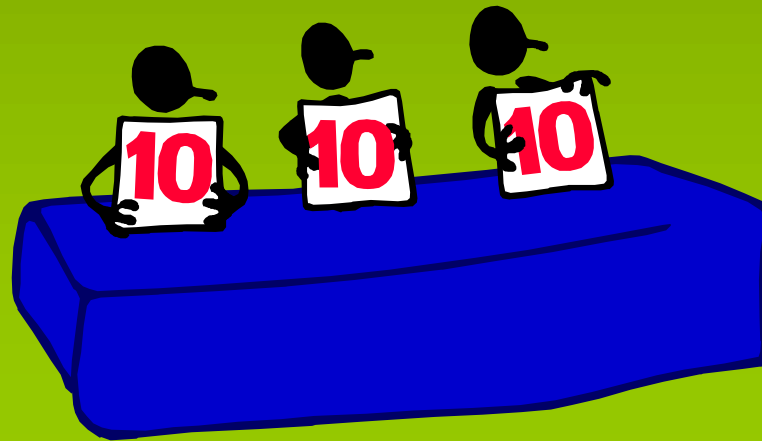
Awareness



- People accept responsibility more readily if they understand why their actions are important
- People become self-motivated, so less reinforcement by management is required
- Emphasises that environmental protection is everyone's responsibility
- Helps to generate commitment by employees

Competence

- The application of knowledge, understanding, judgement, and skill to consistently carry out an activity effectively and efficiently to a pre-set standard
- The objective of training should be to develop competence, or the means to attain competence



Specific Training Requirements

- Top management
- Personnel responsible for identifying environmental aspects and impacts
- Personnel responsible for ensuring legal compliance
- Operating procedures for employees carrying out tasks where there is a risk of significant environmental impact
- Emergency response team
- Persons handling hazardous materials

Specific Training Requirements (Cont'd)

- Employees involved in environmental monitoring
- Waste treatment personnel
- Persons developing written procedures
- Personnel responsible for controlling documents and records
- Internal environmental auditors
- New employees

ISO 14001

Communication says:

With regard to its environmental aspects and environmental management system, the organization shall establish and maintain procedures for internal communication between the various levels and functions of the organization

What does this Mean?

- Effective communications inside the organization are essential to an EMS
- There must be a continuous flow of communication on the EMS between various levels of responsibility, and between different departments or functions in the organization

What is Communication?

A two-way process to exchange information, ideas, opinions so as to achieve mutual understanding

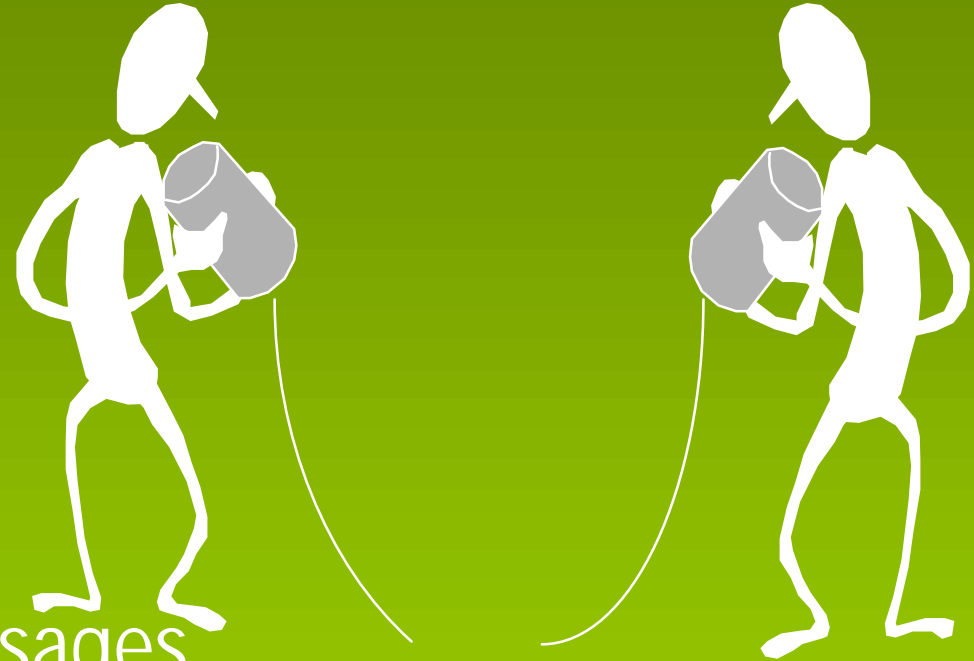


Why Communication is Vital

- Effective communication is an essential foundation of a strong EMS
- Information is power - employees need to be empowered to fulfil their responsibilities
- Missing knowledge and information are weak links in an EMS

These are **Not** Forms of Communication

- Memoranda
- Posted notices
- E-mails
- Written instructions
- Speeches, lectures
- Telephone voice messages
- Anything that does not include feedback and clarification from the receiver



The Purpose of Communication in ISO 14001

- Demonstrate management commitment to the environment; motivate employees
- Address concerns about environmental aspects
- Raise awareness of environmental policy, objectives, targets, and EMS
- Increase understanding of internal and external interested parties about the EMS and environmental performance

It's a Free Choice, but.....

- An organization is not obliged to try to please all interested parties, or to tell everything

BUT

- Organizations are not islands operating independently from the rest of society

Key Issues

- Communication is a two-way cyclic process that results in mutual understanding
- One-directional 'communication' is merely sending information
- Effective internal communication is a cornerstone of an EMS
- ISO 14001 encourages, but does not force, communication of environmental aspects to external interested parties
- Organization must receive and respond to concerns of external interested parties

What ISO 14001 EMS Documentation says:

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

- (a) describe the core elements of the management system;
- (b) provide direction to related documentation

EMS Documentation Levels

- **Policies:** High level documents that state the organization's commitments
- **Management System Procedures:** Describe the core elements of the EMS, how they function and who is responsible for each
- **Standard Operating Procedures:** Organization or department operating procedures
- **Work Instructions:** Details of how to carry out specific tasks

Document Management

Documents must be:

- Available where and when needed
- Clear, up-to-date, identifiable, dated (including revisions), stored neatly and logically, kept for a specified period of time
- Developed, reviewed, revised, approved, and modified only by authorized persons
- Removed from use when out-of-date
- Identified as obsolete if archived

ISO 14001 Operational Control says:

The organization shall identify those operations and activities that are associated with identified significant environmental aspects in line with its policy, objectives and targets. The organization shall plan these activities, including maintenance, in order to ensure that they are carried out under specified conditions.

What are Operational Controls?

- Means by which an organization prevents pollution from operations, e.g.:
 - » Pollution control equipment such as scrubbers, filters, precipitators, clarifiers, biological and chemical treatment, etc.
 - » Alarms for gas, pH, conductance, tank level, etc.
 - » Preventive maintenance practices
 - » Operating procedures

Methods of Operational Control

- Process controls:
 - » electronic
 - » mechanical
 - » monitoring
 - » observation

- Operating procedures:
 - » verbal
 - » documented

ISO 14001 Emergency Preparedness and Response says:

The organization shall establish and maintain procedures to identify potential for and respond to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them

Think Prevention

- ISO 14001 section 4.4.7 speaks first of **PREPAREDNESS**, i.e., prevention of emergencies
- Requires the development of a procedure to identify all possible incidents, accidents, and emergency situations during normal and abnormal operating conditions

Potential Emergencies

- Fire, explosion
- Gas leak, spill
- Natural disasters - lightning, earthquake, flood, extreme weather
- Tank, dam, equipment structural failure
- Electric power or gas cut
- Crash, collision
- Sabotage, vandalism, terrorist attack, riot, bomb threat, hostage incident

Map the 'Hot Spots'

- Locations, types, amounts of chemicals, gases, fuel, oil on-site
- Location, volume, age, secondary containment, inspection history of storage tanks
- Unloading, loading, transfer points for chemicals, fuel, oil
- Storm water run-off paths

Neighbourhood Receptors

- ➔ Identify sensitive local, regional areas:
 - » Residential, industrial, agricultural, fishing, recreation areas
 - » Drinking water sources
 - » Environmentally sensitive areas, nature reserves, endangered species
 - » Cultural, heritage sites

- ➔ Record prevailing wind direction in preparation for a gas leak

ISO 14001 Emergency Preparedness and Response also says:

The organization shall review and revise, where necessary, its emergency preparedness and response procedures, in particular, after the occurrence of accident or emergency situations

The organization shall also periodically test such procedures where practical

Preventive Maintenance

A Key Factor in Emergency Preparedness

Regular inspection and maintenance of:

- Storage tanks
- Secondary containment facilities
- Pumps, valves, joints, pipelines
- Alarms for gases and liquids
- Process equipment
- Storm drains
- Pollution control equipment

Key Issues

- Prevention (i.e., risk management) is a key component of emergency preparedness
- An organization must have a procedure for identifying potential accidents and emergencies
- Need to know all potential sources, types, and environmental impacts of emergencies

ISO 14001 Monitoring and Measurement says:

The organization shall establish and 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. This shall include the recording of information to track performance, relevant operational controls, and conformance with the organization's environmental objectives and targets

The Purpose of Monitoring and Measurement

- Keep track of progress in the EMS
- Catch problems quickly
- Ensure prompt corrective and preventive action if things go wrong
- Check performance in relation to regulatory compliance requirements
- Due diligence, self-regulation
- Meet commitments in Environmental Policy

Recommended Routine Monitoring Requirements

- Emissions to air, discharges to water, and solid waste disposal
- Environmental impacts on air, water, land, biota
- Energy consumption
- Chemical, fuel, and hazardous waste handling, storage, and disposal
- Training needs, training conducted, employee awareness and competence
- Communications from interested parties

Key Issues

- Monitoring and measuring are the keys to consistent environmental performance and continual improvement
- ISO 14001 says you **must** track compliance with legal requirements
- A result is only as valid as the sample it is made on, and the calibrated accuracy of the measuring equipment
- Everything that ISO 14001 says must be “maintained” must be monitored or measured

ISO 14001 Non-Conformance, Corrective and Preventive Action says:

The organization shall establish and maintain procedures for defining responsibility and authority for handling and investigating non-conformance, taking action to mitigate any impacts caused, and for initiating and completing corrective and preventive action

What is a Major Non-Conformance?

A deficiency that seriously impairs the effectiveness of the EMS

Examples:

- An element of ISO 14001 not implemented
- Procedures not developed or not implemented
- Failure to take corrective or preventive action
- Several minor non-conformances

What is a Minor Non-Conformance?

A minor deficiency that does not seriously impair the effectiveness of the EMS

Examples:

- One or a few individuals (out of many) do not use a procedure correctly
- Procedure needs minor changes to be effective
- One or a few records incomplete

Consequences of Non-Conformance

MAJOR NON-CONFORMANCE

- Registration to ISO 14001 delayed until problem is corrected and re-audited

MINOR NON-CONFORMANCE

- Can receive registration to ISO 14001 but must commit to fix problem within 60 days; correction will be confirmed on next audit

What are Corrective and Preventive Actions?

- Corrective action fixes the immediate problem (e.g., repair a leaking valve)
- Preventive action is designed to stop the problem occurring again, or stop problems before they happen (e.g., improved maintenance procedures)
- Effective preventive actions are a key to **CONTINUAL IMPROVEMENT**

ISO 14001 Records: Basic Principles

MAKE THEM
AND
KEEP THEM

Purpose of Records

- Keep track of performance, activities, information, operating variables, dates
- Demonstrate progress towards targets
- Monitor trends
- Provide proof of activities
- Assess effectiveness of the EMS
- Maintain history of operations

Remember

All records are documents
BUT not all documents are records

- Documented procedures say what **should** be done
- Records say what **was** done, and the results
- All ISO 14001 requirements for documents apply to records

Key Issues

- Records are proof of EMS conformance with ISO 14001 requirements
- Records provide a history of EMS information
- Keep records clear, orderly, available, secure, for a defined length of time

EMS Audit: ISO 14001 Definition

A **systematic** and **documented verification** process of **objectively** obtaining and **evaluating** audit **evidence** to determine whether an organization's EMS conforms with the EMS audit **criteria** set by the organization (i.e., ISO 14001), and communicating the results of this process to management

Purpose of EMS Audits

To ensure the organization is continually improving its EMS and environmental performance

Audits: The Big Test

- ➔ Environmental audits of an EMS are usually conducted once or twice a year
- ➔ Types of audits:
 - » Internal audits by personnel from the facility, other company sites, or contractors
 - » External audits by independent certified registration body:
 - » Registration (3-year intervals)
 - » Surveillance (every 6 months or 1 year)

Compliance Audits

- ➔ In addition to regular EMS audits, an organization must also conduct periodic audits of compliance with:
 - » national, provincial/regional, and local laws, regulations, and permits
 - » requirements of due diligence
 - » company policies, programmes, and procedures
 - » good environmental management practices for their industry

Audit Your Knowledge of ISO 14001 4.5.4

- Audits are periodic checks on the 'health' of a facility's EMS or compliance status, and a catalyst for continual improvement of the EMS
- Audits of ISO 14001 EMS take place at intervals between two months and one year
- Audit participants include the client/sponsor, auditee, audit team, management, and employees
- Audit procedures must define roles, responsibilities, scope, schedule, auditor selection criteria, and reporting requirements

ISO 14001 Management Review says:

The organization's top management shall, at intervals it determines, review the EMS to ensure its continuing suitability, adequacy, 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.

EMS Management Review

Purpose:

- Top management meets to review and assess the EMS
- Management Reviews are major opportunities for top management to:
 - » reaffirm commitment to continual improvement
 - » demonstrate environmental leadership

ISO 14001 Management Review also says:

The management review shall address the possible need for changes to policy, objectives, and other elements of the EMS in the light of EMS audit results, changing circumstances, and the commitment to continual improvement

Concluding Thoughts

Important points to remember are:

- ISO - International Organization for Standardisation issues technical and management systems standards to assist international trade
- ISO 1400 Series consists of Standards for EMS, environmental auditing, ecolabelling, performance evaluation, and life cycle assessment

Concluding Thoughts (Cont'd)

Additional points to remember are:

- Use of ISO 14001 EMS Standard is voluntary
- Benefits from implementing ISO 14001 can include improved environmental performance; savings in operating costs; better relations with government and other interested parties; new business opportunities; clarity in decision-making procedures

Concluding Thoughts (Cont'd)

More points to remember are:

- The goal of ISO 14001 is continual improvement of environmental management using a system consisting of:
 - » Environmental Policy
 - » Planning
 - » Implementation
 - » Checking and Corrective Action
 - » Management Review

Concluding Thoughts (Cont'd)

Yet more points to remember are:

- ISO 14001 core themes include:
 - » Prevention of pollution
 - » Shared responsibility for environmental management
 - » Leadership by top management
 - » Interdependence of all elements of the EMS
 - » Well-managed systems and procedures in support of quality performance