The ultimate SME implementation guide for
ISO 9001:2000
ISO 14001:2004
management systems

Section 3
ISO 14001:2004
Version 2005

euro**mines**

3.1 The implementation of ISO 14001:2004

Fast-Track

The implementation flow chart

As with an ISO 9000 based QMS, the implementation of an EMS is not an easy step. It takes a lot of preparation and effort to get the people and the management motivated and involved. In this approach all needed elements are discussed. What is not needed is not discussed. The implementation of a formal management system is best handled as a specific project with a project manager, who should be a key member of the organisation's management team.
In the ideal situation this person will also be the Management representative, but skills in project management are essential.
It is important that none of the stages in the flow chart are omitted. The existing system of management and working practices must be known in some detail before the framework of the formal EMS-documentation can be designed. The system is best designed around existing processes and procedures as the development of new systems that require additional resources may simply delay the implementation process.
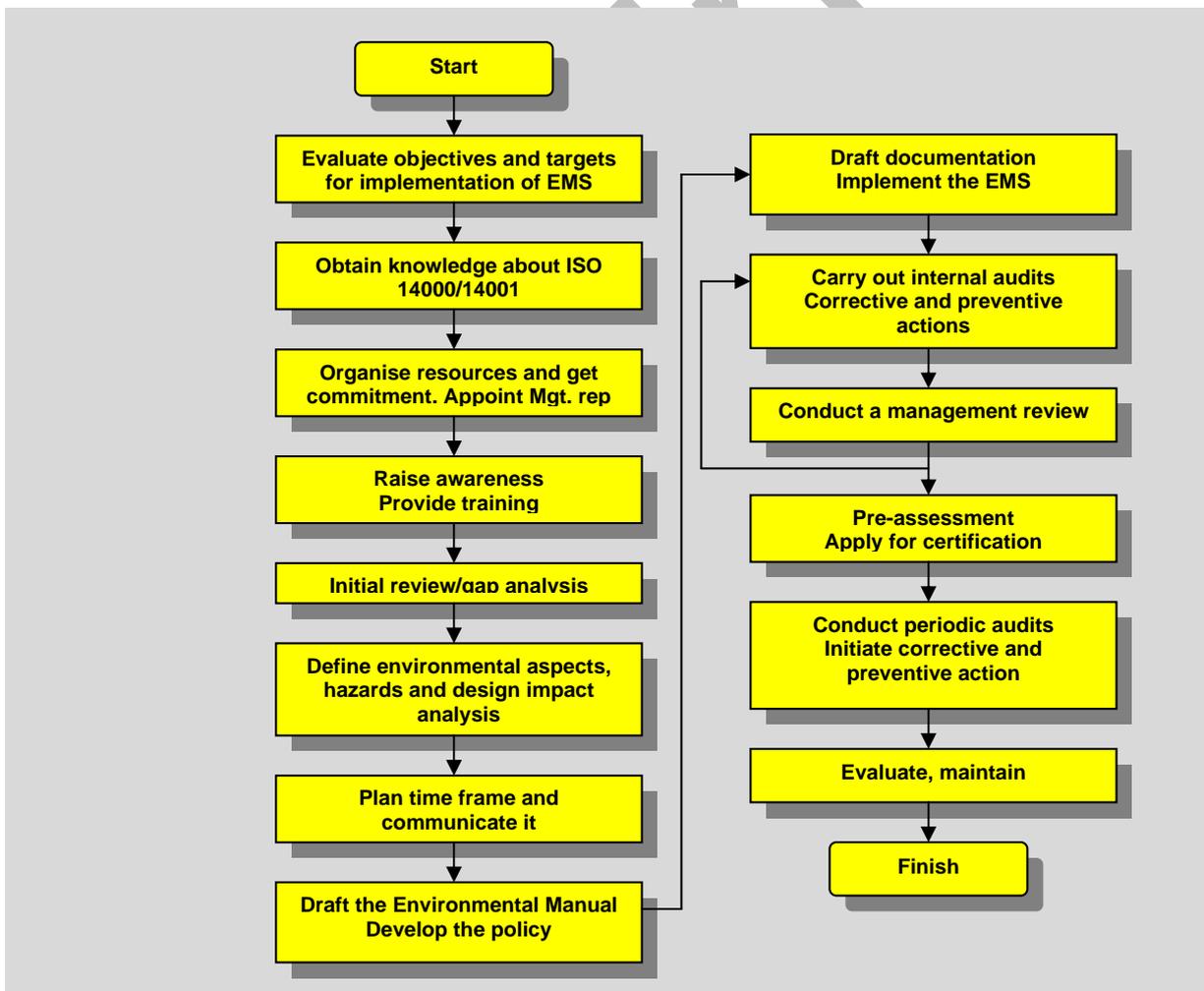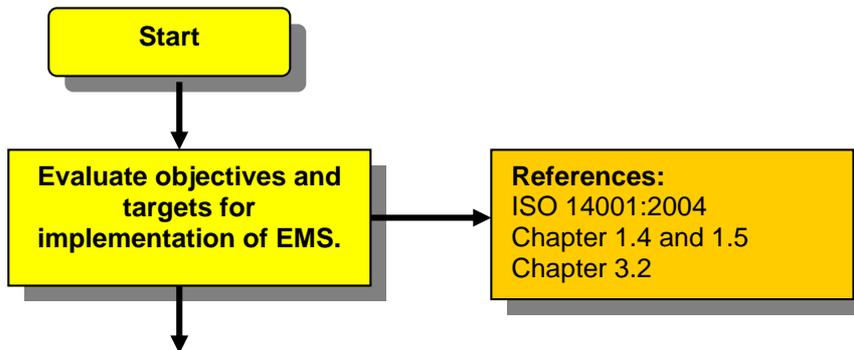
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                    ┌─────────────┐
                    │   Start     │
                    └─────────────┘
                          │
   ┌──────────────────────────┐      ┌──────────────────────────┐
   │ Evaluate objectives and  │      │   Draft documentation    │
   │ targets for              │─────▶│   Implement the EMS      │
   │ implementation of EMS    │      └──────────────────────────┘
   └──────────────────────────┘                  │
                │                     ┌──────────────────────────┐
   ┌──────────────────────────┐      │  Carry out internal audits│
   │ Obtain knowledge about   │      │  Corrective and preventive│
   │ ISO 14000/14001          │      │  actions                  │
   └──────────────────────────┘      └──────────────────────────┘
                │                                  │
   ┌──────────────────────────┐      ┌──────────────────────────┐
   │ Organise resources and   │      │  Conduct a management     │
   │ get commitment. Appoint  │      │  review                   │
   │ Mgt. rep                 │      └──────────────────────────┘
   └──────────────────────────┘                  │
                │                     ┌──────────────────────────┐
   ┌──────────────────────────┐      │  Pre-assessment           │
   │ Raise awareness          │      │  Apply for certification  │
   │ Provide training         │      └──────────────────────────┘
   └──────────────────────────┘                  │
                │                     ┌──────────────────────────┐
   ┌──────────────────────────┐      │  Conduct periodic audits  │
   │ Initial review/gap       │      │  Initiate corrective and  │
   │ analysis                 │      │  preventive action        │
   └──────────────────────────┘      └──────────────────────────┘
                │                                  │
   ┌──────────────────────────┐      ┌──────────────────────────┐
   │ Define environmental     │      │  Evaluate, maintain       │
   │ aspects, hazards and     │      └──────────────────────────┘
   │ design impact analysis   │                  │
   └──────────────────────────┘      ┌──────────────────────────┐
                │                     │   Finish                  │
   ┌──────────────────────────┐      └──────────────────────────┘
   │ Plan time frame and      │
   │ communicate it           │
   └──────────────────────────┘
                │
   ┌──────────────────────────┐
   │ Draft the Environmental  │
   │ Manual                   │
   │ Develop the policy       │
   └──────────────────────────┘
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Figure 3.1, the implementation process flow chart

Step 1,   Evaluate the need and goals for implementing an EMS.

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┌─────────────┐
│    Start    │
└─────────────┘
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       ▼
┌─────────────────────┐        ┌─────────────────────────┐
│ Evaluate objectives │        │ References:             │
│ and targets for     │───────▶│ ISO 14001:2004          │
│ implementation of   │        │ Chapter 1.4 and 1.5     │
│ EMS.                │        │ Chapter 3.2             │
└─────────────────────┘        └─────────────────────────┘
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Implementing an EMS is not done to satisfy customers or directly get a larger market share. The motivation of implementing an EMS is often seen as a defensive instrument. It is not. An EMS is just another good business practice that should be embraced by any well-informed professional management team. ISO 14001 can deliver many benefits, principally because the majority of the implemented EMS's work.

Before an EMS can be considered, top management must evaluate the risks and the benefits to the organisation. The EMS must be custom fit to meet the needs and conditions of the organisation.

At this stage, identify why an EMS is needed and question, does it indeed improve the strength of the organisation, now and in the future.

Before continuing:

☑ *Check that the management is committed to implement an EMS according to ISO-14001.*

☑ *Communicate the objectives and targets for the implementation of the EMS with all the staff.*

Step 2,   *Obtain knowledge about the ISO 14000 family and appoint a management representative*

Obtain knowledge about ISO 14000/14001

References:
ISO 14002:2004
Chapter 1.4
Chapter 3.2 and 3.3
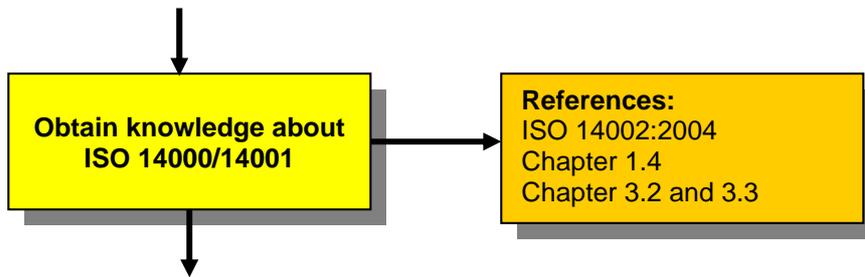
The person responsible for implementing the EMS in the organisation should be well informed about the requirements of the standard and other legal requirements and needs from interested parties.
ISO 14001 contains useful information. Also for specific purposes other standards have been developed that could be applicable to the SME implementing the EMS. See chapter 1.4.

Before continuing:

☑ *Check that the contents and the philosophy of ISO-14001 have been made clear and are accepted.*

Step 3, _Organise the resources_

Organise resources and get commitment Appoint Mgt. rep.	References: ISO 14001:2004 Chapter 1.4 and 1.5
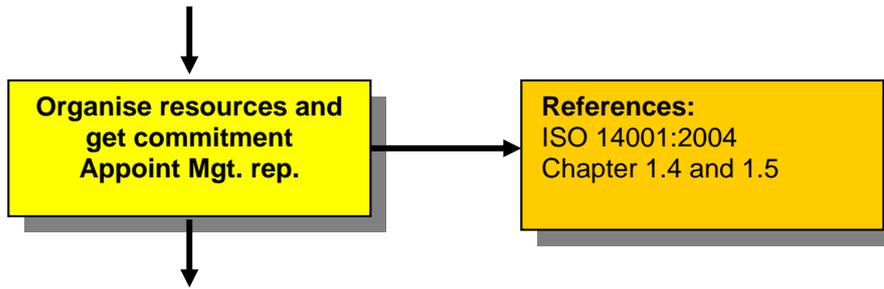
Decide on the responsibilities of the person who will be involved in developing and documenting the QMS, including the appointment of a management representative who will oversee the implementation of the EMS. This person does not have to be the same as the implementer. Establishing a project team may also prove to be useful to oversee progress and in providing resources wherever required.
If within the organisation adequate competence is available, but resources such as time and knowledge cannot be made available, then a consultant should be appointed.

Before doing so, it is good to realise that with subcontracting a part of the implementation process, a part of the knowledge and the commitment is lost. An organisation can learn more and better from its mistakes and own developments, than from just doing what a consultant is advising.
Carry out a cost-benefit analysis of hiring a consultant and agree on the scope and time frame.

Prepare a cost estimate and procure and allocate the resources for this project.
To assist the Management Representative, it would be useful to set up an ISO-team to create involvement and expertise. This team should exist of involved employees, representing various levels within the organisation. The implementation of an EMS is not work for one person only. A team can provide knowledge and support, but also it creates involvement and commitment.
Some authority can be given by top management to speed up the process.

Raise commitment from the top management. If there is no commitment at this stage of the implementation process, than it should be stopped.

Before continuing:

☑ _Check to see that the management representative has been appointed at this stage of the implementation process. Do not continue without the management representative._

☑ _If possible, the implementer should be assured of the help and support of a team of employees (ISO-team)._

☑ _Check to see if a consultant should be involved in this project. Make sure that a cost benefit analysis has been carried out beforehand and with a positive result._
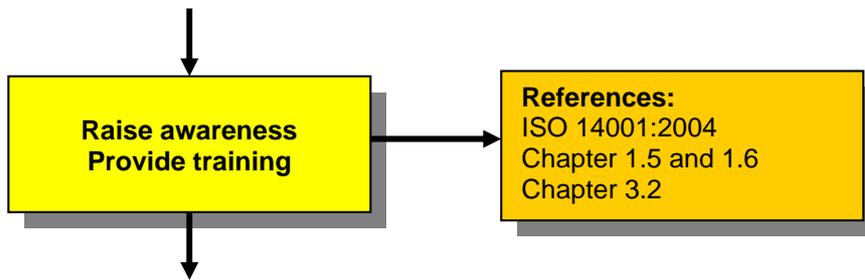
☑ *Check if commitment has been made at this stage on the implementation process, if not it should be stopped here.*
Be assured of the help from an ISO-team.

☑ *Check that the needed resources such as manpower, money and time have been made available to the management representative and the ISO-team.*
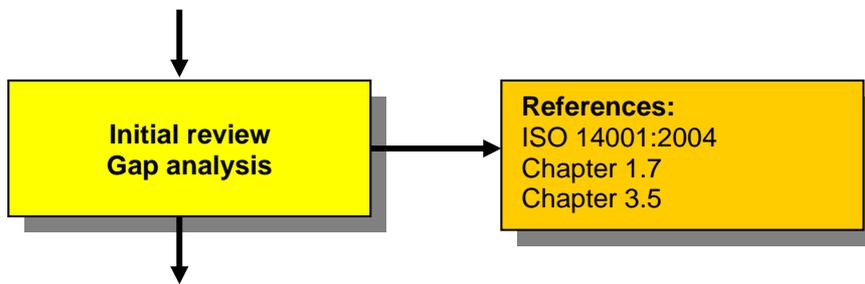
Step 4,   Raise awareness and provide training

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┌─────────────────────┐      ┌──────────────────────────┐
│                     │      │ References:              │
│  Raise awareness    │─────▶│ ISO 14001:2004           │
│  Provide training   │      │ Chapter 1.5 and 1.6      │
│                     │      │ Chapter 3.2              │
└─────────────────────┘      └──────────────────────────┘
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Raise awareness about EMS requirements amongst all personnel performing activities and tasks that affect the environment. Plan for and provide specific training on how to develop an environmental manual, procedures and work instructions. Besides that, it is important to instruct people how to identify and implement improvement processes and how to audit compliance with the EMS.
The ISO-team and/or the consultant should be a resource for assistance during the training.

Before continuing:

☑ *Check that training has been provided to the people involved in the writing of procedures and work instructions. Make sure that the written documents reflect the actual situation and not the desired situation.*

☑ *Check if a number of people have been selected as internal auditors and that the auditor training has been provided.*

☑ *Check that the ISO-team assists in providing insight in the EMS to the other employees by means of presentations, newsletters or other ways of communication.*

☑ *Develop forms that can replace difficult status reporting and provide instructions on how to use them.*

Step 5,   Initial review, gap analysis

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                  ┌──────────────────┐         ┌──────────────────────┐
                  │                  │         │ References:          │
                  │  Initial review  │────────▶│ ISO 14001:2004       │
                  │  Gap analysis    │         │ Chapter 1.7          │
                  │                  │         │ Chapter 3.5          │
                  └──────────────────┘         └──────────────────────┘
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An ISO 14001 Initial review will be performed to determine the extent to which existing facility policies, standard operating procedures, environmental programs, permits and related documents and records conform to the applicable elements of ISO 14001.
Prepare on how to bridge gaps, including planning for additional resources required. Gap analysis may be carried out through self-assessment, by the ISO-team or by an external consultant.

Before continuing:

☑ *Check that the gap analysis has been carried out and study the outcome. With this analysis it should be possible to identify the gaps when it is compared with the ISO 14001 EMS*

☑ *Check that a plan has been developed to bridge the discovered gaps. Make sure that the plan also contains a time schedule and that the actions are realistic and can be finished in time.*

☑ *Check that the results of the gap analysis and the actions to bridge the gaps have been reported to top management and that management is also committed.*

Step 6, Define environmental aspects, identify hazards, and design impact analysis

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┌──────────────────────────┐        ┌──────────────────────────┐
│  Define environmental    │        │ References:              │
│  aspects, identify hazards│───────▶│ ISO 9001:2000 clause 7   │
│  Design impact analysis  │        │ Chapter 3.2              │
│                          │        │ Chapter 3.5              │
└──────────────────────────┘        └──────────────────────────┘
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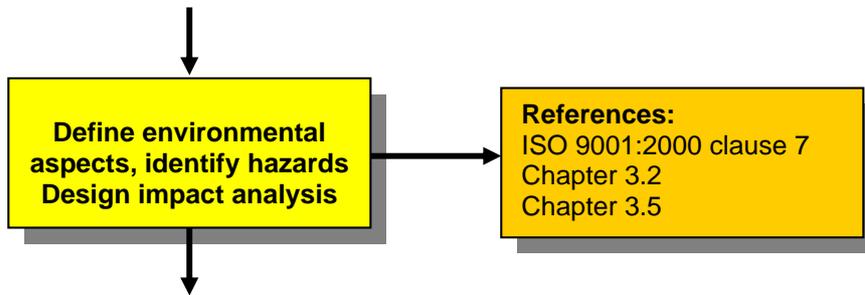
Significant environmental aspects and impacts associated with the organisation's unique processes, products and services must be identified.
Utilising facility flow diagrams and pre-analysis questionnaires, the implementer, or with the help of a consultant, identifies the site aspects and impacts.
When these aspects and impacts are defined, the level of risk involved with conformance or non-conformance has to be evaluated.
For example, an above level pollution from a process exhaust or a too high noise level on the boundaries, invites complaints and lawsuits from the community. Even from the company employees these actions can be expected. Meeting the target level means fewer costs.
Reducing noise or improving the work environment could mean higher productivity. The cost ratios have to be estimated as best possible.
Attention has to be given to air, surface water, noise, soil, dangerous situations, and health issues in and outside the premises.

Before continuing:

☑ *Check that the gap analysis has been carried out and study the outcome. Do not continue if that step is not finished.*

☑ *Make sure that on all processes the critical aspects and the associated impacts and hazards have been identified and documented. The missing of one process will make the whole system worthless.*

Step 7,   Planning and time frame

Plan time frame and communicate it	**References:** ISO 14001:2004 Chapter 1.5 and 1.6 Chapter 3.5
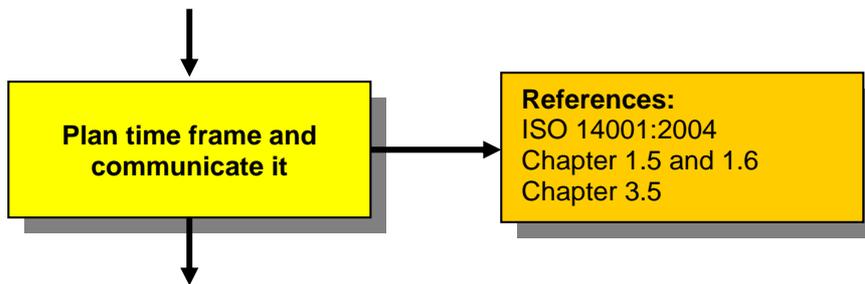
In this stage the allocation of the resources for the EMS project should be defined. Prepare a complete plan to close the gaps identified in step 5 to develop the EMS aspects and impact analysis. In the plan, include activities to be performed, resources required, responsibilities and an estimated completion time for each activity.
The total time required for each phase (planning, documentation, implementation and evaluation) depends on the extent of the gaps in the existing EMS.

Before continuing:

☑   *Check that the plan is complete, including the actions to bridge the gaps, a time schedule and the allocation of the resources such as manpower, money and time.*

☑   *Check that enough effort has been made to communicate the plan and the result of it to all staff. If needed provide extra information to key people and the ISO-team.*

Step 8,   Draft an environmental manual. Develop the policy

Draft the Environmental Manual Develop the policy	References: ISO 14001:2004 Chapter 3.6
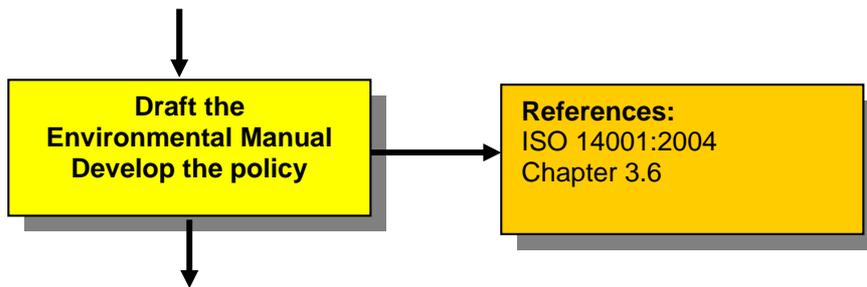
The organisation's Environmental manual and the EMS policy will be developed and reviewed in a meeting with the key environmental, facility program and process owners.
The environmental manual should provide a road map to the EMS program for the organisation.

The manual should include:

- *How the EMS applies to the environmental hazards, impact analysis and environmental aspects.*
- *Refer to documented procedures as mentioned in the standard.*
- *Describe the interaction between the EMS processes and the measurement and monitoring processes.*

Draft the policy for the organisation. Get commitment from top management for the policy.

Before continuing:

☑ *Check that there is an adequate policy developed, that top management is committed to it and that it is a strong statement.*
Do not continue without this policy statement.

☑ *Check that everybody in the organisation have seen it, understands it and can repeat it in his/her own words.*

☑ *Check that the EMS manual is ready. Don't continue without an approved manual.*

☑ *Check that the requirements from the standard are fulfilled and that reference is made to the required (12) procedures. Do not write procedures if there is no need for them.*

☑ *If commitment from top management is still not sufficient, don't continue.*

Step 9, Implement the EMS

Draft documentation Implement the EMS	**References:** ISO 14001:2004 Chapter 3.6
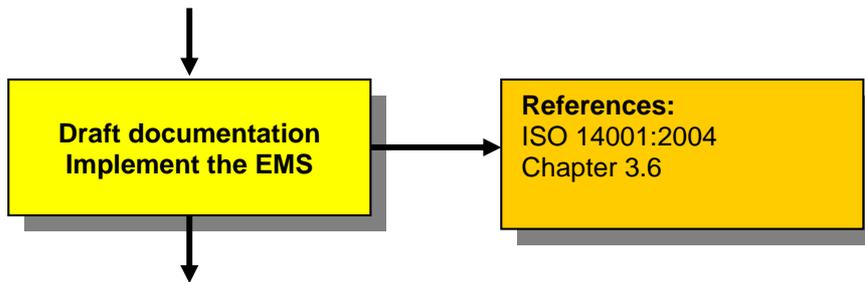
EMS documentation infrastructure development will focus on three types of procedures:

- *Management procedures for EMS*
- *Implementation Environmental programs*
- *Environmental program implementation (operating procedures and work instructions)*

Facilitated meetings with the plant and process management personnel must be utilised in order to capture relevant material and information needed to develop EMS documentation procedures.
Use of flow-charting is encouraged as a tool to develop a visualisation method to determine procedures that need to be documented. The style to be used is different per company.

Clear procedures must be established to control all documents required by the EMS. All documents must be:
- *easily located*
- *legible, identifiable, dated including revision and order*
- *periodically reviewed, revised and approved*
- *available to everyone who needs them*
- *maintained for a specific period*
- *retained, if obsolete for legal or audit reasons*

Identify and plan activities and procedures with proper operational control to meet objectives and targets. These procedures should be documented, specify operating criteria and be communicated to all personnel including contractors and suppliers. Procedures must be developed and maintained to identify potential for and response to abnormal and emerging situations.

Before continuing:

☑ *Check that elements of the standards are implemented in the organisation. Elements such as continual improvement, risk identification, impact analysis, communication and prevention.*

☑ *Check that all the needed procedures have been developed and that work instructions have been written.*

☑ *Check that the process owners are involved in the development of the work instructions.*

☑ *Check that the communication lines are maintained.*

Step 10,   Carry out internal audits

Carry out Internal Audit, Corrective and preventive actions	**References:** ISO 14001:2004 Clause 4.5.3
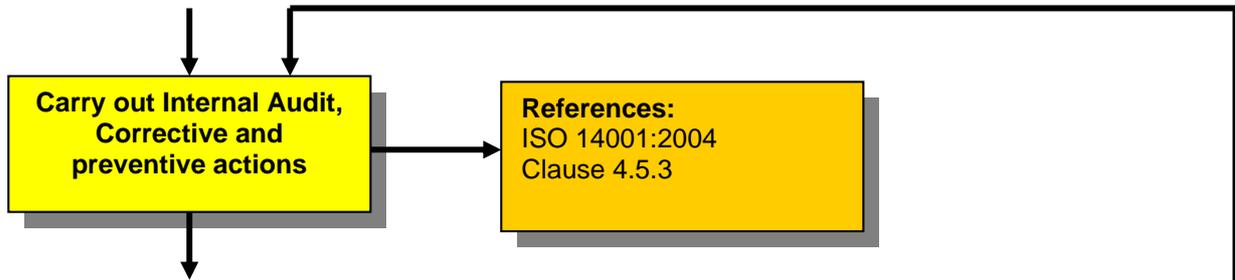
During the phase of implementation, some three to six months after the documentation has been written, the trained auditors should carry out one or two internal audits covering all activities for the EMS, and concerned management should take corrective action on the audit findings without delay.
Wherever required, revise the manuals, procedures and objectives.
After each internal audit, the top management should review the effectiveness of the system and provide resources for corrective actions and improvements.

Before continuing:

☑ *Check that the responsible people have been trained for the internal auditor function.*
Record their training results and data.

☑ *Check that internal auditors do not audit their own department or work area.*

☑ *Check that the results of the internal audits are fed back into the system and lead to improvement of the EMS, the processes and the documents.*

☑ *Check that the results of the internal audits are reviewed on top management level and that appropriate action has been taken.*

☑ *Check that there is a time schedule for internal audits and that it is maintained.*

Return from step 11

Step 11,   Conduct a Management Review

Conduct a Management Review	**References:** ISO 14001:2004 Clause 4.6	Result not sufficient? Go back to step 10.
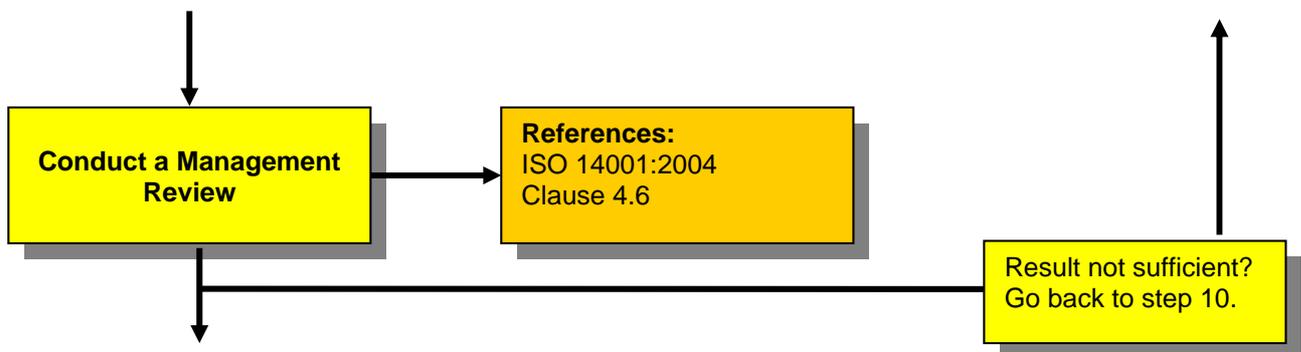
Top management must review the EMS, to ensure its continuing suitability adequacy and effectiveness. This review should be a comprehensive evaluation and should be thoroughly documented.

Before continuing:

☑ *Check that the result of the management review is functioning well and that all people involved know what is expected from them. Check on the involvement and commitment of the top management. If not sufficient? Go back to step 10.*

☑ *Check that actions are taken and decisions are made.*

☑ *Check that the main focus is on emergency preparedness and response.*

☑ *Check that the decision makers are present.*

Step 12,   Pre-assessment. Apply for certification

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┌──────────────────────┐        ┌──────────────────────┐
│                      │        │ References:          │
│   Pre-assessment     │───────▶│ ISO 14001:2004       │
│ Apply for certification │     │ Chapter 1.6          │
│                      │        │                      │
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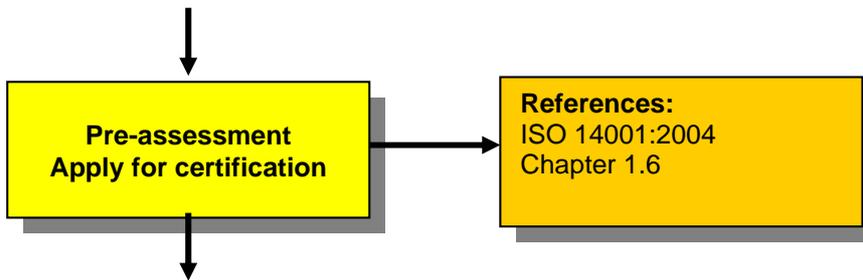
*Carry out a pre-assessment. Correct the EMS and the documentation where needed.
Re-assessment can be done with the help of an external certification body, but also
by local consultants or by consultants from the branch organisation.
On satisfactory completion of the previous step, and if the company decided to obtain
third party certification, an application for certification should be made to an
accredited certification*

Before continuing:

☑ *Carry out a pre-assessment to win trust and confidence among the people
involved in the certification process.*

☑ *Check that actions are taken and decisions are made based on the results of
the pre-assessment.*

☑ *Check that the right partner has been found to carry out the pre-assessment.*

☑ *Check that a certification body has been approached for the final assessment.
Read the requirements in chapter 1.6 to make sure the right choice has been
made.*

Step 13,   Conduct periodic evaluations and initiate corrective and preventive actions

Conduct periodic audits Corrective and preventive actions

References:
ISO 14001:2004
Chapter 1.6
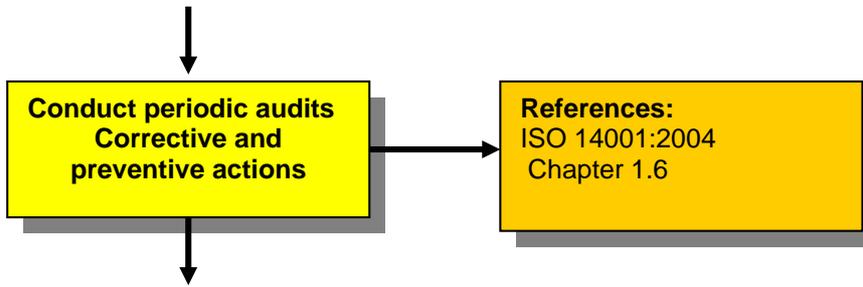
After certification, the organisation should periodically conduct internal audits to review the effectiveness of the EMS and see how it can be continually improved. The organisation should evaluate periodically that the purpose and goals for which the EMS was developed are being achieved, including its continual improvement.

It is needed to look at the organisation's overall systems performance and than decide when and where the most effective improvements can be realised. Then objectives have to be set for those improvements and a periodic evaluation has to be conducted to monitor achievements.
Improvements could be the reduction of waste or energy use within a process or the reduction of contamination in a manufacturing process.

Before continuing:

☑ *Check that internal audits are periodically planned and conducted.*

☑ *Check that the non-conformities from the final assessment will be solved as soon as possible.*

☑ *Check that the organisation will review its goals and objectives on a regular basis.*

☑ *Check that management reviews are planned and conducted periodically.*

Step 14,   Evaluation

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          ┌──────────────────────┐        ┌──────────────────────────┐
          │                      │        │ References:              │
          │     Evaluation       │──────▶ │ ISO 14001:2004           │
          │  System maintenance  │        │ Chapter 1.6              │
          │                      │        │ Non-conformities         │
          └──────────────────────┘        └──────────────────────────┘
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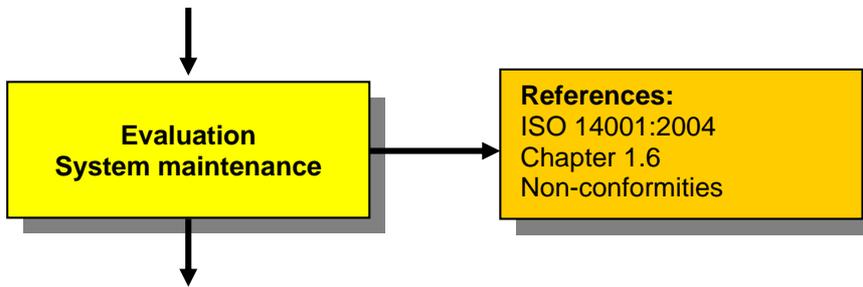
The certification is not the last phase. The people involved need to measure the effectiveness of the implementation of the EMS during the implementation process and by the conclusion of the process. Measurements should be made against the original aims and goals and the key indicators of an effective EMS as stated below:

- *Senior management is fully committed to the EMS and owns the appropriate processes.*
- *The EMS is designed around business processes, permits and other regulatory documentation and not around ISO 14001 or any other standard.*
- *Staff knows how to access the EMS documentation.*
- *Visibility of processes and the clarity of the instructions in the EMS documentation set are clear, concise, readable and understandable. The people involved maintain their own documents.*
- *The organisational culture is a culture of opportunities, focused around continual improvement rather than a person-to-blame culture.*
- *Environmental management representative is a key organisation person rather than a sideline person.*
- *Internal auditing is seen as adding value and part of the continual improvement of the EMS.*

☑ *Check that senior management is fully committed to the EMS and owns the appropriate processes.*

☑ *Check that the EMS is designed around business processes and not around the ISO 14001 or any other standard.*

☑ *Check that staff knows how to access the EMS documentation.*

☑ *Check that visibility of processes and the clarity of the instructions in the EMS documentation set are clear, concise, readable and understandable. The people involved maintain their own documents*

☑ *Check that the organisational culture is a culture of opportunities, focused around continual improvement rather than a person-to-blame culture.*

☑ *Check that the environmental management representative is a key organisation person rather than a sideline person.*

☑ *Check that internal auditing is seen as adding value and part of the continual improvement of the EMS.*

Finish
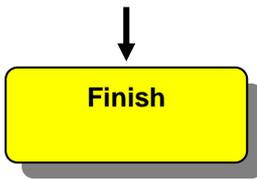
☑ *Continual improvement.*

☑ *Keep up with regular internal audits and Management Reviews.*

3.2   Structure, scope and application

Many companies today conduct environmental audits of their facilities to see if they conform to local, provincial and national regulations. However, these audits by themselves will not guarantee continuous improvement or future conformance. Only a well-established environmental management system (EMS) can do that. The thrust of ISO 14001 is to give the minimal structure for such a system.

A key point to remember when discussing ISO 14001 is that it shares an important characteristic with ISO 9001; namely, it won't produce an environmentally friendly organisation by itself. In the same way that ISO 9001 will not make the quality of the product automatically improve; ISO 14001 only lays out the system and the structure. It is up to the management to set the level of environmental impact to obtain and then seek those targets.

A second key point to remember is that the working document says specifically that an ISO 9000 system can be used as the model of a single management system that addresses both quality and environmental issues.

It is important to point out that health and safety issues can also be wrapped into this same system.

Finally ISO 14001 can be used for any of several purposes, such as,

- *Creating an EMS*
- *Auditing the EMS*
- *Seeking third-party certification*
- *Seeking customer recognition of the EMS*
- *Declaring the EMS to the general public*

Before an EMS can be considered, top management must evaluate the risks and the benefits to the organisation. The EMS must be custom fit to meet the needs and the conditions of a particular site. ISO 14001, being a universal standard, is in its raw form not suitable for an organisation. It should be modelled and formed within the requirements, to the shape of the organisation.

What are potential risks and benefits that should be considered by the implementation of an EMS?

Financial risks
The demand on resources to implement an EMS could be substantial. Not only must the cost of physical resources such as training, environmental monitoring and document management be taken into account, but the added burden placed on management already stretched thin by competitive pressures, may make them less effective. Integrating the EMS with existing management systems may diminish some of the costs and burdens.

Legal risks
ISO 14001 is a standard that requires auditing and reporting. Some of the information gathered during audits and evaluations may be of a sensitive nature and is not protected from disclosure to the proper regulatory authorities. Some outside organisations, such as environmental activists could use the information against the organisation. Though not a compliance standard, the technical data gathered can be used by internal and external stakeholders to assess regulatory compliance. To minimise the risk, corrective actions should be well documented and reported with audit results.

Financial benefits
There are numerous benefits of implementing an EMS. ISO 14001 requires management commitment to improved performance. By integrating the EMS with other management systems overall organisational performance including financial performance will improve. A

strong management system will make access to capital from financial institutions and stockholders more likely for growth and positioning for a stronger competitive advantage. In addition consumers become more environment-aware, demanding more products and services from environmentally friendly organisations. Insurance companies may be more willing to write coverage for organisations with a proven management system, reducing overall insurance costs and risks.

Many organisations start an EMS as a defensive weapon against the environmental lobby. An EMS that is well implemented and well maintained will create benefits enough.

Legal benefits

Though ISO 14001 is basically voluntary, it is being considered for adoption by many organisations as the national environmental standard. ISO 14001 certification may become a prerequisite for operating within some countries.

Employee and public relations

ISO 14001 requires participation and commitment from all levels within an organisation. They become more aware of the impacts their actions have on the communities in which they live and empowered to improve environmental performance benefiting their family and neighbours. Personnel morale and overall organisation performance benefits. External organisations such as environmental activists are more likely to take a co-operative approach to a company that has documented its commitment to improve environmental performance.

Requirements

Fast-Track

The organisation shall establish and maintain an EMS is a quote of how section four of ISO 14001 starts. Just like ISO 9000, section four contains all of the requirements the organisation's management have to meet. And also like ISO 9000, the word "shall" means the organisation must take this action.

Thus, the management must have a well-documented EMS available that can be used as evidence to an auditor as being in conformance and effective.

Environmental Policy (clause 4.2)

Top management must design and communicate a company-wide-policy on the environmental issues. This means anything that has an impact on the surrounding environment, such as noise, surface water quality, soil, air, quality of work life, discharge, scrap, disposal of products, influence on the community, etc.

Therefore the environmental policy will have to be relevant to the size and nature of the organisation and the impact it has on its environment.

The management must state that continual improvement is one of its strategic goals. It must say that the organisation will comply with all relevant regulations. The management has to state how and when it will review its system, including its stated targets and objectives.

All employees and other people working for the organisation (consultants, subcontractors etc.) have to be aware of the policy and it has to be made available to the public.
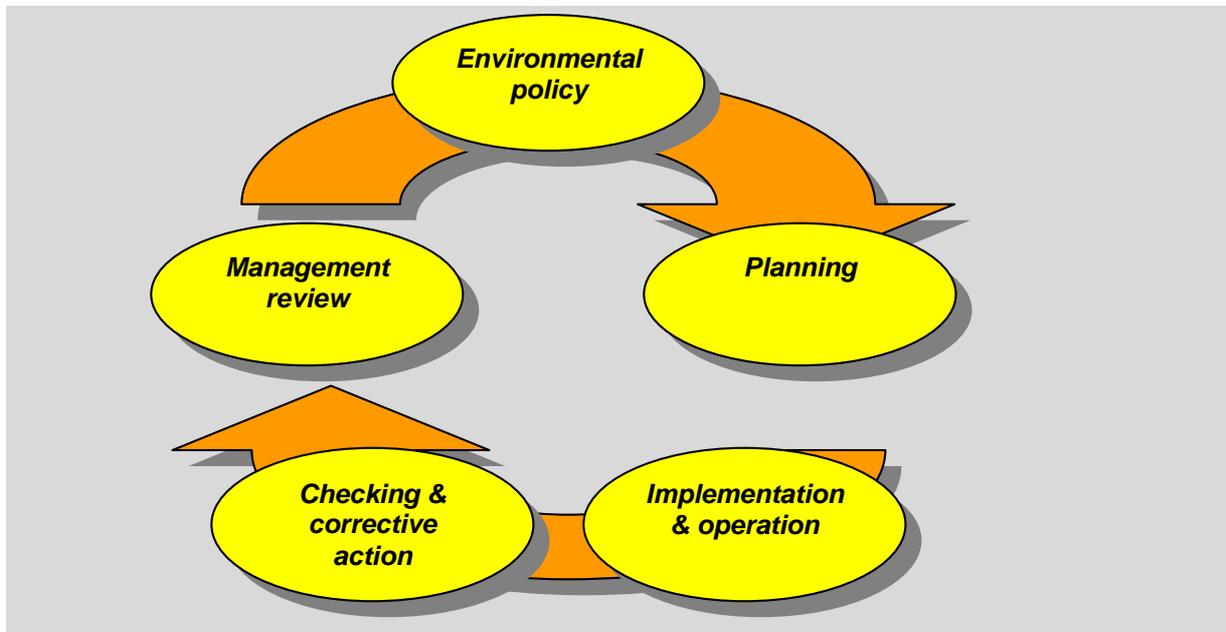
Figure 3.2, the 5 key elements of ISO 14001

Planning (clause 4.3)

Planning begins by defining where the organisation can control the environmental results of its operations, products, and services. Then it has to compile an up-to-date list of environmental regulations and requirements that apply to the organisation. Using this information, the management then begins to set the targets and objectives.
Targets and objectives have to be readily measurable. In addition, the management have to consider which impacts the company has that can be controlled economically.
Also, the concerns of other outside parties have to be considered. At the same time, management have to stay true to the original environmental policy.
Each target and objective is then assigned to a specific job title for control and continuous improvement. A specific timeframe will have to be created. As new projects or production methods are adopted, the EMS plan will have to be changed or expand to include these developments.
The new version of this standard includes also the stipulation that the organisation shall ensure that the identified significant environmental aspects, are taken into account in establishing, implementing and maintaining the organisation's EMS.
Important is that the organisation must implement a procedure to identify the environmental aspects of its activities, products and services, and a procedure for determining those aspects that can have a significant impact on the environment.
With regards to legal and other requirements, the organisation must implement a procedure for identification and access to the legal requirements and to determine how these requirements apply to its environmental aspects.(4.3.1 Environmental aspects and 4.3.2 Legal and other requirements)

Implementation and operation (clause 4.4)

Just like ISO 9000, management have to define lines of responsibility and then provide the people and resources to get the job done. Top management must also assign a manager as the official EMS co-ordinator. This co-ordinator is responsible for ensuring implementation and then regularly reviewing the EMS and reporting to management. All of this has to be documented.

All employees that can have a significant impact on the environment have to be trained to meet identified levels of skills and knowledge. This is very similar to the training requirement of ISO 9000.
In addition, management must train all employees on the importance of conformance to the environmental policies and procedures, the type of impacts the company has, who has responsibility for controlling which impacts, and the potential damage from non-conformance.

Any communication internal to the organisation concerning environmental issues shall be documented. Management will also need a formal system for recording and acting on communications received from external sources, i.e. customers, regulators, environmental groups, etc. Likewise, management needs a formal procedure for releasing environmental information to the public.
Naturally, document control plays a central role in the EMS.
A written procedure is required.
It is recommended that the Level II document created to meet the document control requirement from ISO 9000 be used to meet this same requirement.

An environmental control plan has to be developed for daily operations.
Such a plan would be very similar to the quality control plans required in ISO 9000. It is advised to use a flow chart of the process to identify points where environmental control is required. Each of these points would be listed on the plan along with the criteria to be met and how to react if they are not met. In addition, it should be included, how to communicate the requirements to suppliers and contractors.
Unique to ISO 14001 is the need for a procedure to cover emergencies. If the company suffers a spill or accidental impact, a plan has to be designed to prevent further environmental damage while also correcting the situation. After any accident or emergency is corrected, the management should review what happened and decide how to prevent re-occurrence and whether the procedure should be changed.
The organisation must implement a procedure for its employees and subcontractors to make them aware of the importance of conformity with the environmental policy, the significant environmental aspects, their roles and responsibilities and the potential risk by departure of this procedure.
In conclusion, the organisation must establish and implement procedures as required in clause 4.4.2 Competence training and awareness, 4.4.3 Communication, 4.4.4 Documentation, 4.4.5 Control of documents, 4.4.6 operational control, 4.4.7 Emergency preparedness and response.

Checking (clause 4.5)

Now that is identified what will be monitored and where it will happen, a procedure has to be designed on how this is done. First a system has to be set up where key environmental characteristics are measured and recorded.
These are done in a fashion similar to an SPC (statistical process control) system, that is, a regularly scheduled activity assigned to specific people. Then the written data has to be handled, analysed, and stored under the ISO 9000 procedure for quality records. (Retention policy)
In addition, any measurement equipment will come under the ISO 9000 procedure for the maintenance and calibration measuring devices.
Just like ISO 9000 a corrective action procedure is needed that identifies when to react, who responds, and what actions are taken. The ISO 9000 version of this can be used to meet this requirement.
At least annually management should perform an internal audit of the complete EMS. The procedure for this will be identical to those required under ISO 9000. The key difference is that the internal auditors will need to have knowledge, experience, and/or training in environmental assessment. They need to understand why a particular characteristic is being

checked and what potential impacts it could create. Thus, ISO 9000 internal auditor training or lead assessor training is recommended, followed by a seminar on environmental assessments. In conclusion; Clause 4.5 requires procedures for 4.5.1 Monitoring and measurement, 4.5.2 Evaluation of compliance, 4.5.3 Nonconformity, corrective action and preventive action, 4.5.4 Control of records, and 4.5.5 Internal audit.

Management Review (clause 4.6)

At regular intervals, usually at least once a year, top management need to review the complete EMS for completeness and effectiveness. This review will consist of the results of internal audits, reports on new requirements and regulations, and the management's discussion of the strategic plan for the company. Then upper management decides whether to modify or change the existing
EMS to better meet their changing needs and targets. All of this has to be documented.

Conclusion

As must be clear, the five basic requirements of an EMS really are a combination of environmental concerns and ISO 9000 requirements. It would be fair to say that a company that has ISO 9000 in place would be well on their way to conforming to ISO 14001.
One interesting aspect of ISO 14001 is the proposed idea of written targets and objectives. This would make conformance and improvement obvious to anyone that took the time to look at a series of charts. Employees would gather regular readings of environmental impacts. The target for each chart would be noted. Thus, continuous improvement would be a regular part of the EMS system.
But ISO 14001 will not help when auditors come from organisations like the Environmental Protection Agency (EPA) or OSHA.
Conformance to ISO 14001 will not guarantee conformance to regulations. It is up to the management of a company to set targets and objectives to ensure such continuous conformance.
In regulatory situations, ISO 14001 will be a double-edged sword. On one hand, the organisation will be able to easily demonstrate the efforts to maintain conformance. On the other hand, the system will leave a paper trail that can be easily followed and used in court if the company flagrantly violates the law.

It is obvious that on the implementation of an EMS according to ISO 14001:2004 also the clause continual improvement is applicable. For details see the parallel chapters on the QMS according to ISO 9001:2000 in chapter 2.3.
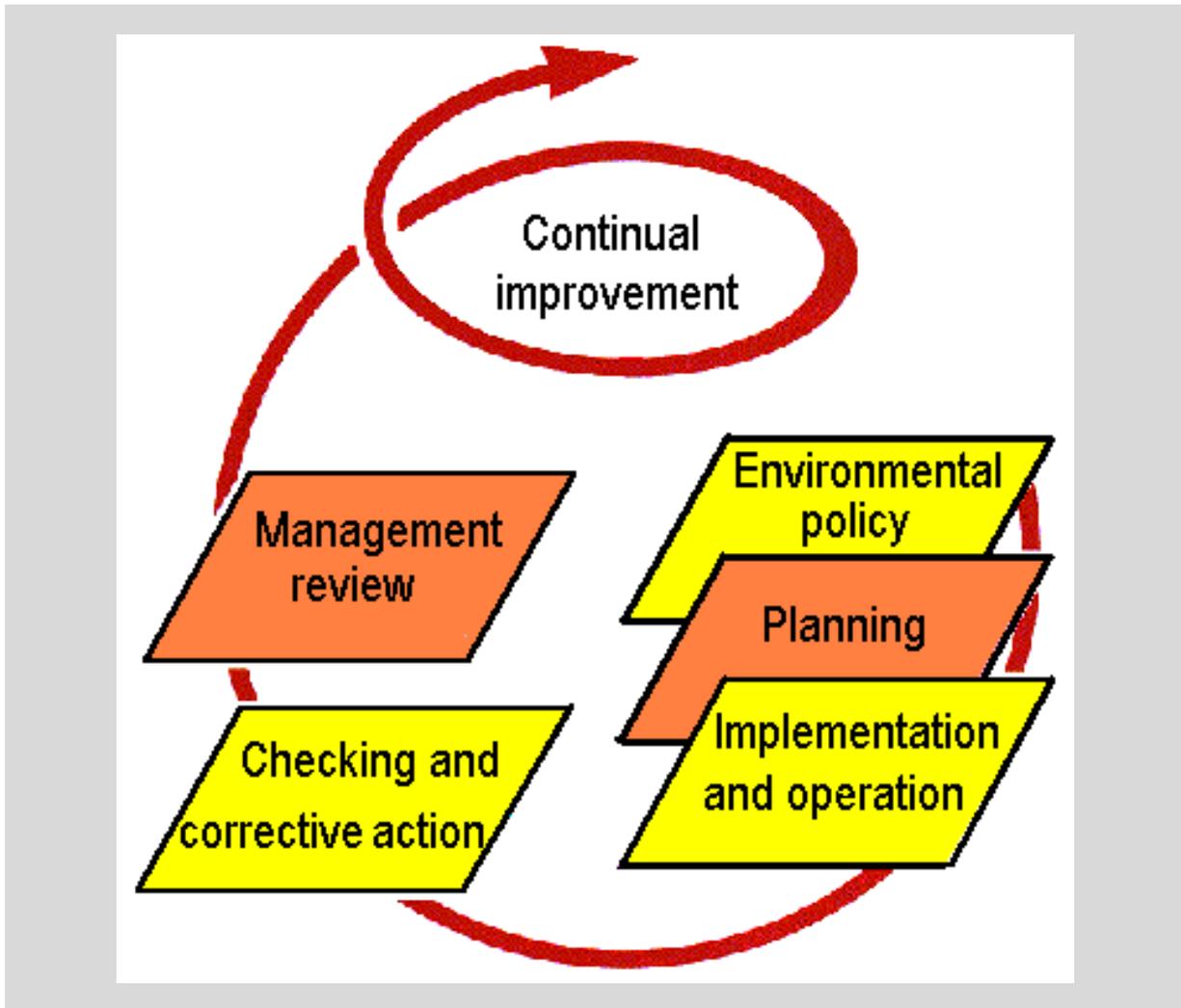
3.3 ISO 14000:2004 explained

Figure 3.3, Environmental Management System model for ISO 14001:2004

ISO14001 requires an Environmental Policy to be in existence within the organisation, fully supported by senior management, and outlining the policies of the company, not only to the staff but also to the public.
The policy needs to clarify compliance with Environmental Legislation that may effect the organisation and stress a commitment to continuous improvement. Emphasis has been placed on policy as this provides the direction for the remainder of the Management System. Those companies who have witnessed ISO 9000 Assessments will know that the policy is frequently discussed during the assessment; many staff are asked if they understand or are aware of the policy, and any problems associated with the policy are seldom serious. The Environmental Policy is different; this provides the initial foundation and direction for the Management System and will be more stringently reviewed than a similar ISO 9000 policy. The statement must be publicised in non-technical language so that the majority of readers can understand it. It should relate to the sites within the organisation encompassed by the Management System, it should provide an overview of the company's activities on the site and a description of those activities and a clear picture of the company's operations.

The preparatory review and definition of the organisation's environmental effects is not part of an ISO14001 Assessment, however examination of this data will provide an external audit

with a wealth of information on the methods adopted by the company. The preparatory review itself should be comprehensive in consideration of input processes and output at the site. This review should be designed to identify all relevant environmental aspects that may arise from existence on the site. These may relate to current operations, they may relate to future, perhaps even unplanned future activities, and they will certainly relate to the activities performed on site in the past (i.e. contamination of land).
The initial or preparatory review will also include a wide-ranging consideration of the legislation, which may affect the site, whether it is currently being complied with, and perhaps even whether copies of the legislation are available.

Many of the environmental assessments undertaken already have highlighted that companies are often unaware of all of the legislation that affects them, and being unaware, are often not meeting the requirements of that legislation. The company will declare its primary environmental objectives, those that can have most environmental impact. In order to gain most benefit these will become the primary areas of consideration within the improvement process, and the company's environmental program.
The program will be the plan to achieve specific goals or targets along the route to a specific goal and describe the means to reach those objectives such that they are real and achievable.

The Environmental Management System provides further detail on the environmental program. The EMS establishes procedures; work instructions and controls to ensure that implementation of the policy and achievement of the targets can become a reality. Communication is a vital factor, enabling people in the organisation to be aware of their responsibilities, aware of the objectives of the scheme, and able to contribute to its success.

As with ISO 9000 the Environmental Management System requires a planned comprehensive periodic audit of the Environmental Management System to ensure that it is effective in operation, is meeting specified goals, and the system continues to perform in accordance with relevant regulations and standards. The audits are designed to provide additional information in order to exercise effective management of the system, providing information on practices that differ to the current procedures or offer an opportunity for improvement.
In addition to audit, there is a requirement for Management Review of the system to ensure that it is suitable (for the organisation and the objectives) and effective in operation. The management review is the ideal forum to make decisions on how to improve for the future.

In the description of the standard below, text quotes from the original standard are marked in blue.

1. <u>Scope</u>

The ISO 14001:2004 standard sets requirements for an Environmental Management System or QMS.
This EMS is applicable to organisations that want to:

- *Implement, maintain and improve an EMS*
- *Assure itself of its conformance with the Environmental Policy*
- *Demonstrate such conformance to others, government, provincial or local authorities by:*
  Making a self-determination and self-declaration or
  Seeking confirmation of its conformance by parties having interest in the organisation, such as customers or
  Seeking information of its self-declaration by a party external to the organisation or
  Seeking certification/registration of its EMS by an external organisation

All the requirements that are mentioned in ISO 14001 are to be intended to be included into the EMS

2. Normative reference

Not applicable

3. Terms and definitions
The following definitions apply to ISO 14001.

3.1.1 Auditor
See chapter 1.6

3.2 Continual improvement
Recurring process of enhancing the EMS in order to achieve improvements in overall environmental performance consistent with the organisation's environmental policy.
For information about Continual Improvement see chapter 2.3.

3.3 Corrective action
Action to eliminate the cause of a detected nonconformity

3.4 Document
Information on its supporting medium

3.5 Environment
Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, communities and their interrelation.

3.6 Environmental aspect
Element of the organisation's activities, products and services that can interact with the environment.

3.7 Environmental impact
Any changes to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activity, product or service.

3.8 Environmental management system EMS
Part of an organisation's management system used to develop and implement its environmental policy and manage its environmental aspects.

3.9 Environmental objective
Overall environmental goal consistent with the environmental policy that an organisation sets to achieve.

3.10 Environmental performance
Measurable results of an organisation's management of its environmental aspects

3.11 Environmental policy
Overall intentions and direction of an organisation related to its environmental performance as formally expressed by top management.

3.12   Environmental target

Detailed performance requirement applicable to the organisation or parts thereof,, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.

3.13   Interested party

Person or group concerned with or affected by the environmental performance of the organisation

3.14   Internal audit

Systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the EMS audit criteria set by the organisation are fulfilled.

3.15   Nonconformity

Non-fulfilment of a requirement.

3.16   Organisation

Company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public, private, that has its own functions and administration.

3.17   Preventive action

Action to eliminate the cause of a potential nonconformity

3.18   Prevention of pollution

Use of processes, practices, techniques, materials, products, services or energy to avoid, reduce or control the creation, emission or discharge of any type of pollutant or waste, in order to reduce adverse environmental impacts.

3.19   Procedure

Specified way, to carry out an activity or process.

4.1   General requirements

The organisation shall establish, document and maintain and continually improve an EMS in accordance with the requirements of ISO 14001:2004 and determine how it will fulfil these requirements

4.2   Environmental policy

The establishment of an environmental policy by top management is the first requirement of ISO 14001. The policy directs goals, responsibilities and the establishments of performance against which the management must be judged. Top management is responsible for the initiation of the policy and for providing leadership.

The policy should consist of the following:

- *Reflect an ethical basis for the organisation's actions*
- *Account for regulatory requirements*
- *Commitment to continual improvement*
- *In line with other policies used within the organisation (quality)*
- *Be clear and concise and known by all levels within the organisation*
- *Be publicly available*
- *Strive towards sustainable development*

- *Set for publication of environmental objectives*
- *Satisfy the requirements of concerned third parties such as Insurance companies, banks, and shareholders*
- *Be updated when needed*

Consider all significant products and services in the Policy determination.
Develop a policy in writing
Effectively communicate the policy with all employees
Include compliance with the laws, pollution prevention and continual improvement.

Example of an Environmental Policy

The Organisation's activities will be conducted in a manner that minimizes risk to public health and safety. Further, the Organisation believes that natural resources can be developed and utilized in a manner consistent with proper stewardship for the environment. Therefore, recognizing that all activities associated with the development of our mineral resources impact the environment, our projects will be designed and managed to reasonably minimize risk and mitigate negative impacts to the environment. The Organisation will strive to assure that its activities are conducted in compliance with the applicable laws and regulations.

Principles:

- *Utilization of the earth's natural resources is fundamental to the survival and prosperity of any organism or society, including man and his activities.*

- *Removal of natural resources from one environment to utilization in another will impact both environments to some degree.*

- *Individuals as well as organisations of individuals should demonstrate respect for and concern with the environment.*

- *Man, in his ability to provide stewardship to the environment, should strive to minimize or mitigate the impacts of resource utilization to the extent reasonably feasible.*

- *Sound science should be the basis of environmental impact evaluation and mitigation.*

- *Socioeconomic factors are a significant component of man's environment.*

Implementation:

The organisation will implement, maintain and apply an Environmental Management System according to ISO 14001:2004.

- *Project planning, development and implementation will include consideration of alternatives and mitigation to reduce negative impacts to the environment. Costs for compliance with regulatory requirements, minimization and mitigation of environmental impacts, closure and reclamation will be included in project evaluations.*

- *The Organisation will continue to seek, evaluate and use, when appropriate, new technologies and methodologies that enhance the ability to conduct our operations in a manner that reduces environmental impacts.*

- *To the extent economically and technically feasible, The Organisation will continuously minimize the generation of solid, hazardous and other wastes.*

- *The Organisation will continue its record of being community oriented. Socioeconomic factors will be included in the evaluation of all projects of significant capital cost.*

- *The Organisation has the opportunity to enhance the environment at mined properties where problems exist; both public safety and environmental concerns will be addressed in managing these properties.*

- *In addition to the corporate-wide procedures for implementation of the Organisation's environmental policy, the following procedures will be applied at its operations as well:*

Compliance with environmental laws and regulations and minimization of environmental impacts is the responsibility of the operation. To implement the environmental policy of the Company, each operation will provide awareness training for employees will maintain suitable staffing to address environmental requirements and will routinely evaluate the effectiveness of their environmental program.
In order to minimize the risk to the environment, due to the necessity of using substances such as chemicals and petroleum products in our mining activities, an emergency response plan will be developed and implemented for each active operation.

All operations will utilize management practices which minimize environmental impacts of the operation.

- *Each operating unit will develop a site-specific compliance manual, and will regularly review and update the compliance manual to assure compliance with regulatory requirements.*

- *The Organisation's corporate office will oversee an environmental review program of all operations and idle properties.*

- *In order to protect the investment of our shareholders, the Organisation will conduct environmental reviews of properties before they become a part of the Organisation's assets.*

- *All incidents or releases which require a report to regulatory authorities will be reported by the operation or project in the timeframe required by regulation, and also will be reported to the Environmental Manager in a timely manner.*

- *All citations, notices of violation or other notifications of non-compliance with regulations will be reported*

- *All awards and recognition of environmental achievement will be reported to Environmental Manager.*

- *The Organisation will conduct its business in a responsible manner.*

The Organisation will minimize public safety hazards at its operating and idle properties.

4.3   Planning

4.3.1   Environmental aspects

Environmental aspects are those elements of an organisation's activity, products or services, which may have potentially beneficial or harmful effects to the environment. These may include discharges and emissions, raw material and energy use, waste recycling etc.
An environmental impact is the change that takes place after the occurrence of a given aspect

Environmental aspects

Requirements	Technical	Environmental	Level
Legislation	Storage	Water	Department
	Exploration	Rehabilitation	Site/plant
	Pollution	Air	Site/plant
Permits	Transfer	Waste	Installation/equipment
	Exploration	Soil and ground water	Site/plant
Insurance	Transport	Soil and ground water	Subcontractor/supplier
Complaints	Utilities	Energy consumption	
	Process	Noise and vibration	Surroundings
Corporate and policy guidelines	Product	Nuisance	
		External safety	Corporate
		Product	Site/plant
Customers	Process	Air	Site/plant
	Product	Quality content	Department
	Product	Contamination	Department

Consider all the ecological effects, human health effects, catastrophic effects, resources depletion, and probability of occurrence and the cost of changing. Use chapter 1.5 to generate ideas.

4.3.2 Legal and other requirements

A procedure to identify legal requirements of the organisation should be established and maintained. This includes all laws and self-imposed requirements. The requirements can be partially established by reviewing the completed aspects and impacts.
The purpose of identifying these items is to ensure that all operations take into account not only the law, but also the self imposed and non-legal practices. Many legal and contractual violations are a direct result of the lack of awareness generated by the lack of knowledge.

4.3.3   Objectives and targets

The organisation shall establish and maintain documented environmental objectives and targets, at each relevant function and level within the organisation.
These objectives and targets must be documented at relevant levels and function in the organisation.

They must be consistent with the policy and contain the three commitments required in the policy.
The business plan must be in line with the objectives and targets
Operational staff best sets objectives and targets. Since they will be ultimately responsible for performance, they should be included in the decision making process when the objectives and targets are developed.

4.4 *Implementation and operation*

4.4.1 *Resources, roles, responsibility and authority*

Management shall ensure the availability of resources essential to establish, implement, maintain and improve the EMS. Resources include human resources and specialised skills, organisational infrastructure, technology and financial resources.

The responsibilities for the environmental management must be defined and it's roles must be communicated to everybody involved.
The resources for the implementation of the QMS must be allocated.
The standard is clear about the appointment and authority of the management representative. This is seen as top management's commitment.

Documents required are:
- *EMS organisational structure*
- *Organisational chart*
- *Communication evidence to all employees about organisational and EMS structure*
- *Defined EMS position responsibilities*

Accountability and Responsibility

Environmental responsibilities in the SME	Person/Function responsible
Establish overall direction	Managing Director
Develop environmental policy	Environmental Manager
Develop environmental objectives, targets and programs	Relevant managers
Monitor overall EMS performance	Environmental manager
Assure regulatory compliance	Operating manager
Ensure EMS compliance	All managers
Ensure continual improvement	All managers
Identify customer expectations	Sales and Marketing staff
Identify suppliers expectations	Purchasing staff, Buyers
Develop and maintain accounting procedures	Finance Manager, Controller
Comply with defined procedures	All staff

4.4.2 *Competence, training and awareness*

The organisation shall establish and maintain a program for achieving its objectives and targets. It shall include:
- *Designation of responsibility for achieving objectives and targets at each relevant function and level of the organisation.*
- *The means and time frame by which they are to be achieved.*

To maintain a pro-active policy with regards to this subject, it is important to utilise employee input wherever possible. The organisation should communicate the expectations of the EMS and the EMP, along with the responsibilities to those individuals who need to know.
Construct the EMP based on current programs and management structures wherever possible.
Continually re-evaluate the action plans when changes occur in procedures or facilities.
By co-ordinating the EMP with other management programs such as QMS, cost reductions are possible.

The basic intent of training is to explain the importance of the EMS to the staff, and to explain their responsibilities for EMS operations. In order for responsibilities to be effectively understood, adequate training is essential. A training system should also include training for executives to ensure that they have understand the EMS, know their responsibilities and have the knowledge to carry these responsibilities out.

Type of training	Audience	Purpose
Raising awareness of the strategic importance of environmental management	Senior management	To gain commitment and alignment of the organisation's environmental policy.
Raising general environmental awareness	All employees	To gain commitment to the environmental policy, objectives and targets and to instil a sense of individual responsibility
Skills enhancement	Employees with environmental responsibilities	Improve performance in specific areas, such as operations, R&D, engineering etc.
Compliance	Employees whose actions can affect compliance	Ensure regulatory and internal requirements for training are met

4.4.3 *Communication*

With regards to its environmental aspects and EMS, the organisation shall establish and maintain procedures for:

- *Internal communication between the various levels and functions of the organisation*
- *Receiving, documenting and responding to relevant communication from external interested parties*

Typical communication subject are neighbours, community groups, local government, municipalities, regulatory agencies and emergency responders.
Procedures that should be developed if applicable are:
- *Procedure for internal communication on environmental matters*
- *Procedure for external communication on environmental matters*

The organisation should keep records of:
- *Received internal/external environmental communication*
- *Responses to internal/external communication on environmental matters*

- *Proof of policy communication*
- *Suggestions related to environmental issues*
- *EMS document distribution sign off sheets*
- *Emergency response communication records*
- *Internal/external audit reports*

4.4.4 Documentation

The organisation shall establish and maintain programs for achieving its objectives and targets. It shall include:

- *The environmental policy, objectives and targets*
- *Description of the scope of the EMS*
- *Description of the main elements of the EMS and their interaction, and reference to related documents*
- *Documents, including records, required by ISO 14000*
- *Documents, including records, determined by the organisation to be necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental aspects.*

Up to now, this guide has focused on laying the foundations the EMS will be developed on, and identifying the targets and objectives of the EMS. To ensure that these targets and objectives are accomplished, an Environmental Management Program (EMP) is designed. The EMP should be designed into the existing organisational structure such as financial management, purchasing, operational etc. This is essential if environmental management is to become an integral portion of the overall business.

4.4.5 Control of documents

The organisation shall establish and maintain information in paper and electronic form to:
- *describe the core elements of the management system and their interaction*
- *provide direction to related documentation*

Documenting the EMS can be as simple or as complex as the organisation wants. EMS documents can and should be integrated with other management documents wherever possible.
Cross-references with health and safety manuals and quality manuals are examples of this. Existing procedures manuals may have environmentally related information in them.

Operational processes and procedures should be defined, documented and updated, especially those that establish operational control over significant environmental aspects.

Elements of document control are:
- *Issue and revision date*
- *Effective date*
- *Approval*
- *Revision number*
- *Document number*
- *Copy number*
- *Cross-references*

To avoid any problems with everybody involved working with the right version of documents, it is advised to use the on-screen technique. On this way within the whole organisation, on

the work areas and mines, the latest version of the procedure or work instruction appears on the screen of the work station.
Ensure authority rights to people who are allowed to make changes in procedures, work instructions and forms.
Ensure that everybody involved is able to handle pc's and workstations.

4.4.6 Operational control

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

Important is to develop procedures for controlling key activities and operations that are associated with significant aspects.
Ensure that employees are trained on these procedures
Ensure that these procedures cover all normal and abnormal operating conditions, including emergencies.
Operational control can be broken down into two plans, a technical control plan and a management control plan. These plans describe technical and managerial controls identified during the gap analysis (chapter 3.2)
This may include budgets for internal capabilities, external support requirements and actual expenditures for capital equipment

Employees who actually work with procedures should develop new instructions, and modify existing ones. Preparation of documentation to establish EMS operation control is delegated to departmental work groups under the direction of the department manager.
The department should review environmental requirements and effects within their area of operation as defined in the aspects, objectives and targets (REF).
This activity is usually accomplished by the project team.

In this part of the manual and the associated procedure, branch specific items can be included such as the use and control of cyanide in the gold mining industry (cyanide code) or the use and control of explosives.

Procedures

A procedure is a pre-described series of actions involving several people. The actions are to be executed in a predetermined sequence. Within the sequence, any points of choice are clearly indicated. A procedure always deals with the following matters:
- *What needs to be done*
- *Who will have to do it*
- *When will it have to be done*

Be aware that the standard is requiring only a limited number of procedures. Each additional procedure complicates the system for the mining company, adds cost and time to the implementation while it is maybe not needed.

Instructions

An instruction (also called work instructions) can be described as a pre-described series of actions to be executed by one single person in a determined sequence. Any points of choice are clearly indicated. The difference with a procedure is that several employees are involved with the latter.

Figure 3.4, the operational control model

4.4.7 Emergency preparedness and response

The organisation shall establish and maintain procedures to identify potential emergency situations and potential accidents that can have an impact on the environment and how it will respond to them. It shall respond to actual emergencies and accidents and prevent or mitigate associated adverse environmental aspects

The organisation shall periodically review and, were necessary, revise its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situations.

The organisation must also test periodically the implemented procedures.
It is recommended to:
- *review all key procedures for emergency preparedness*
- *develop procedures for managing these incidents*
- *train all personnel adequately and check if all emergency equipment is where it should be*
- *develop a process to review the emergency system after a incident*

Planning for emergencies should include:
- *An emergency assessment process*
- *Preventative measures*
- *Organisational responsibilities*
- *Listing key personnel*
- *Defining emergency services and their capabilities*
- *Communication plans*
- *Actions to take in the event of emergencies*
- *Hazardous material information, training, planning and practising in the event of a release*

In developing the procedure, the mining company should take the following items into consideration.

- *Flammable liquids and (natural emerging) gasses, storage tanks, compressed gasses and measures to prevent spillages or accidental releases. Also measures to be taken in case of such an event.*
- *The most likely type and scale of an emergency situation or accident.*
- *The most appropriate method for responding to an accident or emergency situation*
- *Internal and external communication.*
- *The action required to minimise environmental damage.*
- *Mitigate and response actions to be taken for the different type of accidents.*
- *The need for post-accident investigation to allow corrective and preventive actions.*
- *Periodic testing of the emergency response procedure.*
- *Training of the emergency response personnel.*
- *A list of key personnel and aid agencies including contact details. (e.g., fire department, spillage clean-up, aid organisation, rescue organisations, municipalities for evacuation or warning)*
- *Evacuation routes and safe assembly points.*
- *The potential for an emergency situation at a nearby facility affection the mining site.*
- *The possibility of mutual assistance from neighbouring organisations.*

Useful information can be obtained from material safety data sheets, plant drawings, process flow diagrams, piping and instrumentation diagrams, design codes and standards and specifications on safety systems.

Possible emergency cause for the mining industry (not complete)

• **Abandoned mines and mining sites.**
• **Drainage problems during mining can have an effect on the direct surroundings.**
• **Contamination of ground water.**
• **Waste generation, the reduction and identifying waste streams**
• **Determining and monitoring soil quality and ground quality.**
• **Assessment of soils and grounds contaminated by hazardous substances.**
• **Comprehensive monitoring of waste disposal grounds.**
• **Chemical and bacteriological and radiological monitoring of municipal and industrial sludges and waste waters, discharged into surface water, underground waters and grounds.**
• **Testing and controlling of emissions and immisions of atmospheric air pollution.**
• **Determination of pollutants in the geological environment.**
• **The control and use of explosives or other mining equipment**
• **The testing and controlling of radioactive contaminations caused by industrial activities**
• **Monitoring and controlling of noise and vibrations in the mines and mining pits and related work areas and municipalities.**
• **Monitoring and controlling of surface-related hazards in mining areas in respect of shallow voids and the assessment of efficiency of their liquidation.**
• **Monitoring of hazards originating in areas of closed mines.**
• **Rehabilitation of mines and mining pits**

4.5 *Checking*

4.5.1 *Monitoring and measurement*

The organisation 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 significant impact on the environment. This shall include the recording of information to track performance, relevant operational controls and conformance with the organisation's environmental objectives and targets.

It is essential to identify the key process characteristics and develop a method to monitor these characteristics.
A process must be developed to review the compliance with the regulations.
It must be determined how to measure or monitor the performance relative to the objectives and targets.

When performing measuring and monitoring it is essential to:
- *Identify and document the measurements that will be performed, and specify the tolerance. Use the listing under 4.4.7 to generate ideas with a brain storming group.*
- *Identify the time, place and persons performing the measurements*
- *Maintain quality control procedures for verification procedures*
- *Ensure corrective actions and countermeasures are in place if the measurement is found to be in excess of allowable parameters.*
- *Procedures for calibration and routine maintenance of equipment utilised should be documented*

Ensure that the difference between environmental performance evaluations (EPE) and audits are clear
Audits are periodic, independent, a sampling of data and verify conformance.
EPE's are continual, frequent, the operations responsibility and assess process performance.

4.5.2 *Evaluation of compliance*

Consistent with its commitment to compliance, the organisation shall establish, implement and maintain a procedure for periodically evaluating compliance with applicable legal requirements.

The organisation shall keep records of the results of these periodic evaluations. Basically the organisation should be able to demonstrate that it has evaluated the compliance with the legal requirements as identified, including applicable permits or licences.

4.5.3 *Nonconformity, corrective action and preventive action*

The organisation shall establish, implement and maintain a procedure for dealing with actual and potential nonconformities and for taking corrective action and preventive action. The procedures shall define requirements for:

- *Identifying and correcting nonconformities and taking actions to mitigate their environmental impacts.*
- *Investigating nonconformities, determining their cause and taking actions in order to avoid their recurrence.*
- *Evaluating the need for action to prevent nonconformities and implementing appropriate action designed to avoid their occurrence.*
- *Recording the results of corrective actions and preventive actions taken*

- *Reviewing the effectiveness of corrective actions and preventive actions taken.*

4.5.4 Control of records

The organisation shall establish and maintain records as necessary to demonstrate conformity to the requirements of its EMS and to ISO 14001 and the results achieved.

The organisation shall establish, implement and maintain a procedure for the identification, storage, protection, retrieval, retention and disposal of records.

Records shall be and remain legible, identifiable and traceable.

It should be ensured that all the records to be maintained are identified.
For these documents a company retention policy must be defined.
A sufficient storage and retrieval system should be put in place.
Records can be maintained, as were the documents in either paper or electronic form.
For records in electronic form, good MIS procedures should be implemented and followed.

Documents that are to be retained in the EMS are:
- **Complaints reports and records, from customer and other interested parties, and taken action (corrective/preventive)**
- **Records of tests for emergency preparedness, drills and training exercises.**
- **Audit results, internal, external, third parties**
- **Periodic management review results**
- **Process monitoring records**
- **Environmental aspects determination documentation**
- **Training records of all levels**
- **Inspection, maintenance and calibration records (as also defined in ISO 9001)**
- **Incident records with actions taken (corrective, preventive)**
- **Records of applicable legal requirements and the revisions.**
- **External communications decision**
- **Pertinent contractor and supplier records**
- **Records of significant environmental aspects**
- **Records of environmental meetings, planning, minutes etc.**
- **Environmental performance information**
- **Legal compliance records**
- **Communications with interested parties, local communities**

4.5.5 Internal audit

The organisation shall ensure that internal audits of the EMS are conducted at planned intervals to:

- *Conforms to planned arrangements for environmental management including the requirements of ISO 14001 and:*
- *Has been properly implemented and maintained and:*
- *Provide information on the results of audits to management.*

Whether or not internal or third party auditors are used, they should possess the qualifications outlined in ISO 14012:

- *Expertise in environmental science and technology*
- *Expertise in the technical and environmental aspects of facilities operation*
- *Expertise in environmental law and regulations*
- *Expertise in environmental management systems*
- *Expertise in EMS auditing techniques*

It is essential to develop procedures that clarify audit scope, audit frequency, auditor qualifications, reporting requirements and follow-up. Two major objectives should be expected from an audit:

- *The determination of compliance with the EMS as outlined by the objectives and targets, aspects, EMP, the environmental manual, procedures and work instructions, and to check for effective implementation of them all.*

- *Determine if the system is effective in achieving the expectations of the policy.*

4.6 *Management review*

Top management shall review the organisation's environmental management system at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. Reviews shall include assessing opportunities for the improvement and the need for changes to the EMS, including the environmental policy and environmental objectives and targets. Records of the management reviews shall be retained.

Management review is an essential portion of the continual improvement of the organisation's EMS. The improvement process does not end with the establishment of an initial policy, realisation of initial objectives, or the certification of the EMS to a standard. Management review is the essential element for systems improvement, along with preventive and corrective action.

The Management Representative should plan for conducting the required management review. The agenda should include review of instances of non-conformance, corrective actions, continual improvement associated with the EMS, results of compliance and EMS audits, complaints results of any pollution prevention program, waste minimisation programs, and a summation of the measurement and monitoring results.

The review process should:
- *Assess whether company personnel have complied with policy and procedures using audit reports.*

- *Review targets, objectives and environmental performance indicators to establish their suitability in light of changing environmental impact and concerns.*

- *Determine if capital resources (transportation, earth moving equipment, crushers etc,) are (still) adequate for supporting the EMS requirements of the organisation.*

- *Review regulatory compliance and whether EMS requirements have been achieved.*

- *Determine if the operational controls, procedures, corrective actions, preventive measures and continual improvement efforts have resulted in enhanced environmental performance.*

- *Determine if energy efficiency, accounting practices, information management systems are adequate.*

- *Determine areas of improvement in organisational structure, staff expertise, practices, administrative and operational procedures, training, work instructions, process improvements, pollution prevention programs, energy utilisation and accounting practices*

- *Review any emergencies that have taken place in the reviewed time, the preventive and corrective action taken, and the communication to the employees, to interested third parties and municipalities.*

During the management review questions such as the following should be asked and answered:

- *Did we achieve our objectives and targets?*
- *Should we modify our targets?*
- *Is our environmental policy still relevant to what we do?*
- *Are roles and responsibilities clear and do they make sense?*
- *Are we applying resources appropriately?*
- *Are the procedures clear and adequate?*
- *How are we doing compared to other mines and mining sites?*
- *Do we need others, or should we eliminate some?*
- *Are we monitoring our EMS and what do the results of the audit tell us?*
- *What effects have changes in equipment, materials or products had on our EMS and its effectiveness?*
- *Do changes in law or regulations require us to change some of our approaches?*
- *What stockholder concerns have been raised since our last review?*
- *Is there a better way?*
- *What else can we do to improve?*

3.4   The difference with ISO 14001:1996

Summary of key changes between ISO 14001:1996 and ISO 14001:2004
Introduction

Those familiar with ISO 14001 will note that there are numerous textual differences between the 1996 and 2004 editions of the Standard. This document summarizes the most significant of those differences and provides users with guidance on their effect. In all but two cases (evaluation of compliance and management review), the changes in wording between the two editions do not result in changes to the requirements of the Standard. This document is intended as guidance for the marketplace and is not intended to alter the meaning of the requirements specified in ISO 14001:2004.

Each section of this document contains the following information:
•   *What has changed?* — a brief description of the differences between the two editions; and
•   *Guidance* — a brief discussion of the effect of the changes.

For ease of comparison, *italics* are used in some places to highlight differences between the 1996 and 2004 texts.

Control and influence (clauses 1, 4.3.1 and A.3.1)

What has changed?

ISO 14001:1996 applied "to those environmental aspects which the organisation can control and over which it can be expected to have an influence" and required the organisation to establish 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" (clauses 1 and 4.3.1). ISO 14001:2004 "applies to those environmental aspects *that the organisation identifies as* those which it can control and those which it can influence" (clause 1) and requires the organisation to establish a procedure(s) "to identify the environmental aspects of its activities, products and services *within the defined scope of the environmental management system* that it can control and those that it can influence" (clause 4.3.1).

Guidance

ISO 14001:2004 does not add any new requirements with respect to an organisation's control and influence. It reaffirms that the organisation has the discretion to define the scope of the EMS and identify which environmental aspects it can control and influence (see italicised text). Annex A clarifies that "in all circumstances it is the organisation that determines the degree of control and also the aspects it can influence" (clause A.3.1). It also states that "the control and influence over the environmental aspects of products supplied to an organisation can vary significantly and that organisations "may have limited control over the use and disposal of their products" (clause A.3.1). In short, an organisation may use the discretion afforded by the parts of the standard noted above in determining its degree of control and influence.

Legal and other requirements (clauses 4.3.2 and A.3.2)

What has changed?

ISO 14001:1996 required the organisation to establish a procedure to "identify and have access to legal and other requirements to which the organisation subscribes, that are applicable to the environmental aspects of its activities, products or services" (clause 4.3.2).

ISO 14001:2004 requires the organisation to establish a procedure(s) "to identify and have access to the applicable legal requirements and other requirements to which the organisation subscribes related to its environmental aspects" and "to *determine how these requirements apply to* its environmental aspects" (clause 4.3.2).

Guidance

ISO 14001:2004 does not add any new requirements with respect to identification of legal and other requirements. It simply clarifies that in identifying applicable requirements, the organisation needs to determine *how* such requirements apply to its environmental aspects. As Annex A makes clear, no additional procedure is required: "The determination of how legal and other requirements apply to an organisation's environmental aspects is usually accomplished in the process of identifying these requirements. It may not be necessary to have a separate or additional procedure in order to make this determination" (clause A.3.2).

External communication (clauses 4.4.3 and A.4.3)

What has changed

ISO 14001:1996 required the organisation to "consider processes for external communication . . . and record its decision" (clause 4.4.3). ISO 14001:2004 requires the organisation to decide whether to communicate externally, to document its decision and, if it decides to engage in external communication, to *"establish and implement a method(s)"* for such communication (clause 4.4.3).

Guidance

ISO 14001:2004 does not add any new requirements with respect to external communication. It simply clarifies that if the organisation decides to communicate externally, it needs to adopt some method for doing so. As Annex A makes clear, this method may be formal or informal, may vary according to circumstances and need not involve the establishment of a procedure (clause A.4.3).

Evaluation of compliance (clauses 4.5.2 and A.5.2)

What has changed?

ISO 14001:1996 did not expressly require the organisation to evaluate compliance with other requirements to which it subscribes. ISO 14001:2004 moves evaluation of legal compliance from the monitoring and measurement clause into its own clause and adds a requirement to *"evaluate compliance with other requirements* to which it subscribes" (clause 4.5.2.2).

Guidance

ISO 14001:2004 adds a new requirement to evaluate conformity with other requirements. Nonetheless, the organisation retains the flexibility to determine how this will be done. It may combine this evaluation with the evaluation of legal compliance or address it separately. Whereas the organisation is required to establish a formal procedure for periodic evaluation of legal compliance (clause 4.5.2.1), it need not establish a procedure (for example, a formal audit process) for evaluation of conformity with other requirements and may, therefore, take a less formal approach. If the organisation already evaluates conformity with other requirements (for example, as part of management review), it need not to do anything differently.

Nonconformity and corrective and preventive action (clauses 3.15, 4.5.3 and A.5.3)

What has changed?

ISO 14001:1996 required the organisation to establish "procedures for defining responsibility and authority for handling and investigating nonconformance," mitigating adverse impacts and taking corrective and preventive action (clause 4.5.2). It did not define nonconformance. ISO 14001:2004 defines nonconformity as *"non-fulfillment of a requirement"* (clause 3.15) and specifies in more detail the procedure(s) for dealing with nonconformities and taking corrective and preventive action (clause 4.5.3).

Guidance

ISO 14001:2004 does not add any new requirements with respect to nonconformity and corrective and preventive action. "Non-fulfillment of a requirement" refers to a failure of the management system, such as failure to stipulate operating criteria, failure to provide required training or failure to monitor progress on objectives and targets. In this connection, it is useful to distinguish between *requirements* and *goals.* Objectives and targets are goals, not requirements. Failure to achieve an objective or target is therefore not in itself a nonconformity, although it may be caused by, or indicate the presence of, a nonconformity. It is also useful to distinguish between *nonconformity* and *non-compliance.*

Exceeding a legal discharge limit is non-compliance, not nonconformity, although once again it may indicate nonconformity in operational control or some other part of the EMS. Failure to periodically evaluate legal compliance, on the other hand, is nonconformity. In short, the definition of nonconformity does not add new requirements. It also enhances compatibility with ISO 9000:2000.

The more detailed specification of the procedure(s) for dealing with nonconformities in ISO 14001:2004 does not add new requirements. As Annex A makes clear, the formality and detail of such a procedure(s) will depend on the nature of the nonconformity and may involve "a minimum of formal planning or... be a more complex and long-term activity" (clause A.5.3). While ISO 14001:2004 states in more detail what issues the procedure(s) should address, the organisation retains the flexibility to determine how to go about addressing them.

Note; *ISO 14004:2004 appears to suggest that failure to meet objectives or targets and failure to comply with legal requirements are nonconformities (ISO 14004:2004, clause 4,5.3). To the extent that there is inconsistency on this point between ISO 14004:2004 and this document, the guidance given in this document should be used.*

Internal audit (Introduction and clauses 3.1, 3.14, 4.5.5 and A.5.5)

What has changed?

ISO 14001:1996 defined an EMS audit (in part) as "a systematic and documented verification process of objectively obtaining and evaluating evidence" and required the organisation to establish programs and procedures for periodic EMS audits (clauses 3.6 and 4.5.4). ISO 14001:2004 renames the EMS audit the "internal audit", changes its definition, adds a definition of "auditor" and rewords the internal audit requirement. It defines internal audit (in part) as a "systematic, *independent* and documented process for obtaining audit evidence and evaluating it objectively" and adds a note that "in many cases, particularly in smaller organisations, *independence can be demonstrated by the freedom from responsibility for the activity being audited"* (clause 3.14). It defines an auditor as a "person with the *competence to conduct an audit"* (clause 3.1). It rearranges and revises the internal audit requirement

clause and adds that auditor selection and the conduct of audits "shall ensure objectivity and the impartiality of the audit process" (clause 4.5.5).

Guidance

ISO 14001:2004 does not add any new requirements with respect to the internal EMS audit. The main effects of the changes are to clarify the purposes and elements of internal EMS audits, reaffirm the need for impartiality and objectivity in internal audits and enhance compatibility with ISO 9000:2000. The main question is the meaning of the requirement for independence. This is often an issue for very small organisations or organisations with very few environmental aspects, in which the only person competent to conduct the audit may also, be responsible for the activity being audited. If freedom from responsibility for the activity being audited were always necessary to demonstrate independence, many very small organisations would find it impossible to conform to the Standard. This would be inconsistent with the Standard's stated intent to be applicable "to all types and sizes of organisations" (Introduction). Freedom from responsibility for the activity being audited is not, therefore, the only measure of independence and should not be allowed to trump the requirement for auditor competence. In those cases where the only person(s) competent to conduct the audit is also responsible for the activity being audited, it may be possible to demonstrate independence by other means, so long as the person conducting the audit is "competent and in a position to do so impartially and objectively" (clause A.5.5).

Management review (clauses 4.6 and A.6)

What has changed?

ISO 14001:1996 required the management review process to "ensure that the necessary information is collected to allow management" to evaluate the EMS but did not prescribe any particular "inputs" for the management review process (clause 4.6). ISO 14001:2004 specifies eight required "inputs" to management reviews (clause 4.6).

Guidance

ISO 14001:2004 adds new requirements by specifying the required inputs to management review (clause 4.6). The new language was drawn largely from, and enhances compatibility with, ISO 9001:2000. While ISO 14001:2004 specifies the inputs that must be considered in the management review, it still allows the organisation the flexibility to design its management review consistent with these requirements and its priorities.

3.5   Gap analysis template ISO 14001:2004

Fast-Track
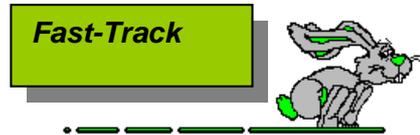
ISO 14001:12004 Requirements	Status Yes/no/none	Action
4 Environmental Management System		
4.1 General Requirements		
Has the organisation established, documented, implemented, maintained and continually improved an EMS?		
Is there a minimum of 3 months objective evidence to conclude the system is fully implemented and monitored for effectiveness?		
4.2 Environmental policy		
Is there an environmental policy, which is identified as such and documented?		
does the policy include commitment to:		
Continual improvement?		
Prevention of pollution?		
Compliance with applicable legislative and regulatory requirements?		
Other requirements to which the organisation subscribes?		
Is it appropriate to the nature, scale and environmental impacts of its activities, products and services?		
Does it provide a framework for setting and reviewing environmental objectives and targets?		
Is there a practice or procedure to communicate it to all the employees, existing and new and consistently followed?		
Is there a practice or procedure to make it available to the public and is it consistently followed?		
Did top management approve the current version when it was issued?		
Is the procedure periodically reviewed and revised so as to keep it up-to-date?		
Is the policy communicated to all employees and other people working there, on behalf of the organisation?		
4.3 Planning		
4.3.1 Environmental aspects		
Is there a procedure to identify environmental aspects of its activities, procedures and services that it can control and influence?		
Does it provide determination as to which identified environmental aspects have or can have significant environmental impacts?		
Is it ensured that the aspects relating to the significant impacts are considered in setting environmental objectives?		
Is the procedure implemented and consistently followed?		
Is the procedure periodically reviewed and revised?		

4.3.2 Legal and other requirements		
Is there a procedure to identify and have access to all:		
Government statutory requirements?		
Regulatory requirements?		
Other legal requirements such as permits, consent order etc?		
Other requirements to which is subscribed such as industrial standards, corporate requirements, contracts, customer requirements, agency orders and voluntary initiatives to which is committed?		
Does the management and employees have reasonable access to the requirements identified under it?		
Is the procedure implemented and consistently followed?		
Is the procedure periodically reviewed and revised so as to keep it up-to-date?		
Is ensured that the legal and other requirements are taken into account in establishing, implementing and maintaining the EMS?		

4.3.3 Objectives, targets and programme(s)		
Are there established, implemented and maintained documented environmental objectives and targets?		
Are they at relevant functions and levels?		
Are the objectives and targets measurable with the environmental policy, including the commitments to prevention of pollution?		
Does the organisation take into account the legal and other requirements to which it subscribes and its significant environmental aspects?		
Does the organisation establish, implement and maintain a programme for achieving its objectives and targets ?		
Does this include the designation of responsibility for achieving objectives and targets at relevant levels?		
And does this include the time frame by which they are to be achieved?		

4.4 Implementation and operation		
4.4.1 Resources, roles, responsibility and authority		
In each of the environmental functional areas, are the roles, responsibilities and authorities:		
Established and implemented?		
Maintained and improved?		
Documented and communicated?		
Understood?		
Does management consistently provide resources essential to the implementation and control of the EMS?		
Do resources include human resources and specialised skills?		
Technology?		
Financial resources?		
Has top management appointed a specific Management Representative who has defined roles, responsibilities and the authority for:		
Ensuring ISO 14001 EMS requirements are established, implemented and maintained?		
Reporting on the performance of the EMS to top management for review and as a basis for improvement of the EMS?		

4.4.2 Competence, training and awareness

Can the organisation ensure that any person performing tasks on its behalf, that have the potential to cause a significant environmental impact is identified by the organisation?		
Are the competent on the basis of training, appropriate education or experience?		
Are the records of these traing/experience and competence retained?		
Does the organisation identify training needs associated with its EMS and environmental aspects?		
Is there a procedure established, implemented and maintained to make person working for it or on its behalf aware of:		
The importance of conformance with its environmental policy and procedures and with the requirements of its management system?		
The significant environmental impacts, actual and potential, of their work activities and the environmental benefits of improved personal performance?		
Their role and responsibilities in achieving conformance with its environmental policy and procedures and with the requirements of the EMS, including emergency preparedness and response requirements?		
The potential consequences of departure from specified environmental related operating procedures?		

4.4.3 Communication

Has the organisation established, implemented and maintained an environmental communications procedure relating to its environmental aspects and its EMS that provide for:		
Internal communications between various levels and functions of the organisation?		
Receiving, documenting and responding to relevant communications from external interested parties?		
Is the procedure implemented and consistently followed?		
Is it periodically reviewed and revised where needed so to keep it up-to-date?		

4.4.4 Documentation

Does the EMS documentation include:		
The environmental policy, objectives and targets?		
A description of the scope of the EMS		
A description of the main elements of the EMS and their interaction and reference to related documents.		
Documents, including records, determined by the organisation to be necessary to ensure effective planning, operation and control of processes that relate to environmental aspects?		

4.4.5 Control of documents

Is there an established, implemented and maintained procedure for controlling all EMS documents required by ISO 14001 and other requirements relating to the system?		
Has the organisation a procedure established, implemented and		

maintained to:		
Approve documents for adequacy prior to issue?		
Review and update as necessary and re-approve documents?		
Ensure that changes and the current revision status of documents are identified?		
Ensure that relevant versions of applicable documents are available at points of use?		
Ensure that documents remain legible and ready identifiable?		
Ensure that documents of external origin determined by the organisation to be necessary for planning and operating of the EMS are identified and their distribution controlled?		
Prevent the unintended use of obsolete documents and apply suitable identification to them if they are retained for any purpose?		

4.4.6 Operational control		
Has the organisation identified those operations and activities that are associated with its identified significant environmental aspects consistent with its environmental policy, objectives and targets, in order to ensure that they are carried out under specified conditions by;		
Establishing, implementing and maintaining documented procedures to control the situations where their absence could lead to deviations from the environmental policy and objectives and targets?		
Stipulating operating criteria in the procedures?		
Establishing, implementing and maintaining procedures related to the identified significant environmental aspects of goods and services used by the organisation and communicating applicable procedures and requirements to suppliers, including contractors?		

4.4.7 Emergency preparedness and response		
Has the organisation established, implemented and maintained procedures to:		
Identify potential for accidents that can have an impact on the environment?		
And how it will respond to them?		
Does the organisation respond to actual emergency situations and accidents and prevent or mitigate associated adverse environmental impacts?		
Does the organisation periodically review and, where necessary, revise its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situations?		
Does the organisation test such procedures where practicable?		

4.5 Checking		
4.5.1 monitoring and measurement		
Has the organisation established implemented and maintained 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?		
Do the procedures include requirements for:		

Information to monitor performance?		
Applicable operational controls?		
Conformance with the defined objectives and targets?		
Conformity with the organisation's environmental objectives and targets?		
Does the organisation ensure that calibrated or verified monitoring and measurement equipment is used and maintained?		
And are the associated records retained?		

4.5.2 Evaluation of compliance		
Are there established, implemented and maintained procedures for periodically evaluating compliance with applicable legal requirements?		
Are there records of the results of these periodic evaluations?		
Does the organisation evaluate compliance with other requirements to which it subscribes?		

4.5.3 Nonconformity, corrective action and preventive action		
Are there established, implemented and maintained procedures for dealing with actual and potential nonconformities and for taking corrective action and preventive action?		
Are the procedures defining requirements for:		
Identifying and correcting nonconformities and taking actions to mitigate their environmental impacts?		
Investigating nonconformities, determining their cause and taking actions in order to avoid their recurrence?		
Evaluating the need for actions to prevent nonconformities and implementing appropriate actions designed to avoid their occurrence?		
Recording the results of corrective actions and preventive actions?		
Reviewing the effectiveness of corrective actions and preventive actions taken?		
Are taken actions appropriate to the magnitude of the problems and the environmental impact?		
Does the organisation ensure that necessary changes in the EMS are documented?		

4.5.4 Control of records		
Does the organisation establish and maintain records as necessary to demonstrate conformity to the requirements of its EMS and of ISO 14001?		
Are the results achieved?		
Does the organisation establish, implement and maintain a procedure for the identification, storage, protection and retrieval, retention and the disposal of records?		

4.5.5 Internal audit		
Does the organisation ensure that internal audits of the EMS are conducted on planned intervals to:		
Determine whether the EMS conforms to planned arrangements for environmental management including the requirements of ISO 14001?		

Determine whether the EMS has been properly implemented and is maintained?		
Does the organisation ensure that internal audits of the EMS are conducted on planned intervals to provide information on the results of audits to management?		
Are audit programmes planned, established, implemented and maintained by the organisation?		
Are they taking into consideration the environmental importance of the operations concerned and the results of previous audits?		
Are the audit procedures established, implemented and maintained that address:		
The responsibility and requirements for planning and conducting audits, reporting results and retaining associated records?		
The determination of audit criteria, scope, frequency and methods?		
Do the selection of auditors and the conduct of audits ensure objectivity and the impartiality of the audit process?		

4.6 Management review		
Does top management review the organisation's EMS at planned intervals to ensure its continuing suitability, adequacy and effectiveness?		
Do reviews include assessing opportunities for improvement and the need for changes to the EMS, including the environmental policy and the environmental objectives and targets?		
Does input to management reviews include:		
Results of internal audits and evaluations of compliance with legal requirements and with other requirements to which the organisation subscribes?		
Communications from external interested parties, including complaints?		
The environmental performance of the organisation?		
The extent to which objectives and targets have been met?		
Status of corrective and preventive actions?		
Follow-up actions from previous management reviews?		
Changing circumstances, including developments in legal and other requirements related to its environmental aspects?		
Recommendations for improvement?		
Do the outputs from management reviews include any decisions and actions related to possible changes to environmental policy, objectives, targets, and other elements of the EMS consistent with the commitment to continual improvement?		

3.6   System documentation

The system document structure for an EMS according to ISO 14001:2004, is similar as for ISO 9001:2000. Therefore it is referred to chapter 2.2, for details on the structure, the composition of the environmental manual, procedures and work instructions.

Go to the next page for the Environmental Management System manual and some examples of procedures for the EMS.

Use the examples on the following pages.
Then go back to 3.1 and implement the EMS.
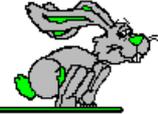
EMS   Revision:
Uncontrolled copy if printed.   Revision date:
Page X of X   Approved by:

Environmental Management System Manual

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1. General

1.1 Policy

The management team of the organisation and all its employees are committed to the protection of the environment.

We recognise the value of environmental responsibility and are committed to continual improvement, prevention of pollution and the reduction of resource consumption.

We will comply with the relevant environmental legislation, regulations and other requirements to which we subscribe.

Our management team establishes the framework for setting and reviewing environmental objectives and targets through its periodic management review process.

Our environmental policy is documented in this environmental management system manual. It is implemented, maintained and communicated to all employees. This environmental policy is available to the public through our web site and in the reception area of our organisation.

1.2   Purpose and scope

This Environmental Management System Manual documents the organisation's EMS system to demonstrate the organisation's commitment to adhere to the requirements of those standards and regulations listed in the applicable standards and regulations section of this manual. This EMS manual applies to all functions within the organisation.

The organisation's EMS provides a mechanism for environmental management throughout all areas and departments. The environmental management system is designed to cover environmental aspects which a facility can control and directly manage, and those it does not control or directly manage but can be expected to have an influence.

1.3   Applicable standards and regulations

ISO 14001:2004   Environmental management system – specification with

guidance for use

2.   Company information

Organisation's name
Address
Phone
Fax
E-mail
Web site
Contact person

3.   Definitions

Top management	Management team lead by the Managing Director of the organisation. This management team has the executive responsibility for performance of the business, the EMS and the QMS.
Management representative	The Managing Director has delegated a part of his operating responsibility to the Management Representative. The Managing Director remains responsible for all operations and actions.
EMS	The environmental management system
QMS	The quality management system
ISO-team	Group of employees of different levels, implementing the EMS and assessing risks and liabilities, to optimise the effectiveness of the EMS.
EMP	Environmental management program

3.1   Issue and update

The control of this manual is in accordance with the document control procedure.
This manual is available in all departments and on all process operating areas on
screen in electronic data format and is therefore up-to-date.
This means that all hard copies are not controlled documents. Before using them, the
revision number and date must be checked with the electronic data version to ensure
that the hard copy is not obsolete. Hard copies may be only used for reference
purposes.
The Management Representative or designee following approval by the Managing
Director will issue amendments to this manual.

4.   EMS requirements

4.1   General requirements

4.2   Environmental policy

The organisation's environmental policy (the policy) is endorsed by the Managing Director.

The policy covers all activities at the organisation. The policy includes a commitment to
continual improvement and prevention of pollution, as well as a commitment to meet or
exceed relevant environmental legislation, regulations and other requirements.

The policy will be reviewed annually by top management, communicated to all employees
and made available to the public in accordance with the Internal and External
Communication procedure.

Reference material
ISO 14001:2004 clause 4.2

Applicable procedures
Internal and external communication procedure

4.3   Planning

4.3.1   Environmental aspects

The organisation's ISO-team lead by the Management Representative identifies the
environmental aspects, which the facility controls and over which it may be expected
to have an influence, and determines which of those aspects are considered
significant. Discussions regarding significance are recorded in ISO-team meeting
minutes. These aspects are reviewed at least semi-annually by the ISO-team or
when there is a new or changed process or activity at the facility. The Management
Representative maintains ISO-team minutes and other records.

Reference material
ISO 14001:2004 clause 4.3.1

Applicable procedures
Procedure identifying environmental aspects and impacts
Procedure review of environmental projects
Environmental aspects matrix
Summary of environmental aspects

4.3.2 Legal and other requirements

The Organisation has established an environmental procedure for the purpose of identifying, accessing and communicating legal and other requirements that are applicable to the facility. Additional information is also available through legal publications. Local regulations are identified, accessed and communicated by the Management Representative. At least annually the Management Representative will review the most current national, regional, provincial, state and local legal and other requirements as applicable to organisation.

Reference materials
Legal and other requirements
ISO 14001:2004 clause 4.3.2

Applicable procedures
Environmental regulations and other requirements

4.3.3 Objectives, targets and programmes

The organisation has established and maintains documented environmental objectives and targets, at each relevant function and level within the organisation in a Business Performance Matrix. When establishing and reviewing its objectives, the organisation considers the legal and other requirements, its significant environmental aspects, its technological options and its financial, operational and business requirements, and the views of the organisation's audit program, including any schedule, is based on the environmental importance of the activity concerned per applicable procedure, and the results of previous audits.
In order to be comprehensive, the audit procedure covers the audit scope, frequency and methodologies, as well as the responsibilities and requirements for conducting audits and reporting the results.

Reference materials
Business performance matrix
ISO 14001:2004 clause 4.3.3

Applicable procedures
Procedure identifying environmental aspects and impacts
Procedure environmental management program, objectives and targets
Procedure review of environmental projects

4.4 Implementation and operation

4.4.1 Resources, roles, responsibility and authority

Environmental management system roles, responsibilities and authorities are defined at relevant functions and levels within the organisation. The Management Team jointly provides the resources essential to the implementation and control of the environmental management system, including: training, human resources, speciality services, and financial resources, technical and informational services. The Management Representative has primary responsibility for establishing, operating and maintaining the EMS. The ISO-team provides routine EMS support and reports directly to the Management Representative.

Reference material

ISO 14001:2004 clause 4.4.1

4.4.2 Competence, training and awareness

The organisation identifies, plans, monitors and records training needs for personnel whose work may create a significant impact upon the environment. The organisation has an environmental procedure to train employees at each relevant function and level so they are aware of the environmental policy, significant environmental aspects, their roles and responsibilities in achieving conformance with the policy and procedures, and with the requirements of the environmental management system. The training co-ordinator is responsible for maintaining employee-training records. Appropriate records are monitored and reviewed on a scheduled basis. The employee's supervisor determines competency. An environmental training plan is defined in the Training Matrix.

Reference material
ISO 14001:2004 clause 4.4.2
Training Matrix

Applicable procedures
Procedure environmental training and awareness

4.4.3 Communication

The organisation has established and will maintain a procedure for internal and external communications regarding environmental aspects and the EMS.

Reference material
ISO 14001:2004 clause 4.4.3

Applicable procedures
Internal and external communication procedure

4.4.4 Documentation

This manual identifies all documents relevant to the EMS. A copy of EMS documents, other than visual aids and records, can be obtained from the Management Representative or designee.

Reference material:
ISO 14001:2004 clause 4.4.4

4.4.5 Control of documents

The organisation has established an environmental procedure for controlling all documents related to the environmental system. This procedure describes where documents can be located and how and when they are reviewed. The procedure ensures that current versions are available and that obsolete documents are promptly removed from use or are suitably identified. Controlled documents are obtainable on screen.

Reference material
ISO 14001:2004 clause 4.4.5

Applicable procedures
Procedure formatting environmental procedures, work instructions & forms

Document control procedure

4.4.6 Operational control

The ISO-team is responsible for identifying operations and activities associated with significant environmental aspects that require operational controls in procedures, work practices or environmental management programs.

These documents define the mechanisms for the establishment, implementation and maintenance of the EMS and ensure that the system is maintained in accordance with the environmental policy and objectives and targets and is communicated to suppliers and contractors.
System procedures: Cover the management and control of both the EMS and the principal environmental aspects, which the system manages. These procedures are organisation wide in their application.

Work instructions: Cover the environmental control of specific operational activities and are usually activities specific in their application.

Reference material
ISO 14001:2004 clause 4.4.6

Applicable procedures
EMS operating procedure
Document control procedure

4.4.7 Emergency preparedness and response

The organisation has an environmental procedure 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. Emergency methods are reviewed by the ISO-team on an annual basis and after the occurrence of accidents or emergency situations.

Reference material
ISO 14001:2004 clause 4.4.7

Applicable procedures
Procedure preparedness and response

4.5.1 Monitoring and measurement

The organisation has established an environmental procedure to monitor and measure the key characteristics of its operations and activities that can have a significant impact on the environment. This procedure includes calibration and maintenance requirements and ensures that records will be retained.

The organisation has established an Environmental Regulatory Compliance Program. The procedure outlines the requirements of the program and to periodically review regulatory compliance and report results to management on a yearly basis

Reference material
ISO 14001:2004 clause 4.5.1

Applicable procedures
Procedure environmental management system and regulatory compliance audits
Procedure monitoring and measurement

4.5.2 Evaluation of compliance

The organisation has a procedure implemented and maintained for periodically evaluating compliance with the applicable legal requirements.

The organisation has an environmental procedure for defining compliance with other requirements to which it subscribes.

Reference material
ISO 14001:2004 clause 4.5.2

Applicable procedures
Procedure monitoring and measuring operational key characteristics

4.5.3 Nonconformity, corrective action and preventive action

The Organisation has an environmental procedure for dealing with the actual and potential nonconformities and for taking corrective action and preventive action.

This procedure defines requirements for:

Identifying and correcting nonconformities and taking actions to mitigate their environmental impacts.

Investigating nonconformities, determining their causes and taking actions in order to avoid their recurrence.

Evaluating the need for actions to prevent nonconformities

Recording the results of actions taken

Reviewing the effectiveness of corrective actions and preventive actionsthe identification, maintenance and disposal of environmental records.

Reference material
ISO 14001:2004 clause 4.5.3

Applicable procedures
Procedure nonconformity, preventive and corrective action

4.5.4 Control of records

The organisation has an procedure for the control of records to demonstrate conformity to the requirements of its EMS and the ISO 14001 standard. Within the procedure, the identification, storage, protection, retrieval, retention and disposal of records are ensured.

Reference material
ISO 14001:2004 clause 4.5.4

Applicable procedures
Procedure control of records

4.6   Management review

The Management Team reviews all elements of the EMS annually to ensure its continuing suitability, adequacy and effectiveness. Meeting minutes record these reviews and are kept by the Management Representative or designee.

Reference material
ISO 14001:2004 clause 4.6

Applicable procedures
Procedure environmental management system review

5.   List of procedures and forms applicable to the EMS manual

Procedure environmental management system review
Internal and external communication procedure
Procedure identifying environmental aspects and impacts
Procedure review of environmental projects
Procedure environmental management programs, objectives and targets
Procedure environmental training and awareness
Procedure formatting environmental procedures, work instructions and forms
Document control procedure
Procedure preparedness and response
EMS operating procedure
Procedure environmental management systems and regulatory compliance audit
Environmental aspects matrix
Summary of environmental aspects
Business performance matrix
Training matrix
Planning system audits
Procedure monitoring and measuring operational key characteristics
Procedure nonconformity, preventive and corrective action
Procedure control of records

Environmental Management system manual log.

Rev.	Section	Sub-section	Paragraph	Change request nr.	Date	Authorised by, (name and position)

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Internal and External Communication Procedure

Scope: This procedure covers the method for addressing communications as required by ISO 14001.
All communication about environmental matters is co-ordinated by the Management Representative. Without the needed authority, employees are not allowed to address this matter.

Responsibility: The Management Representative is responsible to ensure that this procedure is communicated to all employees. The Management Representative is responsible for maintaining this procedure.

Procedure: The following describes the procedure for all communications both internal and external dealing with environmental, safety and health issues.
Issues that may be communicated are: audit finding, spills, waste generation, accident information, soil contamination, risk assessment, control information, etc

Internal Communications

Responsible for ensuring that internal communications take place regarding the company's environmental, safety and health aspects, the Environmental Management System (EMS), the Safety Management System (SMS) and their respective policies.
Waste generation status will be posted quarterly.

Environmental program status and other environmental updates will be posted periodically on the "Environmental News" bulletin board.

Accident information is updated monthly. Other Safety and Health updates will be posted periodically on the "Safety and Health News" bulletin board.

Environmental, safety and health information will be communicated by utilising a variety of media to include, but not limited to, the following:
- Bulletin board notices
- Communication Meetings
- Network
- Employee handbooks
- Posters / banners
- E-Mail distribution

External Communications

Receipt and Processing

- Receive all communications from external interested parties.
- Review and log any relevant communication.

- Answer communications that fall within this scope of responsibility.
- Forward communications to other responsible departments including, but not limited to, corporate environmental, safety and health.

Communications on significant environmental, safety and health aspects.

As part of the strategic review consideration to external communication of it significant
environmental, safety and health aspects and document its decision in the meeting
minutes.

References:

ISO 14001:2004

Environmental manual

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Procedure Identifying Environmental Aspects and Impacts

Scope: This procedure covers the methods for identifying environmental aspects and significant impacts.

Responsibility: The Management Representative is responsible for overseeing the application of this procedure and involving other employees as appropriate.
The Managing Director is responsible for making these individuals available to participate in the aspects evaluation.

Definitions:

Environmental aspects as defined in ISO 14001:2004 are components of the organisation's activities, products and services that are likely to interact with the environment.
Environmental impacts are as defined in ISO 14001:2004 are any changes to the environment, whether adverse or beneficial, wholly or partially resulting from the activities, products and services of the organisation.

Purpose:

This procedure covers activities, service and products that the organisation can control and over which it can be expected to have an influence. Significant environmental aspects identified during this process will be considered in establishing environmental objectives and targets for the organisation.
The organisation will perform a baseline evaluation of current and past products and services. Data, which may be used to identify and evaluate environmental aspects, may include past contamination and damage reports, compliance audits, incident investigation reports, permits, chemical and waste inventories etc.

The baseline evaluation will focus on those activities, services and products over which the organisation experts direct control. Examples of categories of aspects to be evaluated include:
- Air emissions
- Water and surface water discharges
- Waste management
- Energy management
- Contamination of soil
- Subsided/sunk land
- Raw materials
- Used natural resources
- Other local environmental and community issues

This process will consider actual and potential environmental aspects associated with:
- Normal operating conditions
- Shut-down and start-up conditions
- Realistically foreseeable or emergency situations

Potential environmental aspects which are not under the organisation's direct control, but over which the organisation can reasonably be expected to have influence, will be evaluated at such time as management deems appropriate.

The organisation's environmental aspects are re-evaluated, as needed, considering changes in evaluation methodology or significant changes in the facility's process or products. At a minimum,

The evaluation is updated prior to the introduction of a new process or substantially different raw material into the organisation.

Procedure:

1. The Management Representative is responsible for overseeing the application of the procedure and involving other employees as appropriate. Other employees may include representatives from environmental, health and safety, engineering, line management, maintenance, facility management, product design and development, product realisation and other functions, as appropriate.

2. The Managing Director is responsible for making these individuals available to participate in the aspects evaluation. The environmental aspects evaluation is performed according to the schedule established by the Management Representative. Environmental aspects are evaluated using the categories and the types of data elements described in the environmental aspects matrix. The management representative is responsible for making relevant data available to the individuals performing the aspects evaluation.

3. Identified environmental aspects are evaluated for actual and potential environmental impact using a risk-based methodology. Each impact is categorised as significant or not significant and assigned numerical risk rating. Aspects, which are determined to have an associated actual or potential significantly environmental impact, are considered significant environmental aspects.

4. The results of the aspects evaluation process are recorded using the environmental aspects matrix. Aspects are prioritised according to their numerical risk rating generated from the environmental aspects matrix.
   The management representative is responsible for working with plant management to ensure that identified significant environmental aspects are considered in setting environmental objectives and targets.

5. The results of the most recent environmental aspect/impact evaluation are reviewed as part of the management review process. Based on this review, the organisation's management determines the need to update the summary of environmental aspects, impacts and risks and acts accordingly.

6. Every 30 days or sooner if needed, the Management representative will check with the involved individuals the status of the actions decided and report back to the Managing Director.

References:

ISO 14001 :2004
Environmental aspects matrix
Summary of environmental aspects

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EMS Operating Procedure

Scope:

This procedure covers the methods for operating effectively the organisation's environmental management system (EMS).

To provide a documented statement of the organisation's policy relative to the operation and control of it's Environmental Management System (EMS).

This section is structured to correspond to the EMS requirements defined in ISO14001.

The following defines the organisation's policy relative to the establishment and maintenance of its EMS.

Responsibility:

The Management Representative is responsible for overseeing the effective functioning of the EMS.
All functions within the manufacturing operations that are affected by the requirements of ISO 14001.
The Managing Director has final responsibility

Procedure:

Environmental Policy

Employees are committed to being environmentally responsible corporate citizens. This will entail:
Being pro-active in our efforts to improve production processes to eliminate waste;
Seeking out and considering current technologies in:

- Wastewater discharge reduction
- Soil contamination or sinking
- Solid waste handling and disposal
- Hazardous materials handling and storage
- Environmental preferred packaging
- Reusable material handling and recycling systems
- Other environmental issues

Through the use of these technologies and systems, the organisation will continue to move forward toward our objective of zero waste discharge through continual improvement.

Manufacturing Operations is committed to complying with relevant environmental legislation, regulations, and the corporate environmental policy.

The Environmental Policy will be made available to any member of the public requesting it.

Planning

1. **Environmental Aspects:**

    Documented procedures are maintained to identify the environmental aspects of the organisation's activities and products that it can control and over which it can be expected to have an influence. These aspects are identified in order to determine those, which have, or can have, significant impact on the environment. Those aspects related to significant impact are considered in setting the organisation's environmental objectives.

    The procedure is the responsibility of the Management Representative and includes update provisions to ensure that the information concerning environmental aspects is kept up to date.

2. **Legal and Other Requirements:**

    Procedures are maintained to identify and provide access to legal and other requirements to which the organisation subscribes that are directly applicable to the environmental aspects of its activities and products.

3. **Objectives and Targets:**

    Procedures are maintained for establishing and maintaining documented targets at each relevant function and level within the company.

    The procedures include provisions for the consideration of legal and other requirements, significant environmental aspects, technological options, financial, operational and business requirements and the views of interested parties when establishing and reviewing EMS objectives.

    The objectives and targets are reviewed to ensure that they are consistent with the environmental policy including the commitment to prevention of pollution.

4. **Environmental Management Programs:**

    Management programs are established and maintained. At a minimum, the programs include:

    - Designation of the responsibility for achieving objectives and targets at each relevant function and level of the organisation.

    - The means and time frame by which they are to be achieved.

    The procedure includes provisions for the review of new and/or modified activities and products to ensure they are taken into consideration in establishing and/or modifying management programs.

Implementation and Operations

1.   Structures and Responsibility:

The roles, responsibilities, and authorities of key personnel are defined. Management personnel are responsible for providing resources within their functional areas essential to the implementation and control of the EMS. These resources include human resources, specialised skills, technology, and financial resources.

The Management Representative has responsibility and authority for:

Ensuring that the EMS requirements are established, implemented, and maintained in accordance with this policy document.

Reporting on the performance of the environmental management system to top management for review and as a basis for improvement of the EMS.

2.   Training, Awareness and Competence:

Procedures are maintained for identifying training needs. All personnel whose work may create a significant impact upon the environment receive appropriate training as defined by procedures.

Procedures are maintained to make employees at each relevant function and level aware of:

- The importance of conformance with the environmental policy, procedures and the requirements of the EMS.

- The significant environmental impact, actual or potential of their work activities, and the environmental benefits of improved personal performance.

- Their roles and responsibilities in achieving conformance with the environmental policy, procedures, and requirements of the EMS including emergency preparedness and response requirements.

- The potential consequences of departure from specified operating procedures.

Competency of personnel performing tasks, which can cause significant environmental impact, is based on appropriate education, training and/or experience.

3.   Communication:

Procedures are maintained for:

- Internal communications between various levels and functions of the organisation.

- Receiving documentation and responding to relevant communications from external interested parties regarding the organisation's environmental aspects and EMS.

Procedures are maintained for consideration of external communications on significant environmental aspects. Decisions related to these considerations are recorded.

4. Environmental Management System Documentation:

The core elements of the EMS are defined in this policy document. The interaction and directions to related documentation of these elements are defined in this policy document and the referenced procedures.

5. Document Control:

Procedures are maintained for controlling all documents required by this policy to ensure that:

- They can be located.
- They are periodically reviewed and revised as necessary and approved for adequacy by authorised personnel.
- 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.
- Obsolete documents retained for legal and/or knowledge preservation purposes are identified.

Documentation is maintained such that it is legible, dated (with dates of revision) and readily identifiable. It is maintained in an orderly manner with retention period specified.

Procedures are maintained defining responsibilities for, and methods of, creation and modification of all documents within the system.

6. Operational Control:

Procedures are maintained to identify operations and activities associated with the identified significant environmental aspects. These activities, including maintenance, are planned in order to ensure that they are carried out under specified conditions.

Documented procedures are maintained to cover applicable activities as listed below. These procedures include operating criteria as appropriate.

Documented procedures exist for communicating relevant procedures and requirements to suppliers and contractors.

7. Emergency Preparedness and Response:

Procedures are maintained for identifying the potential for, and responding to accidents and emergency situations, and for preventing and mitigating the associated environmental impacts.

Emergency preparedness and response procedures are reviewed and revised after the occurrence of accidents or emergency situations.

Tests of the emergency preparedness and response procedures are conducted according to a schedule established by Management Representative.

Checking and Corrective Action

1. Monitoring and Measurement:

Documented procedures are maintained to regularly monitor and measure the key characteristics of operations and activities that can have a significant impact on the environment. These procedures include provisions for recording information and retrieve information.

Documented procedures are maintained for the periodic evaluation of compliance with relevant legislation and regulations.

2. Non-conformance and Corrective and Preventive Action:

Documented procedures are maintained for defining responsibility and authority for handling and investigating non-conformances, taking action to mitigate any impacts caused, and for initiating and completing corrections and preventive actions.

Changes in the documented procedures resulting from corrective and preventive actions are implemented and recorded.

3. Records:

Documented procedures are maintained for the identification, maintenance, and disposition of environmental records. These records include training records and the results of audits and reviews.

The records are maintained such that they are legible, identifiable and traceable to the relevant activity, product or service. They are stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss. Retention times are established and recorded.
Records are maintained to demonstrate conformance to the requirements of this standard.

4. Environmental Management System Audit:

Documented procedures are maintained to define the environmental management system audit program. The program requires periodic audits be carried out in order to determine whether or not the EMS:
- Conform to the requirement of ISO 14001 and the Environmental Manual.
- Is implemented and maintained in accordance with the Environmental manual.

Information on the results of audits is one of the inputs to the formal management review.

The audit program is based on the environmental importance activities and the results of previous audits. The audit procedures include audit scope, frequency, methodologies, responsibilities and requirements for conducting and reporting results.

5. **Management Review:**

Documented procedures exist for the review of the EMS by top management to ensure its continuing suitability, adequacy and effectiveness. Minutes of the review meeting are recorded.

The EMS is reviewed for the possible need for changes to policy, objectives, and other elements of the EMS in light of EMS audit results, changing circumstances, and the commitment to continual improvement.

References

ISO 14001:2004

Management programs procedure

Environmental policy

Communication procedure

Procedure periodic evaluation of legislation and regulations

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Emergency Preparedness and Response Procedure

Purpose

This procedure outlines the activities for,

1) Planning and preparing for a potential environmental emergency situation that may pose an immediate and significant threat to human health and/or the environment.

2) Responding to such a situation in the event that such an event is imminent or occurs.

This procedure also identifies the existing programs and guidance in place to support these activities.

Scope

This procedure encompasses all activities and processes at the plant.
The procedure applies to the actions of all employees at the plant, as well as the services and products provided by vendors and subcontractors while operating on the mining site.

Definitions

There are no definitions associated with this procedure.

Procedures

Emergency Planning and Preparation

Emergency planning and preparation activities performed by the company include the following;

- Updating emergency response plans
- Employee training
- Review of events and accidents at the plant and other similar facilities within and outside the branch.
- Practice drills
- Health and safety, and environmental compliance audits to identify areas for corrective and preventive action or improvement
- Coordination with local governmental agencies
- Coordination with neighbors.

Potential environmental hazards or activities that could lead to an emergency situation should be identified as part of an Management Review overseen by the Environmental Manager and Plant Safety Team.

A similar review should also occur in the event a significant equipment or process change occurs. Any changes to policies, procedures or instructions to reduce the potential for an emergency situation shall be communicated to all plant employees and other affected parties as soon as possible, as well as being incorporated into the plant's environmental training program.
All changes should be documented according Document Control.

Emergency Response Plans
- Current emergency response procedures include:
- Emergency Response Plan
- Emergency Spill Response Manual
- Chemical Release Emergency Procedure
- Chemical Hazard Evaluation System
- Security and Inspection Program
- Malfunction & Abatement Plan
- Continuous Emissions Monitoring System Shutdown, Breakdown or Malfunction Reporting
- Mercury Spill Handling/Cyanide Code operation manual
- Office Manual - Safety & Security

These documents and plans shall be maintained in accordance with existing regulatory, company, and business unit or plant requirements.

All emergency response actions conducted by plant or other staff shall be within the boundaries of existing training levels, competencies, personal protection, policies, and applicable regulations. External assistance shall be sought in accordance to the appropriate emergency response plan.

Emergency Response Equipment

Emergency response equipment mat may be required in the event of a spill or potential release is located within the plant property. These locations are identified in the Emergency Spill Response Manuals.

This equipment shall be periodically inspected to assure that it is stocked, accessible, and appropriate to the current response plans and potential needs.

Notifications

Notifications in the event of an emergency situation or release to the environment shall be reported in accordance with die applicable plan. This shall include internal, regulatory and public safety officials as appropriate. In addition, Environmental Notifications, shall also be followed, including all necessary documentation.

In all notifications, time is of the essence.

Incident Review

All emergency response actions shall be reviewed and the results provided to the plant management team and the Environmental Manager. Items to be included in the review should include al a minimum:

- Description of incident including events leading up to the emergency situation
- Plant response
- Root cause
- Potential system or procedural failures
- Corrective and preventive actions
- Required changes in policies, procedures or instructions
- Follow-up training or communications.

Any resulting corrective and preventive action planning should follow the procedures and documentation requirements identified in the EMS Handbook, Non-Conformance and Corrective and Preventive Action.

Responsibilities

Emergency response coordination shall be in accordance with the applicable Emergency Response Plan.

All plant employees are responsible for identifying potential conditions, practices or activities that could lead to an emergency situation and communicating this observation to their supervisor or the Environmental Manager. Employees shall immediately notify the plant control room of any emergency condition or pending emergency condition.

Documentation

All emergency response actions shall be documented in accordance with the emergency plan and the environmental notification requirements outlined in the applicable Procedure. Records of these events shall be in accordance with the Corporate Records Management Manual.

The Environmental Manager shall maintain a current listing of all emergency plans and take steps necessary to assure that these plans are current and available.

References

- ISO 14001:2004- Environmental Management System standard
- EMS Master Document List
- Emergency Response Plan
- Emergency Spill Response Manual
- Chemical Release Emergency Procedure