INTRODUCTION TO EMS AUDITING CONCEPTS AND ISO 14000

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Overview

The Environmental Management System (EMS) audit is based on the generic concept of auditing. Simply put, an audit, any audit, is the comparison of actual conditions to expected conditions, and a determination as to whether one is in conformance or not in conformance. This is the same philosophy used to perform financial, quality, regulatory compliance, and systems audits. It is prudent to first review what the common elements are in order to better understand why audits are different.

There are several definitions of audit components that are common to any type of audit. ISO 14010 defines these terms for EMS audits, but they apply in other cases also. As a matter of fact, the ISO committee decided not to create auditing standards for other types of audits, such as compliance audits, although it was originally considered. The main reason for deleting the work items was because the concepts and processes defined in 14011, originally intended for EMS audits, were generic enough to be applied "as is" to other types of audits.

An audit is fundamentally a comparison of audit evidence to audit criteria to determine findings. The evidence is the objective information collected through interviews, visual reconnaissance, and documentation review. The audit criteria are the expectations or "rules" of how conditions should be. It is the criteria that distinguish one audit from the next. For example, in compliance auditing, the criteria are the regulations. With an EMS audit, the criteria would be the description of the expected system elements. In this case, the EMS criteria would be that described in ISO 14001, the specification standard.

When evidence is compared to criteria, one can determine whether the audited entity does or does not conform. This determination is a finding, and a finding can either be one of conformance, or non-conformance. Therefore, an audit will always produce findings, even if what is being audited is in full conformance with criteria.

Other key definitions to be aware of with auditing are: objectives, scope, auditee, client, and auditor. The audit objective(s) is simply why you are conducting an audit; usually the reason is to demonstrate conformance to stated criteria. The audit scope is what entity is being audited, and can be a company, a site, or unit within a site or company.

In the ISO 14000 realm, there is a clear distinction between the auditee and client. The auditee is the entity being audited. The client is the party commissioning the audit. For example, a client can be the customer, and the auditee a supplier to that customer. In ISO 14000, this distinction is important because the client sets the scope, objectives, and plan for an audit, not the auditee, although it is expected the auditee will be involved and cooperate.

The auditor is the one actually collecting evidence and determining findings. The auditor can be comprised of several individuals on a team. There are requirements in ISO 14001 that state that those performing functions within the EMS, such as the auditors, be qualified in their tasks. This

means the auditors must have received training in EMS auditing. However, there may be audit team members who do not have the training, but are on the team because of some unique expertise, such as process, language, or regulatory knowledge.

The ISO 14000 Auditing Standards

The only standard in the ISO 14000 series that must be followed for third party verification (i.e. "getting certified") is 14001. In that document, there is a requirement that the management system be periodically audited. Section 4.5.4 of ISO 14001 states that "the organization shall establish and maintain program(s) and procedures for periodic EMS audits to be carried out in order to:

(a) determine whether or not the EMS:

- Conforms to planned arrangements for environmental management including the requirements of this international standard; and

- has been properly implemented and maintained; and

(b) Provide information on the results of the audits to management."

This requirement means that the organization shall:

- Have procedures governing audits and follow-up actions
- Operate a comprehensive system of audits
- Plan its audits
- Document its audits
- Demonstrate that EMS activities comply with planned arrangements
- Determine that the EMS has been properly implemented and maintained
- Schedule audits on the basis of the status and importance of the activity
- Record results

This however does not convey the full requirements of ISO 14001, as many other clauses of the standard also have an impact upon the EMS.

The ISO 14000 committee decided to prepare guidance standards for users describing techniques to help meet the audit requirement of ISO 14001. The resulting auditing standards were created as guidance documents, meaning that they do not need to be followed or used in order to obtain certification.

There are three standards in the auditing series (14010, 14011, and 14012). 14010 is a general principles document that describes key definitions and general expectations of auditors. For example, the terms defined above, such as auditee, are addressed in 14010. 14010 also addresses confidentiality and professionalism, and discusses the audit report which will be explained below.

14011 is the auditing procedures standard that describes how to establish an audit program including planning, staffing, and reporting. Additional definitions are also addressed in 14011 such as lead auditor and client. 14011 defines the roles and responsibilities of the involved parties in an audit and also provides more information on reporting. These details are defined in the various sections below. The intent of 14011 is to provide the user guidance on addressing ISO 14001, Section 4.5.4 that states:

> "The organization's audit program, including any schedule, shall be based on the environmental importance of the activity concerned and the results of previous audits. In order to be comprehensive, the audit procedures shall cover the audit scope, frequency and methodologies, as well as the responsibilities and requirements for conducting and reporting results."

The 14012 standard describes recommended EMS auditor qualifications in terms of education, training, and practical experience. In general, an EMS auditor should be familiar with management systems, regulatory and legal requirements, processes and operations involved, and environmental science issues related to the auditee. As a guidance standard, 14012 can only recommend such qualifications, and the key is to ensure the audit team is familiar with the EMS that they are responsible for, and not all other areas of environmental science or regulations. Secondly, it is understood that no single individual may have all of these qualifications, hence the concept of the audit team.

It is interesting to note that ISO 14001, 14010, 14011, and 14012 do not acknowledge the concept of certification and third party auditors. The expectation is that the EMS will have its own internal auditors, usually employees of the site or company. The third party auditor, commonly refereed to as the registrar or certifier, is accredited by another organization. They are by definition completely objective, not having participated in the system development or implementation. Accrediting bodies and registrars usually elevate 14010, 14011, and 14012 to requirements for themselves. As a result, an auditor with an accredited registrar will usually meet or exceed the qualifications described in 14012. Using this same terminology, first and second party auditors are usually the internal auditing staff, consultants, and customers or other interested parties, not holding accreditations to certify.

The Difference Between Compliance Auditing and Systems Auditing

Above, we discussed what is fundamentally the same among all audit types as well as what makes them different. Often however, there is confusion between regulatory compliance auditing and EMS auditing. This is because there are many elements of regulatory compliance that overlap with the EMS. Recall that the criteria in a compliance audit are the applicable regulations, whereas the criteria in an EMS audit would be ISO 14001. But does not ISO 14001 address compliance? The answer is yes, but from a system standpoint, not performance. In other words, the standard requires that certain procedures exist regarding identification of legal and other requirements, that periodic compliance assessments be performed, that legal requirements be considered in setting objectives and targets, and that there be a commitment to compliance. However, actually being in compliance is a performance issue, and out of the purview of ISO 14001. Of course, a system that is constantly out of compliance or does not identify and initiate action to correct noncompliances, will eventually fail due to system failure.

The subtle, yet important point is that during an EMS audit, identified regulatory noncompliances are relevant only to the extent that they reflect a potential system problem. The finding therefore is not that the site is out of compliance with a given regulation, but that the noncompliance means some EMS element is not conformed to. For example, a regulatory noncompliance can be related to a problem with training, recordkeeping, or monitoring and measurement.

The EMS auditor is not to do a compliance audit as part of the EMS audit. If, as part of the statistical sampling to verify EMS element requirements, the auditor identifies a regulatory noncompliance, he or she treats it as any other evidence. This point has been difficult to accept, especially in U.S. industry because of our long history of regulatory enforcement. The EMS auditor needs to constantly remember that compliance auditing is being done separately as part of the EMS requirements itself (4.5.1, paragraph 3) and to stay focused on the criteria at hand - ISO 14001 and the site's EMS. There may be legal requirements regarding noncompliances encountered during the EMS audit, but this should be decided and addressed in the audit plan.

In summary, the goal of the compliance audit is to verify compliance with regulations, whereas the EMS audit's goal is to verify that the EMS conforms to planned arrangements, including ISO 14001.

THE AUDIT

Essential Features of an Audit

The EMS audit incorporates in a condensed form the following general features that are essential elements of any audit, i.e.:

- They are pre-planned and methodical in nature rather than haphazard
- They should be free from bias or prejudice
- They encompass some form of inquiry and critical consideration of the resultant findings
- They are concerned with all activities that affect environmental issues and with results reflecting environmental performance
- They should ensure that such activities are carried out in an effective and consistent manner in accordance with planned arrangements

Why Perform EMS audits?

In order to confirm that the defined EMS system operates effectively, it is essential to carry out some form of monitoring activity in addition to ongoing monitoring and measurement. Listed below are some of the potential benefits of adopting EMS audits as the basis of any such additional monitoring:

- They provide a means of confirming that the EMS policy is understood and is being implemented.

- They give management confidence that the system is being implemented in the manner prescribed.

- They provide a structured means of identifying deficiencies in the system, agreeing on corrective action, and following up to confirm effectiveness.

- They enable system weaknesses to be highlighted before the related potential problems are reflected in the environmental performance.

- They provide a convenient framework for investigating operations in a particular area, e.g., in response to environmental problems.

- Again, if they involve personnel from other areas, the opportunity is created for interchange of ideas so that successful features of an area's system can be applied elsewhere if appropriate.

- They can, by involving personnel more widely in the operations of the business, lead to increased commitment and motivation.

Potential Disadvantages of Audits

The potential cost of the EMS audit system is often a source of some concern to companies. It is true that internal audits usually require additional manpower resources since they tend to be superficial if sufficient time is not allocated for preparation and performance of the audits. Consequently, it is critical that all aspects of the audit system from the audit schedule through to control of corrective action are structured to make the most effective use of the available resources. In this manner the auditing's contribution to the effectiveness of the EMS system should outweigh any additional costs involved.

It is sometimes suggested that the principle that audits should be independent will mean that they will be conducted by personnel not familiar with the area being audited, thus restricting their effectiveness. This potential disadvantage can be minimized by careful auditor selection and thorough audit preparation. If this is done, the new insights obtained by examination of the system from a different point of view are invaluable. If use is made of personnel from other departments within the company to meet the recommendation for auditor independence, it provides the ideal opportunity for exchange of good ideas. It also provides an opportunity for the personnel involved in auditing to see problems from the user department's point of view, thus increasing the potential for cooperation and better understanding within the organization.

A frequently stated criticism of audits is that they are a potential source of conflict within the organization, since they involve outsiders telling the managers responsible for the activity being audited how to conduct their business. This criticism ignores the fact that the task of the auditor is to compare actual performance with what is stipulated in the agreed procedures, not to impose his personal interpretation of what is good practice. The use of properly trained auditors who understand the role they are required to fill and the extent of their responsibilities will help audits to be perceived as a constructive process, not a disruptive one.

In summary, although criticisms may be leveled against EMS audits, in most cases either the potential benefits outweigh these, or measures can be adopted to obviate their worst effects. In

particular, the problems of audits being time consuming, ineffective or disruptive can be minimized by a properly structured audit system and the use of well trained experienced auditors.

The Audit Process

The entire audit process can be described as planning, executing, and reporting. ISO 14011 on EMS audit procedures was created to describe this process, and provide suggestions on setting up audit programs. Recall that ISO 14001 requires that the organization establish auditing programs and procedures. In this section, we will examine the three major steps of auditing in detail, providing examples and suggestions towards establishing an audit program. Once the audit program is put together for the site EMS, it should not have to be changed appreciably.

Planning the Audit

With EMS auditing, as with any type of auditing, a very important step is planning the audit. This involves preparing the specific audit plan, making team assignments, deciding on working documents, and addressing any unique extenuating circumstances. To understand the importance of planning, imagine going on vacation without planning; in other words, not knowing where you are going, what you will do, or how long you will be gone.

The Audit Plan

The audit plan is the document that establishes the scope, objectives and criteria, and schedule of the audit. It also goes into specific details on what areas will be audited, when, and by whom. Other details such as which checklists may be used, how the report is to be formatted and distributed, and how meetings will be conducted can also be included in the plan. In essence, the audit plan reflects the programs, procedures, and methodologies of the EMS audit process, in accordance with element 4.5.4 of ISO 14001. These planning items are usually described in the procedures for element 4.5.4 and do not need to be re-created every time an audit occurs. For example, it can be determined that the entire EMS will be audited once per year, but in four partial events. This schedule then becomes part of the procedure.

The audit scope defines what part of the organization will be audited. Obviously, this should coincide with the scope of the EMS itself, and is usually the site in question. If the full EMS audit is divided in smaller segments conducted throughout the year, then the scope of any given segment is what portion of the organization will be audited at that time. Typically, an organization will create a chart or matrix showing the various divisions of the site or activity and when it will be audited. A typical entry may show the maintenance department being audited in the first quarter and production in the fourth quarter, for example.

Also noted in the audit plan is the audit objective(s). The audit objective describes why an audit is being conducted. Typically the reason is to conform to ISO 14001 4.5.4 requiring that the EMS be periodically evaluated. Another reason is demonstrate conformance to others.

Although EMS audits may appear in their own right to be “good practice”, it is essential that auditors have a clear concept of what the general objectives of such audits are.

The definition of EMS audits highlights the need to confirm conformance with planned arrangements and to ensure that these arrangements are effective and suitable to achieve objectives. ISO 14011 expands this to form a number of general objectives for any type of EMS audit. Audits should be carried out to:

- determine conformance of an auditee's EMS with the EMS audit criteria
- determine whether the auditee's EMS has been properly implemented and maintained
- to identify areas of potential improvement in the auditee's EMS
- assess the ability of the internal management review process to ensure the continuing suitability and effectiveness of the EMS
- evaluate the EMS of an organization where there is a desire to establish a contractual relationship, such as with a potential supplier or a joint-venture partner.

Using this definition and sources such as ISO 14010 and 14011, the following statement of the specific objectives of an internal EMS audit has been developed. Internal audits should be carried out to ensure that:

- The EMS continues to meet the needs of the business

- The necessary documented procedures that exist are practical and satisfy any specified requirements

- The necessary documented procedures are understood and followed by appropriately trained personnel

- Areas of conformity and nonconformity with respect to implementation of the EMS system are identified and corrective action implemented

- The effectiveness of the system in meeting the EMS objectives is determined and that a basis is created for identifying opportunities and initiating actions to improve the EMS system

The above objectives imply that internal audits are concerned with more than just the policing of an established system. If auditors and managers are to remain committed to the implementation of the EMS system, it must also contribute to the process of developing that system and seeking improvements.

Internal auditing must not be carried out in a way that results in the transfer of responsibility from the operating staff to the auditor or auditing organization, i.e., at all times the individual or department must retain and accept responsibility for his or her role in the EMS.

If the internal audit process is not designed and implemented to meet the objectives and to avoid the pitfalls described above, it is unlikely that the top management commitment essential to an effective audit process will be readily forthcoming.

The audit criteria define what the "rules" are. For the sake of this guide, the criteria will be the elements of ISO 14001. A subtle point to note however is that the site's EMS requirements are

also part of the criteria. This means that in addition to responding to the requirements of ISO 14001, the EMS must also respond to "planned arrangements", or what the organization said it was going to do. In audits, a common response is "the standard does not require such and such detail". However, if the site's procedure does require some specific response, then it becomes part of the criteria. In essence, the auditors are verifying the system not only to ISO 14001, but also to what the EMS documentation states.

How the audit is divided and scheduled throughout the time interval is up to the organization and will be a function of minimizing disruption to site operations and resource needs. The only requirement is that the full audit be completed within the frequency established in the procedures under 14001, 4.5.4. One of the requirements regarding frequency is that how often an area is audited be in part a function of prior audit results. This means that the planned frequency may change with time based on what auditors are finding.

How long each audit takes again is a function of resource needs and operations. It is recommended, however, that any individual audit event not be protracted out over long time periods. The longer a task takes, the easier it is to get distracted and lose focus.

Much has been written about how to audit a system if the full audit is not completed in one event. Unlike other audits, including quality audits, where a more segmented approach can be taken, ISO 14001 systems tend to be very sensitive to consistency. For example, the emergency planning process may conform to the standard element 4.4.7 in that a procedure exists; however, it may not reflect the potential significant impacts identified in element 4.3.1. Had the audit team focused only on element 4.4.7, they would not have noted the apparent nonconformance.

When developing an audit plan, it is wise to consider the three C's of ISO 14001 EMS auditing: *Conformance, Consistency, and Continual Improvement*. Conformance relates to addressing each of the requirements of the standard, i.e., the "shalls". Consistency relates to how well each procedure or process of the EMS relates to the others. In other words, do objectives and targets reflect the policy commitments? Are personnel trained on the correct legal and other requirements? Finally, Continual Improvement requires that the system lead to improvements in the system itself as well as with environmental performance. A system that has all the prerequisite procedures, but remains static, is not in conformance.

The concepts of consistency and continual improvement are more subtle because they are through-running threads of the standard and not always a definitive statement. The required commitment to continual improvement and the text of the standard itself however do go some way towards reminding the auditor.

With the three C's in mind, one now sees why it is best to audit all applicable elements of the standard in a given area at one time, rather that tracing any one standard element throughout various areas. For example, during the first quarter audit event, Company X may audit all of ISO 14001 in maintenance. During the second quarter event, all of ISO 14001 will be audited in the production area, and so on. This is in contrast to auditing only a certain element, i.e., corrective action, across several site areas in one audit event.

Now we know what is being audited, when it is being audited, and to what "rules" it is being audited. The remainder of the plan is simply then the logistics of the audit. The logistics include identification of team members, noting if and what checklists will be used, schedule and formats of meeting to name a few. Below is the full list of recommended audit plan elements as described in ISO 14011:

- the audit objectives and scope;
- the audit criteria;
- identification of the auditee's organizational and functional units to be audited;
- identification of the functions and/or individuals within the auditee's organization having significant direct responsibilities regarding the auditee's EMS;
- identification of those elements of the auditee's EMS that are of high audit priority;
- the procedures for auditing the auditee's EMS elements as appropriate for the auditee's organization;
- the working and reporting languages of the audit;
- identification of reference documents;
- the expected time and duration for major audit activities;
- the dates and places where the audit is to be conducted;
- identification of audit team members;
- the schedule of meetings to be held with the auditee's management;
- confidentiality requirements;
- report content and format, expected date of issue and distribution of the audit report;
- document retention requirements.

If the internal audit is to proceed smoothly, it is helpful for the internal auditor to establish a dialogue prior to the actual audit with the person responsible for the area being audited. This dialogue may be conducted by memo, telephone, or during a formal or informal meeting. The main factor that should influence the auditor's choice of method for setting up this dialogue should be the organization's normal style or culture. Irrespective of the method of communication the auditor adopts, the following points should be established:

- The overall duration of the proposed audit
- The starting location and time
- The proposed scope and areas to be covered by the audit
- A timetable for approximate progress of the audit where applicable, e.g., if a number of different departments or geographical areas are to be included in the scope of the audit
- The arrangements for any close out meeting where the findings of the audit can be agreed and corrective action requirements discussed
- The personnel liable to be involved at each stage of the audit

If an auditor does not give sufficient attention to ensuring that clear agreement is reached with respect to the above points, the potential for misunderstandings that can affect the conduct of the audit is greatly increased. However, these initial communications with the personnel of the area being audited not only affect the "tone" of the forthcoming audit, but they can significantly

influence the commitment and level of cooperation shown by that area throughout the audit process and for many subsequent audits.

Prior to commencing the audit, but once the plan is prepared, the audit team assignments are made, and working documents are defined. Working documents are those documents such as observation logs and checklists that are used during the audit to collect evidence, but are not necessarily retained as records. In other words, they may be discarded after the audit is complete and the report prepared.

Of these, only the checklist should require an input at this stage from the auditor. However, before compiling a checklist, the auditor must determine if the function and format of the checklist are prescribed by the audit procedure or whether personal preference can be exercised.

The format of the checklist may vary considerably, depending on whether it is intended to act as an aide or as a part of audit records showing the scope and conduct of the audit. The former may consist only of general topics to be covered during the audit, whereas the latter may be an extensive and detailed questionnaire on which details of sampling and answers to the questions are to be recorded.

The need for checklists and the type appropriate will vary according to other experience of the auditors and the culture of the company. It is recommended that for purposes of internal audits, checklists, even if limited, should always be developed. However, standard questionnaire type checklists not prepared by the auditor that must be slavishly followed and completed, should be avoided. This latter type is likely to result in an unnecessary restriction in the scope of the audit and a stifling of auditor initiative.

Although an auditor should always work within the scope defined for the audit, the working documents must not be designed so that they restrict additional audit activities or investigations that may become necessary as a result of information gained during the audit. There are differences of opinion over whether it is preferable to create the checklist anew or whether a previously developed checklist can be used. Although the former is desirable in principle, it is not always practical in terms of the best use of the resources available. The best compromise is to utilize whatever available checklists are already in existence, but to review these critically against the relevant documents previously identified. In this way, time can be saved in using them as a foundation without detracting from effectiveness.

Audit Team Assignments and Auditor Qualifications

The organization needs to identify auditors in order to effectively carry out EMS audits. These individuals are usually employees who have other day to day to functions and responsibilities. They receive specialized training in auditing, systems auditing, and the organization's EMS. It is not expected that these individuals are experts on EMS auditing, nor that they are capable of going out and auditing any other EMS. The key is that they have the level of expertise necessary to audit the EMS in question. ISO 14001 requires that individuals performing tasks within the EMS be appropriately trained and competent.

It is for this variable training needs reason that the auditor qualifications standard, 14012, is only a guidance document. There is no expectation that the auditors in any given organization meet all the requirements described in 14012. As mentioned above however, third party certifiers have elevated the guidance standard to represent minimum requirements for their own auditors.

In general, EMS auditors, or collectively as a team, should have some degree of knowledge of: management systems, auditing methodologies and techniques, environmental science and technology, and regulatory and legal requirements. It is well within the right of the organization to assemble a team of individuals who collectively have this knowledge, understanding that a single person with this breadth of knowledge is a rarity.

More importantly, to an extent, it is not so much the auditor's technical skills, but his or her interpersonal relationship and observational skills. The ability to interact with individuals, collect information, and mentally process observations is a skill difficult to teach, but influential in determining the degree of success that an auditor will have.

Although the auditor need not be a member of the management team, he or she must be capable of exercising basic managerial and organizational skills if acting as the lead or sole auditor. If acting as lead auditor, the ability to coordinate and exhibit leadership qualities is essential. The auditor must have a basic knowledge of any system standard with which the company is seeking to comply without necessarily "being an expert". The auditor must be capable of acquiring an in-depth understanding of the company's EMS procedures and policy, since it is against these he or she is expected to examine the activities being audited. The auditor should be familiar with the regulatory requirements and industry or business practices.

The auditor must be capable of communicating clearly both orally and in writing. This requires an ability to be concise and accurate, to be able to modify the approach and questions to be compatible with the person being interviewed, and to be a good listener.

Diplomacy is an essential characteristic of the auditor, which must be balanced by an ability to be assertive if the situation demands it. Audits should not involve constant arguments, although occasional differences of opinion are inevitable and must be dealt with firmly but fairly. The good auditor should be able to foresee problems and plan accordingly. These attributes, combined with an ability to make logical decisions and exercise sound judgement, provide a good basis for conduct of audits without undue aggravation.

The auditor must be able to follow audit trails to their logical conclusion, i.e., analytical abilities combined with perseverance are essential if the audit is to be searching and not superficial. Patience and self discipline are also important in this respect.

Auditors must be observant and not liable to distractions. They must be able to assess facts without speculation and reach consistent decisions.

Conducting the Audit

Roles and Responsibilities

Now that the audit plan is prepared, the team assigned, and working documents defined, it's time to execute the audit. Simply, this means collecting the information, or evidence which will be compared to the criteria to assess the degree of conformance to planned arrangements.

In order to implement the audit plan effectively and perform the audit, all individuals need to understand and accept their roles and responsibilities. Although these can vary, ISO 14011 provides a listing of these various responsibilities, as illustrated below. Note that ISO 14011 describes not only the functions of the auditors, but also of the client and auditee. The audit is a team effort, requiring two-way cooperation. Such openness and cooperation results in a non-adversarial situation. Recall that the goal of an EMS audit is to assess the state of the EMS in order to encourage corrections and improvements, and not to punish individuals.

Lead Auditor

The lead auditor is responsible for ensuring the efficient and effective conduct and completion of the audit within the audit scope and plan approved by the client.

In addition, responsibilities and activities of the lead auditor should cover:

- consulting with the client and the auditee, if appropriate, in determining the criteria and scope of the audit;
- obtaining relevant background information necessary to meet the objectives of the audit, such as details of the auditee's activities, products, services, site and immediate surroundings, and details of previous audits;
- determining whether the requirements for an environmental audit as given in ISO 14010 have been met;
- forming the audit team giving consideration to potential conflicts of interest, and agreeing on its composition with the client;
- directing the activities of the audit team in accordance with the guidelines of ISO 14010 and this International Standard;
- preparing the audit plan with appropriate consultation with the client, auditee and audit team members;
- communicating the final audit plan to the audit team, auditee and client;
- coordinating the preparation of working documents and detailed procedures, and briefing the audit team;
- seeking to resolve any problems that arise during the audit;
- recognizing when audit objectives become unattainable and reporting the reasons to the client and the auditee;
- representing the audit team in discussions with the auditee, prior to, during and after the audit;
- notifying the auditee without delay, of audit findings of critical nonconformities;
- reporting to the client on the audit clearly and conclusively within the time agreed with in the audit plan;
- making recommendations for improvements to the EMS, if agreed in the scope of the audit.

Auditor
Auditor responsibilities and activities should cover:

- following the directions of and supporting the lead auditor;
- planning and carrying out the assigned task objectively, effectively and efficiently within the scope of the audit;
- collecting and analyzing relevant and sufficient audit evidence to determine audit findings and reach audit conclusions regarding the EMS;
- preparing working documents under the direction of the lead auditor;
- documenting individual audit findings;
- safeguarding documents pertaining to the audit and returning such documents as required;
- assisting in writing the audit report.

Audit Team
The process for selecting audit team members should ensure that the audit team possesses the overall experience and expertise needed to conduct the audit. Consideration should be given to:

- qualifications as given, for example, in ISO 14012;
- the type of organization, processes, activities or functions being audited;
- the number language skills and expertise of the individual audit team members;
- any potential conflict of interest between the audit team members and the auditee;
- requirements of clients, and certification and accreditation bodies.

The audit team may also include technical experts and auditors-in-training that are acceptable to the client, auditee and lead auditor.

Client
Client responsibilities and activities should cover:

- determining the need for the audit;
- contacting the auditee to obtain its full cooperation and initiating the process;
- defining the objectives of the audit;
- selecting the lead auditor or auditing organization and, if appropriate, approving the composition of the audit team;
- providing appropriate authority and resources to enable the audit to be conducted;
- consulting with the lead auditor to determine the scope of the audit;
- approving the EMS audit criteria;
- approving the audit plan;
- receiving the audit report and determining its distribution.

Auditee
The responsibilities and activities of the auditee should cover:

- informing employees about the objectives and scope of the audit as necessary;

- providing the facilities needed for the audit team in order to ensure an effective and efficient audit process;
- appointing responsible and competent staff to accompany members of the audit team, to act as guides to the site and to ensure that the audit team is aware of health, safety and other appropriate requirements;
- providing access to the facilities, personnel, relevant information and records as requested by the auditors;
- cooperating with the audit team to permit the audit objectives to be achieved;
- receiving a copy of the audit report unless specifically excluded by the client.

For most types of system audits, the pattern of audit performance is similar, in that it tends to include the following stages:

- Opening meeting – to explain the audit process and set the scene
- Examination and evaluation – fact finding through interrogation of the system and analysis of findings
- Reporting of deficiencies – presentation of corroborated facts
- Closing meeting – to advise the auditee of findings and what happens next

Since there is no good reason why internal audits should not be conducted on the same basis, the requirements relating to each of these stages is considered in turn.

The Opening Meeting

Even in circumstances where the auditor and auditee are well known to each other and relationships are normally very informal, it is still advisable to commence the internal audit with an opening meeting that covers certain specific topics. In circumstances where auditee(s) and auditor(s) are not known to each other, e.g., in a large company, or where audits are conducted on a corporate basis, such a meeting is essential. Records of this meeting need not be kept, although the auditor should note who is in attendance, since this information may be required for any audit report subsequently produced.

Irrespective of the formality or otherwise of the meeting, there are certain topics that should always be addressed at any opening meeting.

Introductions

In circumstances where the audit team is made up of several individuals, it is likely that a number of representatives of the department being audited will attend the opening meeting. This presents the opportunity to complete introductions and to begin to establish a working relationship with the auditees.

Scope of Audit and Program

Although the scope and audit itinerary should have already been agreed upon as part of the audit preliminaries, these should be re-confirmed at the opening meeting. In particular, the suitability of the audit schedules should be discussed in case unforeseen circumstances have resulted in there being problems with the original planned itinerary.

Method of Working and Reporting

The method of working and reporting should be summarized. The team lead should outline who is likely to be involved in the audit and ensure that arrangements have been made for a departmental representative to accompany the auditors. Obviously in those circumstances where the area being audited is small with few people employed in the area, the requirement for guides or escorts may be superfluous. Where a standardized format of reporting such as non-conformance notes is being adopted the team leader should describe how and in what circumstances these are originated.

Closing Meeting

Provisional arrangements for a closing meeting should be agreed with respect to both its timing and who should attend.

Executing the Audit

Collecting Evidence

Having established with the auditee and client the scope of the audit, now is the time to undertake an initial review of the related documentation, which will normally consist of:

- The EMS manual and the procedures applicable to the area being audited
- Regulatory documents and specifications that typically apply in the area being audited
- The findings of the last audit of the area and any available audit checklists relating to that area
- Any records of corrective action analysis relating to that area

The examination of the EMS manual and procedures undertaken at this early stage is a general review rather than an in-depth study essential for checklist compilation. At this stage the auditor should confirm the adequacy of the proposed scope, e.g., if a manager has provided him with an audit schedule which references various procedures but does not include one which the auditor considers essential to the operations in the area being audited. The auditor, in undertaking this general review, should also consider how much time is necessary to prepare the required checklists and to perform the audit, and confirm that this is compatible with the actual time available. Lastly, the auditor must satisfy himself that the business systems and/or technology involved in the area being audited are not so unfamiliar to him that they undermine his ability to conduct the audit. Normally, by this stage, the auditor would have undergone some training in relation to implementation of the internal audit procedure, and would already be conversant with its requirements. Nevertheless, it would still be appropriate for the auditor to review the document to ensure understanding of all its requirements and to identify all changes to the procedure since his last involvement in the audit process.

The foundation of a good audit is effective evidence gathering. The ultimate interpretation of the data to develop findings will only be as good as the raw data. The auditing planning process

described above was in part intended to identify the criteria and decide what information must be collected to verify conformance. This leads to the conclusion that the auditor must be aware of not only what the requirement is, but what type of information will be appropriate to verify conformance. In the sections below are general comments on evidence gathering, followed by a clause by clause discussion of ISO 14001, Attachment A. The discussion will not only address what the standard requires, but what would be appropriate information to review to gather evidence. First however, it is appropriate to make general comments on auditing.

Orienting Yourself to Audit

To be most effective, the auditor should be somewhat familiar with the specific area they will be auditing. This familiarization goes into more depth than the audit plan. For example, proper preparation will include knowing an area's significant aspects, objectives and targets, monitoring and measurement needs, and supporting documentation. Documentation can include reference documents, work instructions, procedures, records, and calibration procedures.

Secondly, the auditor should arrange for a brief visual reconnaissance, or walkthrough of the area. This allows the auditor to relate what the procedures say should be happening to what actually occurs. In addition, the auditor can note conditions that verify or contradict planned arrangements. The key is that an EMS audit is not a documentation exercise. Having the appropriate documentation is only part of the story. The organization must also have properly implemented and maintained the processes.

This constant observation is part of the process of developing "auditor awareness", an essential requirement for effective and thorough audits. The auditor must always be conscious of what is happening around him or her, whether it is during the visit to a department or between departments. The auditor must be alert and prepared to note throwaway comments or visual clues which will make the subsequent sampling more effective, e.g., general untidiness and bad housekeeping in an assembly area may suggest that waste handling may be a potential problem area.

This awareness is something that every auditor has to develop and some find it easier than others. It is a skill that is developed with experience and maintained through regular usage rather than one that can be taught.

The concept of verifying that the organization "does what it says it will do" is rooted in ISO 14001's use of the term "establish and maintain". In regard to required procedures, ISO 14001 states "the organization shall establish and maintain a procedure to…". This goes beyond preparing and documenting a procedure. It also means integrating the procedure into site operations, conducting related training, and periodically ensuring that the procedure works, is followed, and is improved upon when there is a problem. The auditor in turn must verify this degree of implementation.

Time Management – Structuring the Visit

It is often assumed that the main problem the auditor will face is understanding the workings of another department or area and finding the non-conformances. Although a good basic understanding of the EMS is necessary, inexperienced auditors initially tend to find the

management of time during the assessment a more significant area of concern; e.g., "How was I supposed to review all these activities in the two hours allocated and what shall I do about the other two departments I should also have visited this morning?"

One method that helps to minimize this problem is for the auditor to allocate the time available between the various activities being undertaken in that department. It is also useful to try and identify what assessment techniques are likely to be most productive and what kind of sampling would be the most appropriate.

Finally, in attempting to structure the visit to assist time management, the assessor should look for a logical route or path he can follow. This may be following the flow of information or material through the area, identifying the inputs, the processing stages and the outputs. Having identified the route, the auditor tries to control deviations from it so that sampling and discussions of the irrelevant are minimized; e.g., the purchasing manager may be very enthusiastic about explaining and demonstrating the intricacies of the contractor selection systems, but can spending an hour reviewing the aspect be justified?

The Use of Checklists

Earlier, when preparation for the audit was discussed, great emphasis was placed upon the preparation of checklists. These checklists should be kept available throughout the audit. Ideally, they should not be followed blindly, but should be used as an aide to check that all the topics relevant to the area have been examined. In some instances, it may be beneficial to use spaces incorporated into the checklist to record information gathered during the audit. Frequently, internal audit procedures require that the checklist, completed in this way, be retained to provide objective evidence of effective implementation.

This use of checklists, when combined with a well-structured approach, helps ensure all relevant topics are reviewed in the time available and that the audited department is left with the impression of a well-conducted, thorough audit.

Interviewing

It is ironic that probably the most sensitive part of auditing is the most difficult to teach, and is more an acquired skill. Interviewing is essentially the technique of gathering information from another individual by asking a series of questions. This may sound easy, but there are varying styles of questions that will prompt different types of answers. For example, closed questions (i.e., yes - no answers) will not yield details or explanations. It is not feasible to assess how well someone understands a concept by using closed questions. On the other hand, there is a time for closed questions, usually when the auditor wishes to verify a point or time is short. Keep in mind also that the auditor can ask additional clarifying questions to elaborate on a point.

Other types of questions, such as antagonistic or leading are not recommended. Also, keep in mind that silence, allowing the interviewee to think, is also a valid technique of obtaining information. In general, interviews should be characterized by structured, thoughtful questions, putting the auditee at ease, explaining what is required, listening to the response, and avoiding personal judgement.

What types of questions are typically asked during ISO 14001 EMS audits? There are a few basic questions that are nearly always asked, at least to begin discussions. It should be noted that interviews are situation-specific, and many other clarifying questions may follow those listed below. However, either to create a checklist, or in lieu of a checklist, the following are a good rule of thumb. You will note two sets of questions. The first set represents elements that all employees should be able to answer, and can be asked of anyone within the EMS. The next set is more specific questions, applicable to individuals involved with critical functions, as defined by ISO 14001.

First Set

- Are you familiar with the policy?
- Are you familiar with the EMS program?
- What do you do in case of a procedural nonconformance?
- What do you do in case of an emergency?
- What kind of training have you received?
- How do you communicate environmental concerns or ideas?
- What do you do if you receive environmental-related communication from external parties?

Second Set

- What are the significant aspects and impacts associated with your function?
- How do you know what to do? (Ask for procedures and operating criteria).
- What specific training have you received?
- Are there any objectives and targets associated with your function?
- Are you responsible for any monitoring and measurement activities?
- What records do you keep?
- (Any other specific questions prompted by answers to 1-6 and/or specific circumstances)?

Typical Interviewees

- Plant management
- Management representatives
- Department managers
- Document control and record departments
- Research and development
- Engineering
- Operations employees (plant, administration)
- Human resources and training
- Contractor management and purchasing
- Security

Reviewing Documentation

The Documented EMS System

We have already defined the EMS system and it follows that the documented EMS system is the formal recording of the policies, procedures, organization structures, responsibilities, etc. in

some form or another. The most common of these is an EMS manual with supporting environmental or departmental procedures and work instructions. Listed below are many of the reasons often quoted for having a documented system:

- It is a prerequisite for an approved or certified system to ISO 14001
- It is a training aid that enables people to transfer to new jobs
- It is a means of managing and facilitating change
- It eliminates obvious excuses such as "nobody told me"
- It brings consistency to routine activities and helps ensure best practices
- It is a marketing tool

Some of these are obviously more valid than others.

During an EMS audit, the auditor will be reviewing a wide variety of documentation. Documents will vary from high-level management policies and procedures to specific records. In general, the documentation review is part of the overall evidence, gathering phase. More specifically, the auditor is looking for the following:

- Does your documented system respond to the standard?
- Do the procedures describe what's happening?
- Is the documentation controlled?
- Are all employees informed?
- Are the procedures followed by everyone all the time?
- Is there objective evidence that the procedures are being followed?

It is easy to quickly become overwhelmed by the sheer volume of documents that may exist. Once again, the auditor must remind him or herself that an audit is a statistical sampling in an instant of time of the EMS. There is no expectation that every document be reviewed. Part of the art of auditing is knowing how to select a representative sampling. Although there is much latitude with sample size, one should definitely not continue auditing until they find a nonconformance. Unless there is an indication of a problem within the pre-agreed upon sample size, the audit is complete when that sampling is done, even if no nonconformances were noted. The nature and size of the documentation sample size is determined during the audit planning.

Listed below are typical documents reviewed when auditing against various ISO 14001 elements. Obviously, the title and format will vary from site to site. However, the following list includes typical document types in addition to required procedures, that will facilitate verifying conformance to the specific ISO 14001 element.

Aspects Procedure
- Aspects list
- Significant determination information
- Significant aspects/impacts list

Legal and Other Requirements
- Listings of applicable legal and other requirements

- Appropriate instructions for compliance
- Permits, manifests, etc.

Objectives and Targets and Environmental Management Programs
- Minutes/notes of objectives and target development
- List of objectives and targets
- Related action plans

Structure and Responsibility
- Job descriptions
- Organizational charts

Training Awareness and Competence
- Training needs listings/matrix
- Manuals, course materials
- Sign-in sheets
- Test records, certificate copies, etc.

Communication
- Specific work instructions
- Records of communication and correspondence

Document Control
- Documents, procedures, and manuals

Operational Control
- Critical operations/aspects listing/matrix
- Specific work instructions
- Environmental issues and instructions within other work instructions
- Contractor policies, work orders, etc.
- Supplier requirements

Emergency Preparedness and Response
- Emergency plans and protocols
- Practice and drill results

Monitoring and Measurement
- Objectives and target action plans
- Function-specific procedures and work instructions
- Records of monitoring and measurement data collected, including calibration records

Nonconformance, Corrective and Preventive Action
- Corrective action reports
- Evidence of discussion and follow-up (meeting notes, etc.)

Records
- Records

EMS Audit
- Specific audit procedures, checklists, forms, schedule
- EMS audit notes and working documents
- EMS audit reports

Management Review
- Meeting agendas and attendance
- Meeting minutes and action items
- Evidence of follow-up actions, reports, etc.

Completing the Audit

Once the evidence has been collected, the audit team meets to agree on the findings. Recall that findings are the comparison of evidence to criteria to ascertain if the EMS is in conformance to planned arrangements. Therefore, findings will be either that the EMS is or is not in conformance.

Note that with EMS auditing using ISO 14001, 14010, and 14011 as guides, the auditor is not expected to draw conclusions or make recommendations regarding corrective action on non-conformances. However, if the EMS's corrective action process under 14001 Section 4.5.2 includes the auditors drawing conclusions and making recommendations then it would be acceptable. This point about the role of the auditor is very important with ISO 14001 because the standard has separated the auditing (4.5.4), from interpretation and corrective action (4.5.2), which are in turn separated from continual improvement which is under management review (4.6). An organization's EMS may mix these roles and functions at their discretion; however, the mixing is not required or expected by ISO 14001.

It is important that the auditor records all the objective evidence available, both of deficiencies and of conformance with the procedures. This enables the findings to be reviewed, subsequently with the other members of the team. If a deficiency has been observed, make sure that the escort or guide and/or department representative agrees at least to the facts of what has been observed. It is not usually appropriate at this stage to try and reach agreement with the guide on the interpretation of these facts.

Ideally, evaluation of findings should be carried out after completion of the interviews and examination rather than on the spur of the moment. This allows cross checking against the detailed working of the procedures and against the findings of other team members. If a non-conformance is to be written, then there must be objective evidence that the requirements of the EMS and/or the company procedures are not being satisfied.

Closing Meeting

It is very important that the audit team agree on findings prior to sharing them with the auditee in order to avoid unnecessary disagreement and confusion. Once the audit team agrees on the findings, a closing meeting is held with the auditee. Whether the report, described below, is

prepared before or after the closing meeting is a function of the organization's own audit plan and procedures. The main purpose of this meeting is to come to agreement on findings before closing the audit.

At the closing meeting the team leader (or sole auditor) must present any findings backed up where necessary by supporting evidence. It is essential that the audited department acknowledge any non-conformances that are being written even if they do not accept the auditor's interpretation of the facts. It is in this respect that the use of non-conformance notes is a distinct advantage. These can be presented at the closing meeting and the departmental representative can study them before countersigning to acknowledge they have been issued.

It is important that this opportunity is taken to clear up any misunderstandings and to explain any limitations on the performance of the audit. A little extra time spent at this stage to ensure that the audit is perceived as a constructive exercise with everyone being thanked for their cooperation will make the task of the next person to audit the department that little bit easier.

The Audit Report

Once agreement has been reached, both among the audit team and with the auditee, it is time to prepare the audit report. Note that ISO 14001 does not require a documented audit report. However, it is very difficult to verify that the auditing requirement has been satisfied without a supporting record, which is typically a documented audit report.

The audit report is prepared by the lead auditor, although he or she may have other team members prepare portions. The content of the audit report is determined by the audit plan and the organization's EMS audit procedures. Having completed the examination phase and evaluated the collected data observations, etc., the assessor is faced with the problem of documenting any deficiencies he or she may have found. There are many different methods of documenting deficiencies, ranging from inclusion in the body of the audit report to producing non-conformance notes or corrective action requests. Irrespective of which method is adopted, the basic principles to be followed are similar. ISO 14001 does not dictate what should be in the report, and ISO 14011 only suggests contents. ISO 14011 indicates that at a minimum, the findings need to be in the report. The findings appear as a statement that the EMS is or is not in conformance with the criteria, and states what the criteria and supporting evidence are for the statement. ISO 14011 also lists other optional items to include such as:

- the identification of the organization audited and of the client;
- the agreed objectives, scope and plan of the audit;
- the agreed criteria, including a list of reference documents against which the audit was conducted;
- the period covered by the audit and the date(s) the audit was conducted;
- the identification of the auditee's representatives participating in the audit;
- the identification of the audit team members;
- a statement of the confidential nature of the contents;
- the distribution list for the audit report;
- a summary of the audit process including any obstacles encountered;
- audit conclusions such as:

- EMS conformance to the EMS audit criteria;
- whether the system is properly implemented and maintained;
- whether the internal management review process is able to ensure the continuing suitability and effectiveness of the EMS.

The format of such reports can vary considerably and may range from completion of a simple pro-forma to expansive documents describing all aspects of the audit performance and findings. However, irrespective of the style and format, the audit report should cover the key topics already identified as being essential for discussion and presentation at the opening and closing meetings. In constructing the report two specific objectives must be borne in mind.

(1) The report has to provide objective evidence of effective implementation of the audit procedure.

(2) The report has to allow for corrective action to be addressed and that the follow-up requirements can be established and initiated.

Where there are non-conformances, there are various options regarding deficiency reporting.

One option is to describe each of the deficiencies identified in the main body of the report along with any supporting evidence, and if requested, corresponding recommendations. Although this may result in a comprehensive report of audit findings, it has the disadvantage that the individual deficiencies are often difficult to locate, particularly when trying to monitor follow-up actions. This can be partly overcome by writing separate corrective action requests for this purpose.

A useful alternative that is less time consuming is to restrict the description of deficiencies in the body of the report to general summaries only. Details of deficiencies can then be included in non-conformance notes. Ideally, the non-conformance note should also provide space for agreeing corrective actions and recording subsequent monitoring of that corrective action. In this manner, any duplication of effort with respect to audit reporting is minimized, thus producing a more easily managed system. It is important that however non-conformances are handled, it be constant with the EMS correction action process (ISO 14001, Section 4.5.2).

Before considering the steps in preparing the non-conformance note we must be clear about their purpose.

- To convey to the auditee the findings in a clear and accurate manner so that they know what to do next.

- To advise the EMS personnel or other auditors what you have found so that he can follow it up.

- To present a record that can be reviewed remotely from the scene and be understood.

All non-conformance notes must contain certain basic information.

- The physical area being audited.

    - Failure to record this often results in great confusion 3 to 6 months later when a follow-up visit is carried out to review corrective action implementation.

- The specific clause(s) of the assessment standard(s) against which the non-conformance is issued.

    - If the auditor is unable to readily identify the applicable section of the EMS manual or the procedure against which to issue the non-conformance, he must question whether or not he is justified in writing the non-conformance. It is good practice to re-read the requirements of the relevant system documentation to confirm that these can be interpreted as supporting the non-conformance. If they do not, then the non-conformance cannot be issued.

- The detailed nature of the non-conformance including the specific identity of documents/procedures/material, etc.

Earlier we considered the requirements for recording observations during the assessment and emphasized the need for them to be factual and to contain objective evidence that the system requirements were not being satisfied. Although this appears to be fairly straightforward, in practice this is often not the case. It is not unusual for inexperienced auditors to identify a deficiency only to fail to communicate the findings in a manner that facilitates implementation of the appropriate corrective action. The non-conformance note, while not being over long, must contain sufficient information to enable a person not present during the audit to be able to gauge the seriousness or otherwise of the observation.

The use of descriptive terms such as extensive, several, isolated, etc… is essential to communicate accurately the nature and extent of the deficiency, but care must be taken to ensure that their use does not result in a lack of objectivity; e.g., the term extensive can only be included if there is irrefutable evidence to justify its use. The auditor must also take care to ensure that the description is not only accurate but it is also fair, e.g., a statement that 50% of manifests were incorrectly signed may be accurate but is hardly fair if only two manifests were sampled.

Having documented the nature of the deficiency, some audit systems require the auditor to grade the deficiency or non-conformance, e.g., major and minor. It is not intended to discuss grading systems in detail since there are many potential variations that companies may wish to adopt. Irrespective of what system is being adopted, the auditor must ensure that the grading given and the text describing the deficiency are completely compatible.

Distribution of the audit report and nature of documentation are decided between the auditor and auditee, although this too is usually addressed in the audit plan. An audit is considered successful when the auditee and client feel that they have useful, constructive feedback that allows them to improve the system.

ATTACHMENT

REQUIREMENTS OF ISO 14001

In order to effectively audit an ISO 14001 EMS, it is important to have an understanding of the standard's requirements. A quick review of the standard shows that it is structured following the Plan, Do, Check, Improve philosophy of the Total Quality Management movement, as follows:

PLAN
4.2 Policy
4.3 Planning

DO
4.4 Implementation and Operation

CHECK
4.5 Checking and Corrective Action

IMPROVE
4.6 Management Review

Within these five elements are 17 sub-elements stating the various requirements.

4.2 Policy

4.3 Planning
- 4.3.1 Environmental Aspects
- 4.3.2 Legal and Other Requirements
- 4.3.3 Objectives and Targets
- 4.4.4 Environmental Management Programs

4.4 Implementation and Operation
- 4.4.1 Structure and Responsibility
- 4.4.2 Training Awareness and Competence
- 4.4.3 Communications
- 4.4.4 EMS Documentation
- 4.4.5 Document Control
- 4.4.6 Operation Control
- 4.4.7 Emergency Planning and Response

4.5 Checking and Corrective Action

- 4.5.1 Monitoring and Measurement
- 4.5.2 Nonconformance, Corrective, and Preventive Action
- 4.5.3 Records
- 4.5.4 EMS Audit

4.6 Management Review

Within these 17 sub-elements are all of the requirements, or "shalls", necessary to conform to ISO 14001. There is no substitute for reading the standard in terms of recognizing the requirements. As a matter of fact, no auditor should embark on an audit without having easily available the criteria to which they are doing the audit. However, below we briefly summarize the key points of the sub-elements. This summary is not intended to be a replacement for ISO 14001, and should not be used exclusively as such during an audit.

Detailed Section by Section Summary

4.2 Policy

ISO 14001 requires that the organization have a policy statement to drive the EMS. These tend to be short, one page or less documents, and simply affirm the commitments. There is no expectation that specific details be noted in the policy. For example, the commitment to pollution prevention can simply be stated saying, "we are committed to prevention of pollution". The policy must be clearly endorsed by top management and be available to the public and employees. Although the availability to the public can be rather passive; i.e. "is here if they want it", there is an expectation that the employee awareness is more proactive. Section 4.2 of ISO 14001 lists the other requirements of the policy.

4.3.1 Environmental Aspects

This element requires a procedure that not only identifies the aspects and impacts, but also provides for determination of significance, and keeping the information up to date. ISO 14001 does not prescribe what aspects should be significant, or even how to determine significance. However, it is expected the organization will develop a consistent and verifiable process to do so.

4.3.2 Legal and Other Requirements

This is a requirement for a procedure that explains how the organization obtains information regarding its legal and other requirements, and makes that information known to key functions. This is not the assessment or compliance audit requirement, but rather a more up front determination of requirements.

4.3.3 Objectives and Targets

There is no requirement for a procedure in this element, only that objectives and targets be documented. It does require that certain items be considered in developing the objectives, such as legal requirements and prevention of pollution. It is sometimes easiest to develop a procedure anyway for this element to be able to verify these considerations were made.

4.3.4 Environmental Management Programs (EMP)

EMPs are the detailed plans and programs explaining how the objectives and targets will be accomplished. These EMPs usually note responsible personnel, milestones and dates, and measurements of success. Noting monitoring and measurement parameters directly in the EMP facilitates conforming to 4.5.1 on Monitoring and Measurement discussed below.

4.4.1 Structure and Responsibility

ISO 14001 requires that the relevant management and accountability structure be defined in this element. This usually takes the form of an organizational chart. Also, the organization must denote the Management Representative who is responsible to oversee the EMS and report to management on its operation.

4.4.2 Training Awareness and Competence

The key point in this element is that personnel must receive applicable training regarding the EMS. Specific requirements are itemized in ISO 14001, and include general, company-wide items such as knowing the policy, to more function-specific training on aspects and emergency response. An organization usually responds to this element with a training matrix, cross-referencing to training materials and records.

4.4.3 Communications

Procedures are required for both internal and external communications. Note that ISO 14001 only requires procedures, and allows the organization to decide for itself the degree of openness and disclosure of information. Whatever the decision in terms of disclosure, that decision process must be recorded.

4.4.4 EMS Documentation

This requirement is simply that the organization has documented the system in either electronic or paper form such that it addresses the elements of the standard and provides direction to related documentation. Not all ISO 14001-required procedures need to be documented, as long as the system requirements can be verified.

4.4.5 Document Control.

Procedures are required to control documents, such as system procedures and work instructions, and to ensure that current versions are distributed and obsolete versions are removed from the system.

4.4.6 Operational Control

This element is the one which connects the EMS with the organization as a whole. Here, the critical functions related to significant aspects and objectives and targets are identified and procedures and work instructions created to ensure proper execution of activities. Requirements for communicating applicable system requirements to contractors are also addressed.

4.4.7 Emergency Planning and Response

Although typically addressed through conventional emergency response plans, this element also requires that a process exist for identifying the potential emergencies, in addition to planning and mitigating them. A linkage to the aspects analysis, where impacts are assessed, is appropriate. Emergency incidents include those that may not be regulated, but may still cause significant impact as defined by the organization.

4.5.1 Monitoring and Measurement

Procedures are required describing how the organization will monitor and measure key parameters of operations. These parameters relate to the significant aspects, objectives and targets and legal and regulatory compliance. In order to properly manage the system, measurements must be taken of its performance to provide data for action. Responses to this element usually cross reference to many other specific procedures and work instructions describing measurement and equipment calibration. It is in this element that we find the requirement for what is commonly referred to as a compliance audit.

4.5.2 Nonconformance, Corrective, and Preventive Action

This element requires procedures for acting on nonconformances identified in the system, including corrective and preventive action. Nonconformances may be identified through audits, monitoring and measurement, and communications. The intent is to correct the system flaws. Typically, Corrective Action Report (CAR) forms are the norm, noting the nonconformance, the suggested fix, and closure of the action when completed. Note that this requirement does not imply in any way that the party identifying the nonconformance must be the one to suggest the fix. Instead, it is expected that the system provide for the information to be routed to the most appropriate party to address the concern.

4.5.3 Records

Records are expected to exist to serve as verification of the system operating. For example, records include audit reports and training records. Unlike controlled documents, records are "once and done" documents, resulting from the execution of some process or procedure. Procedures in this element are required for the maintenance of records.

4.5.4 EMS Audits

ISO 14001 requires that the system provide for internal audits. This procedures(s) will include methodologies, schedules, and processes to conduct the audits. Interestingly, the EMS audit will in essence, audit the audit process itself!

4.6 Management Review

This element requires that periodically, top management will review the EMS to ensure it is operating as planned. If not, resources must be provided for corrective action. For areas where there are no problems, the expectation is that with time, management will provide for improvement programs. Usually there is no detailed procedure for this element, although records of agendas, attendance, and agreed upon action items are maintained as verification.