ENVIRONMENTAL AUDITING GUIDE

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1. INTRODUCTION

This document is a practical guide to auditing of environmental management systems and practices in the industrial gases industry.

2. SCOPE AND PURPOSE

2.1. Scope

This document provides guidance for auditing environmental management systems and practices in the Industrial Gas industry. This document does not give specific advice on health and safety issues, which must be taken into account before undertaking any activity. On these issues the relevant MEGA documents, and/or national legislation should be consulted for advice.

2.2. Purpose

This document is intended as a guide to environmental management systems and site auditing for industrial gas facility managers, internal auditors, environmental specialists and technical managers.

This document provides an overview of the environmental auditing process that is an important element of a company's environmental management system and a necessary part of any certified environmental management system.

The Appendices to this document provide guidance in the form of checklists to assist in the practical conduct of a site environmental audit and also a management systems audit.

3. DEFINITIONS

3.1. Environmental Audit

The environmental audit is a management tool consisting of a systematic, documented, periodic and objective evaluation of environmental performance, management systems and equipment with the aim of firstly, facilitating management control of environmental practices and secondly, assessing compliance with an operation's or activity's environmental policies, including meeting regulatory requirements. Examples include:
- internal auditing of systems and procedures for measuring, recording and reporting performance data;
- independent validation of systems and procedures for measuring, recording, and reporting performance data;
- Independent evaluations and commentaries by external experts regarding an organisation's economic, environmental, and social performance and/or management processes.

3.2. Environmental Reporting

Reporting is a management tool which assists the monitoring and assessment of the performance of a process or system.

The quality, usefulness, and credibility of reporting can be enhanced by verification and validation. Independent verification, for example it provides an additional level of assurance in regard to the reliability and completeness of an external Environmental Report and enhances the quality, usefulness, and credibility of information used within the company and the underlying management systems and processes.

3.3. <u>Verification</u>

<u>Verification is the confirmation, through the provision of objective evidence, that specified requirements have been fulfilled.</u>

3.4. <u>Validation</u>

<u>Validation is the confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled.</u>

3.5. <u>Process</u>

A process is defined as "set of interrelated or interacting activities which transforms inputs into outputs".

Plan
- <u>Establish the objectives.</u>
- Select the issue to receive attention (often based on priorities).
- Design a clear statement of purpose.
- <u>Define the processes necessary to deliver results in accordance with the environmental policy.</u>
- Then seek advice about expectations from the process; prioritise expectations, set performance measures, identify barriers to good performance, measure current performance, identify opportunities for improvement and develop solutions.

Do
Implement the process steps where practicable and seek the involvement of those affected by the change during the testing phase.

Check
<u>Monitor and measure processes, objectives, targets, legal and other requirements and report the results.</u>

Act
- <u>Take actions to continually improve performance of the environmental management system;</u>
- standardise the improvement;
- install the improvement;
- leverage the improvement into other areas of the organization

The process should be:
- documented and approved by senior management;
- communicated to relevant staff.

Accountability for implementation and review should be established; performance should be monitored and reported with appropriate adjustment to the process where appropriate.

4. ENVIRONMENTAL AUDITING

4.1.   Background

There is increasing need for companies to demonstrate good environmental management practice to a wide range of interested parties. ISO 14001 require that organisations have their environmental performance measured and verified.

Environmental auditing is a proactive management tool that is used to consciously identify environmental problems before they occur in order to take preventative measures. Environmental auditing is an internal management tool for use by an organization or activity in carrying out its environmental management responsibilities.

Auditing is a long-established tool commonly used to evaluate and monitor financial and production performance.

Auditing all or part of that system can measure the performance of a company's environmental management system.   The results of such audits can assist companies in demonstrating their commitment to continuously improving their environmental performance. Full commitment from senior company management is essential if the audit process is to be a success. This commitment requires an involvement and interest in the whole audit process.

4.2.   Use of this Guide

These general guidelines can be used as a guide for implementation of environmental audits for an organization or activity. The environmental audit is a voluntary action which can be undertaken by the manager of an organization or activity or by a third party and which serves as an instrument for managing and monitoring the environment.

A guidance checklist for conducting a site environmental audit is provided in **TD 17/16/E – Environment Audit Checklist – Section 1**, and a checklist for conducting a management systems audit is given in **Section 2, TD 17/16/E – Environment Audit Checklist – Section 2**. Several publications are also available which provide further helpful guidance on conducting an environmental audit.

4.3.   Why audit?

It is important to establish the purpose of the audit; this will help in deciding when to audit and what approach to use. An environmental audit can provide valuable information to help a company to meet the agreed standards of environmental performance (which should be defined in company policy) and stay ahead of the requirements placed on them by law.
The possible functions and benefits of an environmental audit are: Management

- Demonstrate a visible commitment to improving an organisation's environmental performance.
- Use as a basis for the development of environmental management policies or efforts to improve existing plans.

- Identify environmental risks, impacts and review of management controls and systems and associated liabilities, liabilities and risks from past and present activities of the site or
- surroundings and implementation of recommendations.
- Review process and plant operating procedures or activity's current environmental standards of operation and company environmental management procedures, including emergency response planning, monitoring and reporting systems and planning for future changes in Processes.
- Increasing actions undertaken or needing to be undertaken by an organization or activity to meet environmental goals such as sustainable development, Responsible Care®, recycling and efficient use of resources.

Financial

- Prevention of financial losses: through remediation or the closure of an organization or activity; government restrictions or negative publicity caused by bad management or monitoring of the environment.
- Fair assessment of financial implications of environmental issues, liabilities and impact of new regulations.
- Highlight where costs can be saved (e.g. through energy conservation or minimisation, improved use of raw materials, process changes, waste reduction, reuse and recycling etc)

Legal

- To measure and improve an organization's or activity's compliance with environmental legislation and regulations such as operating permits, air emission standards, effluent standards, waste management standards, transport regulations, etc,thus avoiding legal sanctions against an organization or activity or its management under prevailing laws and regulations.
- Provision of evidence of the implementation of environmental management in court if requested.

Training

- To facilitate the sharing of best environmental practices and increase in the awareness of the management and staff of an organization regarding environmental policies and responsibilities.
- Assessment of training, knowledge and awareness of employees.

Reporting

- Provision of an environmental audit report for use by an organization, or activity in dealings with environmental groups, government and the mass media.
- Provision of information required by insurance companies, financial institutions, shareholders and other stakeholders.

It is also important to recognize the limitations of the audit process when deciding to conduct an environmental audit. The following points may be helpful to remember in this respect:

- An audit should not be used as a chance to tell the audited unit how to do their job;
- It is not a technical investigation in itself (although can be used in support).
- It should not be used to provide a public statement of performance (although it may be used to back up and support any such statements made).

4.4.   Types of Audit

A different type of audit may be chosen based upon why the audit is being conducted. Three broad types of audit can be identified:

4.4.1. **Self Audit / Self-assessment**
Team members are selected from the staff of the <u>business, operating unit or department</u> to be audited

4.4.2. **Internal Audit**
Team members are selected from employees of the organisation, but not from the <u>business, operating unit or department</u> to be audited. In some circumstances it may, however, be of benefit to have a representative of the unit on the audit team. They should not be team leaders.

4.4.3. **External Audit**
Team members are drawn from outside the organisation -for example, consultants. The team may, however, be assisted by employees of the organisation such as <u>business, operating unit or</u> <u>department</u> manager acting as guide and advisor. This type of audit may be useful where third party benchmarking, certification and neutrality is required, or where company resources do not allow internal audits.

4.5.   Basic Principles of Auditing

4.5.1. **Basic Characteristics**
An environmental audit has the following characteristics;

- **Comprehensive Methods.** An environmental audit requires the use of detailed procedures and methodology. The environmental audit must be conducted using comprehensive protocols and fixed procedures to ensure collection of the required data and the documentation and verification of that information.

- **Evidence and Verification.** The concept of evidence and verification of environmental deficiencies is a main element in an environmental audit. The audit team must verify all procedures, collected data and information through direct field inspection.

- **Relevant Measures and Standards.** The standards and measures of environmental performance must be adjusted to be relevant to the organization or activity and the production process being audited. An audit is meaningless unless there are accepted standards against which performance can be compared.

- **Written Reports.** Reports should contain factual observations and reasoning, and the documentation of the processes. All findings should be presented clearly and accurately, based on valid and documented evidence.

4.6.   <u>The Keys to Success</u>

4.6.1.   **Support from Management**
The first step in implementing an environmental audit is obtaining management commitment. Implementation can be ineffective without the strong support of management. Moreover, the audit team should have the freedom to study potentially sensitive environmental problems.

4.6.2.   **Participation by All Parties**
A successful audit requires the commitment and cooperation of all members of the organization, since the assessment of environmental performance will cover all aspects of a wide variety of jobs.

4.6.3.   **Auditor Independence and Objectivity**
The environmental audit team should be independent of the organization or activities being audited. Without this independence the objectivity and the credibility of the audit would be cast in doubt. <u>Independent does not necessarily mean external to the organization. In many cases, particularly in</u> <u>smaller organizations, independence can be demonstrated by the freedom from responsibility for the</u> <u>activity being audited.</u>

4.6.4.   **Agreement on Procedures and Scope**
Prior to the audit there must be agreement between management and the audit team on the scope of the environmental audit to be carried out.   Success or failure of the audit can depend upon the commitment given to the entire process and to completing the actions that result from the audit report. Continuous improvement of a company's environmental management system becomes difficult to sustain without an effective audit programme. Senior management has a very important role to play in ensuring that full and visible commitment is given to this programme. The following are key points in this respect:

- Make a high visibility commitment to both the process and the follow up of environmental audits.
- Understand that auditing is only one element of the environmental management system. The other elements must not be overlooked.
- Give clear (written) direction to auditors to conduct audits.
- Free up adequate resources to conduct audits and provide adequate training to enable the audit team to do the best job possible.
- Expect and require a high level of cooperation and liaison between the audit team and the unit being audited.
- Demand high standards of auditing and reporting.
- Take every opportunity to personally follow up the results of an audit.
- Require status / progress reports of action plans.

4.7.   <u>Scope</u>

An environmental audit should be conducted in a manner that allows for the provision of information regarding:

4.7.1. **Background**

- The history of an organization, land or activity including information on the setting, previous environmental damage/spill at the site, environmental practices, monitoring records and known environmental issues from the site and neighbours including soil and underground water.
- Any changes in the environmental setting that have occurred since the establishment of the organization or activity up to the time of the last audit.
- The natural resources used as input, processing of materials and all finished products, energy, water, raw material use) and wastes including hazardous and toxic wastes.

4.7.2. **Compliance with Environmental Management Policy & Objectives**

- Environmental risk assessment including compliance to regulations, soil; underground water, solids wastes, emissions, waste waters, hazardous products & nuisances.
- Emergency response plans and procedures.
- Waste minimization and environmental pollution control plans.
- The utilization of energy, water and other natural resources.
- Recycling programs and product life cycle considerations.

4.7.3. **Training**

- Plans for management and employees training (fundamental environmental concerns, regulations, permits, and policy), objectives and environmental awareness.

4.7.4. **Practices**

- The handling and storage of chemicals, hazardous and toxic materials and any potential environmental hazards.
- Waste management control systems, transportation route for materials and waste disposal, including facilities to minimize waste disposal impacts and accidents.
- Measure of the effectiveness of pollution control equipment as indicated in inspection reports, maintenance logs, emission test results and routine analytical reports.
- Records regarding waste disposal licenses and compliance with laws, regulations and environmental quality standards.
- Environmental practices of contractors and sub contractors.

4.8. **When to audit?**

The need to conduct an audit, and the timing and frequency of such an audit, should be determined by considering the following factors:

- Hazard and risk ranking.
- History of past incidents.
- Past performance against standards (results of previous audits, incidents on site) .
- Environmental associated costs (e.g. energy, insurance, waste disposal).

- Legal requirements.
- Availability of resources.
- Review before acquisition or sale of sites.
- Changes in process, organisation or activity.
- 3rd Party certification requirements.

4.9.   The Audit Process

An audit may range in complexity from a simple inspection of a plant operation against environmental requirements conducted by a local management team over a period of a few hours, through to a comprehensive assessment of performance of a location's entire environmental management system.

4.9.1.   Introduction

Implementation of an environmental audit will depend on the type of audit being carried out, the type of organization or activity and the practices of the auditor.

4.9.2.   Pre-audit

Pre-audit activity forms an essential part of the environmental auditing procedure. Careful planning at this stage will help to ensure success of both the initial audit and any subsequent audits. Information required at this stage includes detailed information regarding activities carried at the site, the legal status of the facility including permits & monitoring data, management structure and the scope of the organization or activity to be audited. Pre-audit activities also include the selection of the audit protocol team and the financing for the audit program. At this stage the purpose and scope of the audit should have been agreed upon.

- Obtain management commitment.
- Agree audit scope, objectives and style.
- Communicate objectives.
- Choose audit team.
- Brief team.
- Issue pre-audit questionnaire.
- Gather the necessary information:
- List of operational permits
- Mapping of the site & surroundings including soil & underground waters
- Past & present activities of the site & surroundings
- Plant layout & processes
- Relevant regulations
- Environmental incidents on the site & surroundings: ex: spills
- Previous audit reports
- Site safety requirements
- Risks analysis
- Visits Interviews
- Sampling
- Other methods.

- Review feedback from questionnaire & prepare for audit (audit protocol).

4.9.3.   **Site Activities**

4.9.3.1.   Audit "kick-off" meeting on site /Preliminary Meeting

The first step in the audit is a meeting between the audit team and the management of the organization or activity to review the purpose of the audit, the procedure and the time schedule.

4.9.3.2.   Site Inspection

The initial site inspection should follow the preliminary meeting. The audit team will receive an overview of the organization and the operations and on this basis can then focus on specific areas or processes that require attention. In carrying out the site inspection, the audit team may discover matters which are relevant to the audit but which were not identified at the planning stage. Environmental audits should be conducted in accordance with a set procedure. The procedure consists of defined steps which must be followed by the auditor to ensure that there is consistency in the implementation of the audit and the reporting of results. There is a wide variety of protocols
depending upon the type of organization and environmental characteristics. Some common protocols used for an audit are:

- **Fill-In Forms**. The simplest form of an audit uses fill-in forms based on reports, which will be produced as an audit guide.
- **Check List.** This type of protocol is commonly used, providing a detailed listing of all issues to be covered.
- **Questionnaires.** Questionnaires are frequently used as an auditing protocol and the list of questionnaires shall be completely replied by the auditor. In general an auditor prepares a standardized format for conducting an audit compiling the final report.
- **Guidance.** Guideline protocols are the most common type of protocol. They provide specific instruction and guidelines to be used by the auditor, and aspects that should be investigated.
- **Photographs** - A picture speaks 1000 words. Use photographs to support findings and to highlight good practices; remember to obtain the permission of the site management and respect any safety requirements (e.g. use appropriate equipment in flammable zones etc).

4.9.3.3.   Data Collection

Data and information collected during the environmental audit will consist of the audit protocol, documentation provided by the owner of the organization or activity, auditor's notes and observation, the sampling and monitoring results, photos, plans, maps, diagrams, working papers and other related items. This information must be well documented to facilitate easy retrieval. The prime purpose of data collection is to support the audit findings and provide the basis for verification.

4.9.3.4.   Verification

A main principle of environmental auditing is that the information presented by the audit team shall be <u>supported on the basis of evidence</u>. Documentation must be produced by the audit team in support of all statements or have been verified under the direct supervision of the audit team. In the verification of the audit findings, the audit team must guarantee that the documents produced are all genuine and valid. The audit protocol should establish the level

of verification required or the audit team should specify this.

4.9.3.5.   Evaluation of the Findings

The audit findings should be evaluated against the objectives established for the audit, and the agreed protocol, to ensure that all issues and problems have been covered.   The supporting documentation should be carefully reviewed to ensure that proper backup and verification is available for all of the findings.

4.9.3.6.   Closing Meeting on site

On completion of the site investigations, the audit team should present their preliminary findings in a formal exit meeting.   This meeting will discuss any matters which have been resolved or for which information is unavailable.   The audit team shall provide a general review of the findings and indicate when the final report will be completed.   All documents collected during the audit should be returned to the management of the organization or activity.

4.9.4. Post Audit Actions

4.9.4.1.   Issue draft audit report to site management

The audit team should prepare a comprehensive written report on the results of the audit. The report should include presentation of an action plan for addressing the issues identified. The nature of this report will depend upon the complexity of the audit.   The report should state factual findings, particularly compliance with standards, policy and legal requirements where relevant. In addition the report should include recommendations for remedial or improvement actions.

4.9.4.2.   Revise and issue final report

It is important that an opportunity is given for the management of the unit being audited to see and comment upon a draft of the audit report before it is finalised to clarify points and correct inaccuracies. The final report is then issued and a follow up meeting is conducted if necessary.

4.9.4.3.   Action plan

An action plan should be developed from the report.   Many actions may be possible to complete quickly and with local resources. There may be some actions that require additional resources. It is essential to obtain the necessary high-level management commitment to progress these actions. There must also be a process to self-check against audit recommendations and action plan and report back the progress of the actions on a regular basis.

4.10. Confidentiality

Internal audit reports are the confidential property of the organization or activity that has been audited and often contain a disclaimer. However, the organization or activity may, at their discretion, submit the environmental audit reports to the authorities, the public or other organizations for the purpose of:
- Publicising their environmental management efforts.
- Responding to the requirements for performance rating of the business.
- Any other purposes as defined by the organization activity.

This confidentiality policy should not be interpreted as in any way limiting the following. The rights of authorities to:

- Verify the audit results;
- carry out routine or special inspections of an organization of activity;
- carry out investigations of an organizations or activity suspected of violations or non- compliance with laws and regulations;
- request specific information as the basis for any scheme for environmental performance ranking of an organization or activity;
- the responsibility of the organization or activity to provide environmental management and monitoring data as prescribed usually under regulations.

4.11. <u>Training of the Auditors</u>

To ensure that environmental audits are conducted in a reputable and professional manner, business activities and non-governmental organizations are recommended to establish and implement a code of ethics and certification of environmental auditors. The environmental auditor should have suitable education and professional experience to carry out their duties. The skills needed by environmental auditors include those in the areas of:

- Environmental auditing processes, procedures and techniques.
- Characteristics and analysis of management systems.
- Laws, regulations and environmental policies, environment health and safety protection systems and technology.
- Operation of facilities to be audited.
- Potential environmental impact and worker health and safety risks.

Auditors should also have training and demonstrated ability in areas needed to perform the audit including:

- Communication skills.
- Work scheduling and planning.
- Data analysis and finding.
- Audit report writing.

Environmental auditors should exercise due professional care in ensuring accuracy, consistency and objectivity in the performance of audits.

APPENDIX 1 - GLOSSARY

Environmental Accounting for Sustainable Development -An information tracking framework that (1) integrates internal (private) and external (societal) costs and benefits, and (2) supports evaluations of the short- and long-term consequences of activities and projects from environmental, social and economic perspectives. (*Source:* Commissioner of the Environment and Sustainable Development)

Better Practice A reference to 'better practice' is, in the main, influenced by the guidance provided by Standards and National or International organisations

Continual Improvement Process of enhancing the environmental management system to achieve improvements in overall environmental performance in line with the organisation's environmental policy

Ecological Sustainable Development- ESD is using, conserving and enhancing the communities resources so that the ecological processes on which life depends, are maintained, and the total quality of life now and in the future, can be increased.

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

Environmental Aspect
These are elements of an organization's activities, products or services that can interact with the environment. For example use of energy or transportation of products.

Environmental Impact
Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.   For example: the contamination of water with hazardous substances or the reduction of air emissions.

Significant Environmental Impact
For example persistent non-degradable contamination, unacceptable risk to people, flora, fauna, also as perceived or interpreted by authorities and external parties.

Environmental Policy
A statement by the organisation in which it states its' intentions and principles in relation to its overall environmental performance, which provides a framework for action and for the setting of its environmental objectives and targets.

Environmental Management System
That part of the overall management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving reviewing and maintaining the environmental policy.

Environmental Performance
The result of an organisation's management of its environmental
aspects.

Environmental Performance Indicators (EPIs)
These provide a means to measure how well an organisation has performed in meeting its environmental objectives or achieving outcomes. EPIs are not an exact measure of achievement but rather an indication of company performance. They can be specific measures of individual aspects to track and demonstrate performance (for example, energy kW/h).

Environmental Stewardship
Environmental Stewardship refers to the concept that company should recognise the impacts of its activities on environmental conditions and should adopt practices that eliminate or reduce negative environmental impacts. Every aspect of an organisation's operations, including strategic planning, procurement, waste reduction, waste management, water and energy usage, responses to existing
environmental problems, and land management, must be conducted in such a way as to limit or eliminate adverse impacts on the environment.

Environmental Targets
Refers to detailed performance requirements, quantified where practicable, applicable to the organisation or parts thereof, that arise from the environmental objectives and that needs to be set and met in order to achieve those objectives.

Global Reporting Initiative (GRI)
GRI was established in late 1997 with the mission of developing globally applicable guidelines for reporting on the economic, environmental, and social performance of organisations.

International Organization for Standardization (ISO)
The ISO is a worldwide federation of national standards bodies that prepares international standards. International Standard ISO 14031 "Environmental Performance Evaluation" supports ISO
14001 and 14004. It is a draft international standard giving guidance on the design and use of environmental performance evaluation within an organisation (Source: ISO 14031).

Key Performance Indicators (KPIs)
KPIs are those indicators which give a comprehensive, high level overview of a program's performance. They are particularly aimed at external users of performance information.

Categories
The broad areas, or groupings, of economic, environmental, or social issues of concern to stakeholders (for example, air, energy); commonly known as 'triple bottom line' reporting.