TECHNICAL SPECIFICATION

ISO/IEC TS 17021-2

First edition
2012-08-15

Conformity assessment — Requirements for bodies providing audit and certification of management systems

Part 2: Competence requirements for auditing and certification of environmental management systems

Évaluation de la conformité — Exigences pour les organismes procédant à l'audit et à la certification des systèmes de management

Partie 2: Exigences de compétence pour l'audit et la certification des systèmes de management environnemental

Reference number
ISO/IEC TS 17021-2:2012(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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Foreword

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

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

— an ISO/IEC Publicly Available Specification (ISO/IEC PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO/IEC Technical Specification (ISO/IEC TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/IEC TS 17021-2 was prepared by ISO Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 2, *Environmental auditing and related environmental investigations*, and the *ISO Committee on conformity assessment* (CASCO).

It was circulated for voting to the national bodies of both ISO and IEC, and was approved by both organizations.

ISO/IEC 17021 consists of the following parts, under the general title *Conformity assessment — Requirements for bodies providing audit and certification of management systems*:

— *Part 2: Competence requirements for auditing and certification of environmental management systems* [Technical Specification]

The following parts are under preparation:

— *Part 3: Competence requirements for auditing and certification of quality management systems* [Technical Specification]

The next revision of ISO/IEC 17021:2011 will reflect the different parts and will become ISO/IEC 17021-1.

Introduction

This Technical Specification complements ISO/IEC 17021. In particular, it clarifies the requirements for the competence of personnel involved in the certification process set out in ISO/IEC 17021:2011, Annex A.

The guiding principles in ISO/IEC 17021:2011, Clause 4, are the basis for the requirements in this Technical Specification.

Certification bodies have a responsibility to interested parties, including their clients and the customers of the organizations whose management systems are certified, to ensure that only those auditors who demonstrate the relevant competence are allowed to conduct Environmental Management System (EMS) audits.

All EMS auditors should possess the generic competencies described in ISO/IEC 17021 as well as the specific EMS knowledge described in this Technical Specification.

Certification bodies will need to identify the specific audit team competence needed for the scope of each EMS audit. The selection of an EMS audit team will depend upon various factors including the EMS technical area, the client organization, its environmental aspects and the site where these aspects occur.

The competence requirements for other personnel involved in certification activities are also described.

Conformity assessment — Requirements for bodies providing audit and certification of management systems

Part 2:
Competence requirements for auditing and certification of environmental management systems

1 Scope

This Technical Specification specifies additional competence requirements for personnel involved in the audit and certification process for Environmental Management Systems (EMS) and complements the existing requirements of ISO/IEC 17021.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14050, *Environmental management — Vocabulary*

ISO/IEC 17021, *Conformity assessment — Requirements for bodies providing audit and certification of management systems*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14050 and ISO/IEC 17021 and the following apply.

3.1
EMS technical area
area characterized by similar activities, products or services and the related environmental aspects

4 Generic competence requirements

The certification body shall define the competence requirements for each relevant EMS technical area and for each function in the certification activity. The certification body shall take into account all the requirements specified in Clauses 5, 6 and 7 of this Technical Specification that are relevant for the EMS technical areas as defined by the certification body. See Tables A.1 and A.2 for a summary of the competence requirements for personnel involved in specific certification functions.

5 Competence requirements for EMS auditors

All personnel involved in EMS auditing shall have a level of competence that includes the generic competencies described in ISO/IEC 17021 as well as the EMS knowledge described in 5.1 to 5.10.

NOTE 1 Risk and complexity are other considerations when deciding the level of knowledge needed for any of these functions.

NOTE 2 It is not necessary for each auditor in the audit team to have the same competence, however the collective competence of the audit team needs to be sufficient to achieve the audit objectives.

5.1 Environmental terminology

Knowledge of environmental terms, definitions and concepts as used within an EMS technical area.

5.2 Environmental metrics

Knowledge of the quantification of environmental outputs applicable to the EMS technical area and applicable regulatory requirements.

EXAMPLES Direct, normalized, aggregated, indexed and weighted measurement, modelling, mass balance.

5.3 Environmental monitoring and measuring techniques appropriate to the aspects and EMS technical area

Knowledge of environmental monitoring and measuring techniques and analytical methods appropriate to the aspects and EMS technical area including calibration and equipment maintenance.

EXAMPLES Continuous, periodic and manual sampling, observations made during abnormal conditions.

5.4 Techniques for identification and evaluation of environmental aspects and impacts and their environmental significance

Knowledge of environmental aspects and impacts and the derivation of their environmental significance.

5.5 Environmental aspects of design

Knowledge of the design process including evaluation of environmental aspects that can be controlled or influenced by an organization in the life cycle of the product. This includes the aspects associated with the selection and use of inputs (e.g. raw and recycled materials, components, energy, water and other resources used to produce the product), outputs (waste and emissions), and aspects that result from the distribution, use and eventual disposal of a product.

NOTE ISO/TR 14062 provides further information on ecodesign.

5.6 Environmental performance evaluation

Knowledge of environmental performance evaluation, including indicators, sufficient to determine whether an organization's environmental performance is meeting the objectives and targets established by its management.

NOTE ISO 14031 provides further information on environmental performance evaluation.

5.7 Legal and other requirements

Knowledge to determine whether an organization has identified and evaluated its compliance with all applicable legal requirements and other requirements.

NOTE 1 Statutory and regulatory requirements can be expressed as legal requirements.

NOTE 2 Other requirements may include voluntary national, international and sector-specific protocols for environmental reporting.

5.8 Emergency preparedness and response

5.8.1 Knowledge of an EMS technical area sufficient to determine whether an organization has identified potential emergency situations and planned relevant responses for events such as:

a) accidental emissions/discharges to air, water and land;

b) specific environmental and ecosystem impacts from accidental releases.

5.8.2 Knowledge sufficient to evaluate an organization's effectiveness in testing its emergency responses and responses to actual emergencies if applicable.

5.9 Operational control

Knowledge of the use of operational controls consistent with an organization's significant environmental aspects, including the use of contractors to achieve objectives and targets and ensure consistency with an organization's environmental policy and its commitment to the prevention of pollution and continual improvement.

5.10 Factors related to site

Knowledge of site-related factors that might influence the potential impacts of an organization's aspects on the surrounding areas, ecosystems and communities. Site factors include geography, climate, hydrogeology, topography, soil and other site-related physical conditions.

6 Aspect-specific competence requirements for EMS auditing

An audit team shall be appointed that is composed of auditors (and technical experts as necessary) having the collective competence to undertake the audit. The certification body shall define the specific competence criteria related to each aspect appropriate to the EMS technical area(s) in which it operates and consistent with the requirements specified in 6.1 to 6.7.

NOTE Risk and complexity are other considerations when deciding the level of competence needed by an audit team.

6.1 Emissions to air

Emissions to air occur from activities such as performing mechanical, chemical or biological processes, generating or using energy or through the provision of services requiring the use of fossil fuelled vehicles. These emissions may include gases and particulate matter and be subject to control through mechanical, chemical or natural means to reduce them to an acceptable level in order to avoid air pollution.

6.1.1 Gases and particulate matter

Knowledge of types of emissions to air (fugitive, point or diffuse) of gases, aerosol or particulate matter [e.g. Volatile Organic Compounds (VOCs), odours, acids, bases and greenhouse gases].

6.1.2 Operational control

Knowledge of the techniques used to control emissions to air such as filtering techniques, scrubbers and thermal oxidizers.

6.1.3 Monitoring and measurement

Knowledge of the techniques used to monitor emissions to air, for example observation of stack emissions, continuous or sample-based stack monitoring, air sampling and analysis and calculation-based mass balance.

6.2 Releases to land

Releases to land of solids or liquids may occur as waste from mechanical, chemical or biological processes, on the production or disposal of a product or the delivery of a service or as a result of a natural event or accidental situation. These releases may be subject to control through physical means (e.g. silt trap, penstock), natural (e.g. composting) or chemical treatment (primary, secondary or tertiary) and biological remediation (phyto/anaerobic).

6.2.1 Liquid or solid releases

Knowledge of releases to land including but not limited to heavy metals, polycyclic aromatic hydrocarbons (PAH), petroleum-based products, halogenated hydrocarbons, pesticides, herbicides and animal waste.

6.2.2 Operational control

Knowledge of the techniques used to control releases to land such as primary or secondary containment (bunding) and dispersion (land application rates).

6.2.3 Monitoring and measurement

Knowledge of the techniques used to monitor, measure and analyse water and soil associated with releases to land.

6.3 Releases to water

Releases to water are discharges which include industrial effluent, sewage and diffuse runoffs (e.g. fertilizers or pesticides transported by natural precipitation). This water may be discharged for treatment; or directly to surface or ground water before or after treatment.

6.3.1 Surface and ground water

Knowledge of surface and ground water flows and characteristics, including water columns, suspended and dissolved solids, sedimentation, effluent viscosity and density, evaporation, acidification and eutrophication.

6.3.2 Operational control

Knowledge of the typical liquid waste streams for the EMS technical area (e.g. organic, inorganic) and the techniques used to treat liquid waste (e.g. aerobic and anaerobic treatment).

Knowledge of the techniques used to control surface water discharges (e.g. from weather) and to remediate surface and ground water.

6.3.3 Monitoring and measurement

Knowledge of the parameters measured and the techniques used to monitor liquid waste treatment processes and/or other discharges, [e.g. indicators including Biological Oxygen Demand or Chemical Oxygen Demand (BOD and COD), sampling and analysis, in-process monitoring devices and inspections].

6.4 Uses of raw materials, energy and natural resources

6.4.1 Upstream management — Use of natural resources

Knowledge of resource depletion issues including sourcing renewable and non-renewable materials, water scarcity, forest loss and soil degradation.

Knowledge of renewable and non-renewable sources of energy, the techniques for converting them to useful energy and their environmental impacts, including climate change, biodiversity and limitations in their application.

6.4.2 Downstream management

Knowledge of technology and techniques related to source reduction, consumption, minimization, resource recovery and treatment practices and processes.

Knowledge of the impact that the activities of an organization have on the environment including biodiversity.

6.4.3 Operational control

Knowledge of the techniques used to control, monitor and measure material efficiency in the context of the EMS technical area.

6.4.4 Monitoring and measurement

Knowledge of energy control and monitoring techniques relevant to the EMS technical area including operational and technical techniques and knowledge of low carbon technologies.

6.5 Energy emitted

6.5.1 Sources of energy emissions

Knowledge of sources of emissions of heat, light, electromagnetic and ionising radiation, noise and vibration, and their potential environmental impacts.

6.5.2 Operational control

Knowledge of emissions measurement and management and control methods, including process management, and emissions reduction and abatement.

6.6 Waste

Knowledge of waste materials which can result from an organization's activities. Knowledge of waste treatment including the modification of processes to enable avoidance, reduction, reuse or recycling before the option of final disposal is considered.

6.6.1 Sources of waste

For an EMS technical area, knowledge of the wastes generated by the activities, including the characteristics of the wastes and their potential environmental impacts.

6.6.2 Operational control

Knowledge of methodologies for the elimination, source reduction and waste minimization appropriate to the EMS technical area, including reuse, recycling, treatment and disposal practices and processes.

Knowledge of transportation and disposal methods for solid and liquid waste, including treatment, incineration and burial in an approved landfill.

6.7 Physical attributes

Knowledge of the interactions of the physical attributes (size, shape and colour) of buildings, structures and equipment with the local environment.

7 Competence requirements for other personnel

The certification body shall define competence requirements for other personnel involved in the certification functions as given in 7.1 and 7.2. The functions of these personnel may be fulfilled by one or more persons.

7.1 Competence of personnel conducting the application review to determine the audit team competence required, to select the audit team members and to determine the audit time

7.1.1 Environmental terminology

Knowledge of environmental terms and definitions.

7.1.2 Techniques for identification and evaluation of environmental aspects and impacts and their environmental significance.

Knowledge of environmental aspects and associated impacts.

7.1.3 Factors related to site

Knowledge of site-related factors, including proximity to sensitive environments (e.g. wetland, flora, fauna and human communities) that may be impacted by the organization's activities, sufficient to select a competent audit team.

7.2 Competence of personnel reviewing audit reports and making certification decisions

7.2.1 Environmental terminology

Knowledge of environmental terms and definitions within the EMS technical area.

7.2.2 Techniques for identification and evaluation of environmental aspects and impacts and their environmental significance.

Knowledge of environmental aspects and impacts and processes for determining significance.

7.2.3 Environmental performance evaluation

Knowledge of environmental performance evaluation.

NOTE ISO 14031 provides further information on environmental performance evaluation.

7.2.4 Legal and other requirements

Knowledge of applicable legal requirements and other requirements.