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Occupational health and safety management systems — General guidelines for the implementation of ISO 45001:2018

Systèmes de management de la santé et de la sécurité au travail — Lignes directrices générales pour la mise en œuvre de l'ISO 45001:2018

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 283, *Occupational health and safety management*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

An organization is responsible for the occupational health and safety (OH&S) of its workers. This responsibility includes promoting and protecting their physical and mental health. The organization is also responsible for taking steps to protect others who can be affected by its activities. This is best achieved through an OH&S management system.

The purpose of an OH&S management system is to provide a framework for managing OH&S risks and opportunities, and for managing risks and opportunities to the management system itself. The intended outcomes of the OH&S management system are to continually improve the OH&S performance, to fulfil legal requirements and other requirements, and to achieve the OH&S objectives.

This document gives guidance on how to implement the requirements in ISO 45001:2018 in any type of organization and should be used in conjunction with ISO 45001:2018. Where ISO 45001:2018 states what needs to be done, this document expands on that and gives guidance, including real-life cases, on how it can be done. A complement to this general guidance is a handbook, see Reference [2].

The intention of ISO 45001:2018 is to enable organizations to protect all workers from injury and ill health, regardless of individual characteristics. This document provides additional guidance on how to ensure the specific needs of individuals and groups of workers are addressed, recognizing that a generic approach to OH&S management can lead to the needs of different genders, age and minority groups not being fully addressed.

Many requirements of ISO 45001:2018 contain terms such as “as appropriate”, “as applicable” or “relevant”. These terms signal that the organization should determine whether and how the requirement pertains to the organization, taking into account its conditions, processes or context. In this document, the meaning of these terms is as follows:

— “as appropriate” means suitable or proper in the circumstances and implies some degree of freedom, i.e. it is up to the organization to decide what to do;

— “as applicable” means possible to apply and implies that if it can be done, it should be done;

— “relevant” means directed and connected to the subject, i.e. pertinent.

The OH&S management system approach applied in this document is founded on the concept of Plan-Do-Check-Act (PDCA). The PDCA concept is an iterative process used by organizations to achieve continual improvement. It can be applied to an OH&S management system and to each of its individual elements, as follows:

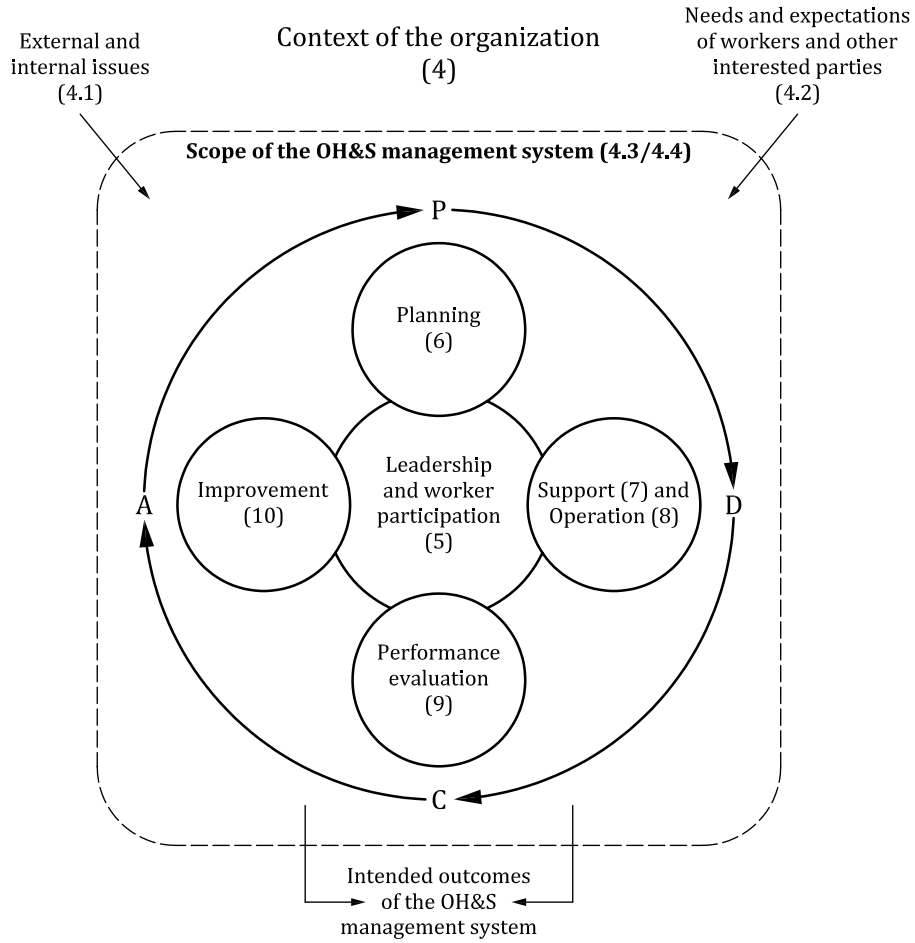
a) Plan: determine and assess OH&S risks, OH&S opportunities and other risks and other opportunities that can influence the intended outcomes of the OH&S management system and establish OH&S objectives and processes necessary to deliver results in accordance with the organization’s OH&S policy.

b) Do: implement the processes as planned.

c) Check: monitor and measure activities and processes with regard to the OH&S policy and OH&S objectives and report the results.

d) Act: take actions to continually improve the OH&S performance to achieve the intended outcomes.

The PDCA concept and relationship to this document is shown in Figure 1.



NOTE The numbers given in brackets refer to the clause numbers in this document.

Figure 1 — Relationship between PDCA and the framework in this document

Occupational health and safety management systems — General guidelines for the implementation of ISO 45001:2018

1 Scope

This document gives guidance on the establishment, implementation, maintenance and continual improvement of an occupational health and safety (OH&S) management system that can help organizations conform to ISO 45001:2018.

NOTE 1 While the guidance in this document is consistent with the ISO 45001:2018 OH&S management system model, it is not intended to provide interpretations of the requirements in ISO 45001.

NOTE 2 The use of the term "should" in this document does not weaken any of the requirements in ISO 45001:2018 or add new requirements.

NOTE 3 For most of the clauses in this document, there are real-life cases on how different types of organizations have implemented the requirements. These are not intended to suggest the only or best way to do this, but to describe one way this was done by an organization.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 45001:2018, *Occupational health and safety management systems — Requirements with guidance for use*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 45001:2018 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Context of the organization

4.1 Understanding the organization and its context

To be able to implement an effective OH&S management system, the organization needs to understand the context within which it operates and to determine what issues can make it easier or more difficult to achieve the intended outcomes of the OH&S management system. The intended outcomes as included in the definition of "occupational health and safety management system" (see ISO 45001:2018, 3.11) are to prevent injury and ill health to workers and to provide safe and healthy workplaces. It includes enhancement of OH&S performance, fulfilment of legal requirements and other requirements, and achievement of OH&S objectives. These are the minimal, core outcomes but an organization can set additional intended outcomes such as going beyond the requirements of ISO 45001:2018, e.g. encouraging a supplier to also implement an OH&S management system.

The organization should be aware that external and internal issues can change, and therefore, should be monitored and reviewed. It is advisable for an organization to conduct reviews of its context at planned intervals and through activities such as management review.

Examples of external issues that can affect the intended outcomes of an OH&S management system are:

— economic and financial situation, economic activity;

— business sector, markets, international commerce activities, the needs and expectations of interested parties (contractors, insurance companies, etc.);

— supply chain requirements, including modern slavery;

— terrorist threats;

— technological innovations, equipment, products and systems evolution, the knowledge of OH&S effects of products and work equipment;

— political and social unrest;

— legal requirements and other requirements, including legislation, sectoral agreements, conventions and voluntary agreements subscribed to by the organization;

— institutional needs and expectations;

— the geographical location of the company;

— environmental concerns that can have an impact on health and safety, including climate change and pollution;

— potential emergency situations including pandemics but also floods, earthquakes, etc.

Examples of internal issues that can affect the intended outcomes of an OH&S management system are:

— consultation and participation, issues raised by workers and other interested parties that can impact the organization's internal activities and its OH&S management system;

— internal requirements, including policies and practices, mission, vision, values, objectives, strategies, agreements and guidelines;

— what has been known to cause injuries and ill health in the past;

— organization structure and governance model, work scope, work shifts, roles, functions and responsibilities;

— work centres and distribution;

— demography (e.g. gender of workers, age range, racial identities, range of languages, workers with disabilities);

— conditions and extension of services and activities;

— globalization and internalization of the company;

— cultural diversity (e.g. inclusion, racial identities and backgrounds, cultural and religious beliefs, proficiency in languages, literacy and education levels);

— financial, human (availability, competence, etc.) and technological resources (availability and conditions of equipment, products, facilities, systems and workplaces) and distribution of resources;

— general planning;

— processes, products and services.

An organization can choose to document this information if it wants to adopt a more structured approach to its OH&S management system. However, the absence of such documentation should not impact the ability of the organization to seek and demonstrate conformity to ISO 45001, where it can evidence a structured approach by other means.

The organization can use different methodologies to determine and evaluate the external and internal issues. One example is analysing strengths, weakness, opportunities and threats. See Clause 5 for guidance on how to involve workers in this process.

The issues dealt with in this clause are mainly related to the impact on the OH&S management system and are usually analysed at high levels of the organization. Specific OH&S risks are dealt with at operational levels and are considered in 6.1.2 and 6.1.3.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 4.1.

A diverse service organization implemented the requirements of 4.1 and made a high-level analysis of issues by conducting a brainstorming exercise with participation from OH&S staff, other workers and worker representatives, knowledgeable persons from various parts of the organization and someone from top management who champions OH&S. The team discussed external and internal issues from a wide perspective and determined which were relevant for the OH&S management system. This then served as input to identify interested parties (see 4.2), determine scope (see 4.3), and address risks and opportunities (see 6.1).

Even though there is no requirement in ISO 45001:2018 to document the result of this context work, the organization chose to do that anyway and ensure that the whole team agreed on the result. They created a bridge from context to planning by documenting each relevant issue in a categorized way, stating if this was a current or future issue, and if it had a positive or negative potential. They also put a value to its relative importance and stated how the issue should be managed in their system (as an OH&S risk, potential emergency, risk to the management system, other opportunity, etc.). Table 1 shows part of what they found.

This context exercise is reviewed when there are significant external or internal changes that affect the organization or the OH&S management system and otherwise when deemed appropriate by the organization.

Table 1 — Some of the external and internal issues found

Category	Issue	Time frame	Negative or positive	OH&S management system importance	Managed as
Culture: internal	Lack of OH&S interest from top management	Current	Negative	High	OH&S management system risk
Workplace hazard	Working at heights with customer installations	Current	Negative	Medium	OH&S risk
Workplace hazard	Noise levels in some operations	Current	Negative	High	OH&S risk
Economy: internal	Lack of financial resources for investing in OH&S improvements	Future	Negative	Medium	Currently not managed
Activities: internal	Inadequate chemical management	Current	Negative	Medium	OH&S risk
Resources: internal	Improvement of OH&S staff competence beyond requirements	Current	Positive	Medium	OH&S management system opportunity
Technology: external	New technologies for eliminating hazards and mitigating OH&S risks developed	Current	Positive	High	OH&S management system opportunity
Interested parties: external	Requirements from customers regarding OH&S management system certification	Future	Positive	High	OH&S management system opportunity
Interested parties: internal	Lack of participation from worker representatives	Current	Negative	High	OH&S management system risk

Table 1 *(continued)*

Category	Issue	Time frame	Negative or positive	OH&S management system importance	Managed as
Company: internal	Poor internal OH&S communication	Current	Negative	Medium	OH&S management system risk
Resources: external	Suppliers of OH&S protection equipment, including personal protective equipment (PPE) are not always able to deliver required goods when there is increased market demand	Future	Negative	Medium	OH&S management system risk
Company: internal	Lack of specific consideration for issues related to gender, non-binary workers and other specific groups as well as provision for these groups	Current	Negative	High	OH&S risk

4.2 Understanding the needs and expectations of workers and other interested parties

The needs and expectations (i.e. requirements) of workers and other interested parties are important when considering the context in which the organization operates. It is important that the organization takes into account the characteristics of its workers and how these can affect needs and expectations. Different genders and age groups can have very different needs and expectations than others. Minority groups (e.g. ethnic minorities, workers with physical or mental disabilities, workers of non-traditional gender or sexuality) also have needs and expectations which are not always recognized or understood. Determining interested parties that are relevant to the OH&S management system and developing a relationship with them enables communication, which can improve worker participation, remove obstacles to participation, lead to a culture that supports OH&S, and build mutual understanding, trust and respect.

The organization should identify the relevant needs and expectations of workers and other interested parties, to determine those that it has to comply with and voluntary agreements that it chooses to comply with. The methods used and resources applied can vary depending on, for example, the size and nature of the organization, the finances available, the OH&S risks and opportunities that should be addressed, and the organization's experience with OH&S management.

There are three steps that are typically taken to determine what the organization should comply with:

— Step 1: Determining other relevant interested parties, in addition to workers. Workers at all levels are always at the heart of the OH&S management system. However, other interested parties that are relevant to the OH&S management system can include:

  — trade unions and worker representatives;

  — regulatory or statutory agencies;

  — communities;

  — owners, including investors/shareholders;

  — neighbours;

  — other companies related to the organization, such as contractors, suppliers or clients;

  — institutional bodies, such as inspectorates, OH&S national institutes and OH&S research groups;

  — other bodies or companies related to injuries or illnesses, such as social security, compensation bodies and insurance companies;

— customers (e.g. those requiring suppliers to implement an OH&S management system or that have specific OH&S-related requirements);

— people that can occasionally be in the facilities or under the control of the organization, such as visitors, consultants, transport workers, and workers of contractors or suppliers.

Interested parties can change over time and can depend on the sector, industry or the geographic location in which the organization operates. Changes in the external or internal issues that are part of the organization's context can also result in a change in interested parties. It can be good practice to keep this information up to date.

— Step 2: Determining the relevant needs and expectations (i.e. requirements) of workers and other interested parties in relation to OH&S. Examples include:

— authorities require the organization to meet legal requirements;

— workers need the organization to provide adequate training to ensure their competence to control risks from their work or as a result of contractor(s) work;

— specific needs and expectations of, for example, women (correctly fitting PPE), workplace environment), older workers (accessibility, training/communication methods), workers with visible or invisible disabilities, workers from different cultural or ethnic backgrounds, and workers with additional psychological health and safety needs (e.g. due to racial identity, sexuality, gender or religion);

— contractors need the organization to keep them informed of all OH&S-related policies, processes and procedures;

— regulators require the organization to provide relevant OH&S information in a timely manner;

— owners need and expect to be kept informed about the organization's OH&S performance;

— customers require their suppliers to implement fully or partially an OH&S management system;

— suppliers require access to hazard-related information as part of contract negotiations;

— worker representatives expect the organization to provide them with information on OH&S performance regularly.

There is no single approach to determining needs and expectations. The organization should use an approach that is appropriate to its scope, nature and scale, and is suitable in terms of detail, complexity, time, cost and availability of reliable data. Sources for determining worker needs and expectations can be:

— individual or collective agreements;

— suggestions by workers or their representatives;

— surveys carried out by the organization;

— informal discussions with workers.

— Step 3: Determining which needs and expectations are, or can become, legal requirements and other requirements:

— An organization should determine which of the relevant interested parties' needs and expectations it has to comply with (legal requirements), and then which of the remaining needs and expectations it chooses to adopt (other requirements). This general, high-level knowledge then gives input into managing legal requirements and other requirements as further detailed in 6.1.3.

— For requirements set by a regulatory body, the organization should gain knowledge of areas of legislation that are applicable to its circumstances and operations and relevant in the context of

ISO 45001. The organization should ensure that legislation and regulatory body requirements relating to fairness, equality and discrimination are taken into account.

— In the case of voluntary commitments (other requirements), the organization should gain broad knowledge of relevant needs and expectations. This knowledge enables the organization to understand the implications these can have on the achievement of the intended outcomes of its OH&S management system.

The organization should consider the output from the steps above when setting the scope of its OH&S management system, establishing its OH&S policy, and addressing risks and opportunities. Although not a requirement, it can be useful to document this information to facilitate its use to meet other requirements in ISO 45001.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 4.2.

A medium-sized manufacturing organization identified the following interested parties during the context analysis of its external and internal issues:

— External, on-site (sometimes): Customers, visitors, suppliers, external consultants, labour inspectors, insurance companies, waste management companies, fire department and ambulance workers.

— External, off-site: Creditors, competitors, regulatory authorities, shareholders, social insurance agencies, neighbours, lenders and other finance institutions, and labour organizations.

— Internal: Workers including top management, worker representatives, works council and fire brigade members, contractors.

In the form of a brainstorming workshop, the organization then listed everything it could think of that these different interested parties required or might require of the organization related to OH&S. Then it also listed anything anyone in the workshop could remember that these interested parties had asked about or even shown an interest in, in relation to OH&S. They also included requirements from the past and added things they thought would become requirements or become important for interested parties in coming years.

The final step was to decide which of these needs and expectations the organization would need to or chose to comply with. These included legal requirements, collective agreements, board and top management OH&S-related decisions (although they found two that were in conflict that needed to be resolved) and contractual agreements.

The outcome was documented in a file and was then used as a starting point for the process of going into details about legal requirements and other requirements and how these were met by the organization (see 6.1.3).

Table 2 shows what the file contained.

Table 2

Interested party	Needs and/or expects the organization to:
Workers:	— provide adequate training to ensure their competence to control risks from their work or as a result of contractor(s) work processes and procedures — be transparent and disclose OH&S information — recognize and appreciate good initiatives and OH&S performance — recognize that different groups of workers (related to gender, age, disabilities etc.) can be exposed to different OH&S risks and take steps to address these — ensure that workers have the possibility to participate in the planning and decisions related to the execution of work tasks

Table 2 *(continued)*

Interested party	Needs and/or expects the organization to:
Authorities	— meet legal requirements — provide relevant OH&S information in a timely manner — align its OH&S management system with government objectives — promote compliance with applicable regulations and standards to contractors
Contractors	— keep them informed of all OH&S-related policies, processes and procedures — recognize and appreciate good OH&S performance, initiatives and collaboration
Owners	— keep them informed on the organization's OH&S performance — good communication and coordination — implement a sustainable OH&S management system
Customers	— implement an OH&S management system that they have set up as a requirement for suppliers — supply products that are safe to use — supply products in time and not delayed by incidents — take a general approach to sustainable development that includes OH&S
Suppliers	— be clear and consistent on what they require in relation to OH&S in contract negotiations — recognize and appreciate good OH&S performance, initiatives and collaboration
Worker representatives	— ensure a safe and healthy workplace with no serious OH&S incidents — clarify OH&S rules as well as roles and responsibilities — provide them with information on OH&S performance on a regular basis.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 4.2.

A small service organization conducted a survey of identified interested parties during two workshops with participation from the OH&S manager, operations manager, worker representative, human relations manager, a lawyer and two external consultants. First, the group identified the relevant interested parties; then it listed anything anyone in the workshop knew that these interested parties had asked or shown an interest in, in relation to OH&S.

They also included requirements from the past and added things they thought would become requirements or become important for interested parties in coming years.

The results of the survey were reviewed by the owner and was sent to the worker representative to ask for further input and/or review. Based on this input the company determined what to comply with. The outcome was shared with employees at a meeting to obtain feedback and establish a plan for implementation.

4.3 Determining the scope of the OH&S management system

To clarify what is and what is not within the scope of its OH&S management system, the organization should determine the boundaries and applicability of the management system, using the outputs from 4.1 and 4.2, and considering its activities. Implementing an OH&S management system can be done with respect to the entire organization or to a subdivision of the organization.

Care should be taken to consider geographical, jurisdictional, physical and organizational boundaries when defining and documenting the scope of the OH&S management system.

The organization should understand the extent of control or influence that it can exert over activities, products and services before deciding on the scope. However, it is critical to the success of the OH&S

management system and to the credibility of the organization to ensure that the scope is not defined in a way that excludes activities, products, services or facilities that have or can have significant impact on the OH&S performance. The scope should also not be set to evade legal requirements or other requirements, or to mislead interested parties.

If the organization changes its sphere of control or influence, expands or contracts its operations, or makes other changes likely to affect the OH&S management system, the scope should be reconsidered.

When considering the scope of the OH&S management system, it is important to understand that outsourced functions and processes can impact the intended outcomes of the OH&S management system. Organizations should consider these activities when scoping the boundaries of their management system. Further detail on outsourced functions is available in 8.1.4.3.

It is good practice to make the scope available to interested parties. There are several methods for doing so (e.g. using a written description, inclusion on a site map, an organizational diagram, a webpage, posting a public statement).

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 4.3.

A large multiple location company reviewed the requirements of ISO 45001. Following the requirements, this company determined its external and internal issues along with the needs and expectations of interested parties. They then decided to start with a pilot implementation of an OH&S management system at one of their locations with all its processes. The goal was to use the experiences from this pilot to see how OH&S performance could be improved throughout the whole organization. This decision was documented and communicated internally and made public on the company's website.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 4.3.

A large organization has operations in many locations globally. It has experience with implementing another management system in steps over a number of years and this did not work out well. The main reasons for this were that:

— both top management and the rest of the organization started to lose interest over time when only a minor part of the organization was involved during the first 1 to 2 years;

— a high turnover of staff meant that experiences from the first implementation were difficult to carry over to other sites;

— business challenges due to economic and market changes created issues with top management focus.

The organization decides to implement the OH&S management system throughout the whole organization in 80 locations. They are aware this is a major commitment, but injuries and ill health are an issue in many locations, and they do not want to give the impression that safety in one location is more important than in another. Based on their review of requirements from interested parties there is also an expectation from both the board and from key customers that they should have an OH&S management system in place.

EXAMPLE 3 Real life case 3 on how to implement requirements in ISO 45001:2018, 4.3.

A small factory decided that implementing an OH&S management system would reduce injuries and create a safe and healthy workplace. The owner held a meeting with its 50 employees to gather information about their needs and expectations. The owner then considered both external and internal issues facing the company, such as growth and scarce resources. The owner developed a plan to implement ISO 45001:2018 step by step over a period of two years. The scope included all processes and activities of the organization, including work currently outsourced to another organization. The owner documented the scope and the implementation plan and communicated it at the next employee meeting. The scope and plan were also posted on their webpage for external stakeholders.

EXAMPLE 4 Real life case 4 on how to implement requirements in ISO 45001:2018, 4.3.

A small company that designs and manufactures plastic cutlery for airlines discusses the scope for their OH&S management system. They have one manufacturing building that occupies part of a fairly large piece of land that was previously used for other purposes.

Modern technology has reduced the need for such a large piece of land for its core manufacturing activities, so they decide to open a restaurant close to the manufacturing building.

At the same time, the organization decided to implement an OH&S management system at the manufacturing plant only. The scope of the OH&S management system was defined as "Designing and manufacturing plastic cutlery at site X".

Although the restaurant is located on the same piece of land owned by the same company, the OH&S management system considers the "workplace" to be only the part of the site occupied by the manufacturing plant.

4.4 OH&S management system

This is a general clause requiring organizations to look after the OH&S management system, which can be seen as a set of processes that, if operating in a coordinated manner, will help to ensure that the intended outcomes are achieved. Specific requirements for individual elements or management system processes can be found in each of the other clauses of ISO 45001.

The level of detail and complexity of the OH&S management system, the extent of documentation and the resources devoted to it are dependent on the context (size, structure, complexity) of an organization and its activities. A complete list of the documented information required by ISO 45001:2018 is included in 7.5.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 4.4.

An educational institution has a well-defined professional development programme for its workers which incorporates subjects such as human resources, computer software, financial and instructor course offerings. The processes include means to determine learning requirements, communicate offerings, self-registration and tracking completion.

The organization, during its review of the scope and requirements of ISO 45001, decides to integrate competency requirements for the OH&S management system into its existing professional development programme and processes instead of setting up a separate OH&S competence programme.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 4.4.

A large distribution company, which has several sites, has established a management system team. The team's members include one person from top management, at least one operations manager, a corporate OH&S manager, a distribution centre safety manager, a product compliance representative, an internal auditor and employees representing diverse areas of the distribution network. The management system team meets annually to update (maintain) all documents including the OH&S policy, scope of the management system, organization roles and responsibilities and legal and other requirements.

In addition, risks/opportunities are reviewed and ranked each year. The team uses the highest ranked risks to determine opportunities. The team then chooses from these opportunities to determine its objectives for the current year. The company has a written procedure on how this process is completed each year to ensure continual improvement.

5 Leadership and worker participation

5.1 Leadership and commitment

Top management should engage in, promote, communicate and monitor the performance and effectiveness of the OH&S management system. How this can be applied depends on various factors, such as the size and complexity of an organization, management style and organizational culture.

The term "top management" is defined in ISO 45001:2018, 3.12, as the "person or group of people who directs and controls an organization at the highest level". They are accountable and responsible for the overall performance of the management system and for supporting other workers to demonstrate leadership and commitment within their areas of responsibility. In other clauses, there are examples of further direct top management responsibilities including the OH&S policy, organizational roles, responsibilities and authorities, as well as management review. If the scope of the management system covers only part of an organization, then top management refers to those who direct and control that part of the organization.

Top management should consider integration of OH&S requirements in general business processes and when setting mission, vision and values. Where appropriate, these elements should be included in the formation of the organization's overall business, strategic direction and operational plans.

Top management's commitment also means providing physical and financial resources, as well as direction. It includes active involvement, removing barriers that can limit worker participation, leading others to support the OH&S system, and communication of the importance of effective OH&S management. It also means ensuring that processes for effective consultation and participation are established.

Another specific requirement for top management is to ensure that workers are protected from reprisals when they report OH&S issues such as injuries, ill health, unsafe conditions, near misses, or risks and opportunities related to OH&S or to the management system.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 5.1.

The top management of a company ensures that their decisions on OH&S matters are consistent with their values and can demonstrate that it meets the requirement in 5.1 h) by establishing performance objectives for managers and supervisors that are linked to continual improvement of OH&S performance and the OH&S management system. The organization also recognizes those employees who provide suggestions for improvement.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 5.1.

In a manufacturing company, managers actively involved workers in the improvement of OH&S by making them aware of risks and urging them to report all dangerous situations including near misses. They supported and encouraged workers to bring forward their own ideas for improving OH&S. Managers also promoted OH&S by providing targeted support for further training.

Managers also demonstrated that health and safety is a top priority by addressing this topic regularly during meetings and tours throughout the organization. Part of the working time of top management was reserved for implementing and promoting OH&S.

EXAMPLE 3 Real life case 3 on how to implement requirements in ISO 45001:2018, 5.1.

The owner of a small organization demonstrated commitment to providing a healthy and safe workplace by including an example of what had been done recently to improve OH&S performance, during the monthly organization-wide meetings held with employees.

During these meetings, employees were encouraged to provide feedback on both positive and negative experiences in the workplace as they related to the OH&S management system.

By consistently providing examples of commitment and leadership and engaging employees in conversations at the meetings, the owner developed a culture that supported the intended outcomes of the OH&S management system.

EXAMPLE 4 Real life case 4 on how to implement requirements in ISO 45001:2018, 5.1.

In a regional public service, to introduce the new health and safety management system in line with the international standard, and to begin the process of migrating from their out-of-date national standard, top management took the decision to buy and distribute individual copies of ISO 45001:2018 to their union delegates and health and safety committee members.

They chose to do that to gain trust from their unionized workforce, and to begin a new higher-level strategic engagement over preventing injury and ill health, beyond the usual cycle of incidents, hazards and risk assessments.

The copies of ISO 45001:2018 were sent with an offer to participate in a recast joint service-wide health and safety committee, now called the "Regional Public Service ISO 45001:2018 Committee", with participation from top management, senior OH&S and other managers. The process began with a joint training session for all the members of the committee on ISO 45001, with officials of the relevant union also invited to attend.

A key element of the memorandum of understanding (MOU) to establish this committee was to give it a key role in conducting the ISO 45001:2018 auditing process, which was previously conducted only by management.

In the covering letter to the MOU, the board chair stated that "The leadership of this organization see the opportunities presented by ISO 45001, to deepen our engagement with our workforce and their representatives to make work better".

The union delegates and health and safety committee members agreed that the time had come to try a higher strategic engagement model and that was what ISO 45001:2018 offered.

The first meeting of the ISO 45001:2018 committee took place a few days after the joint training session.

EXAMPLE 5 Real life case 5 on how to implement requirements in ISO 45001:2018, 5.1.

After there had been a number of health and safety near misses and then an incident in a small cabinet-making workshop, the owner/manager decided that changes were needed in how health and safety was handled in the organization.

The owner had read about ISO 45001:2018 after an internet search on improving health and safety. She bought a copy to read and decided to convene an all-staff meeting to talk about the recent incident and to introduce the workshop's first health and safety management system.

As the owner presented the various clauses of ISO 45001:2018 on a projector screen, they talked about the near misses and the incident and what sort of health and safety management system would suit their context.

During the meeting, the staff were surprised at how much ISO 45001:2018 was about their consultation and participation and saw the opportunity to have more of a voice at work.

Given the size of the organization, all agreed that it was not necessary to establish a representative health and safety committee. It was agreed to start the process of introducing the new system, by holding weekly all staff meetings on Monday mornings to talk about the work planned for the week, and to systematically go through the health and safety issues that were presented by the work.

The more experienced staff also undertook to talk more often to the apprentices and newly qualified workers about safe working and to help them see the warning signs of unsafe work.

Both the owner and the staff agreed that rushed timelines for orders and work pressure also needed better management, as these were underlying hazards that had caused the incident. The owner agreed to have more detailed discussions with the more experienced staff concerning delivery deadlines in contract negotiations with clients.

5.2 OH&S policy

ISO 45001:2018, 5.2, states that the organization's OH&S policy should be "appropriate to the purpose, size and context of the organization and to the specific nature of its OH&S risks and OH&S opportunities". This means that it should be specific enough to be focused on the issues that are significant for the organization to keep workers safe and healthy and continually improve its OH&S performance.

It should enable workers to understand the overall commitment of the organization and how this can affect their individual responsibilities.

In developing its OH&S policy, an organization can consider, for example:

a) its context, mission, vision, core values and beliefs;

b) coordination with other policies (corporate, integrated, etc.);

c) needs and expectations of workers and other interested parties;

d) risks and opportunities associated with the activities of the organization;

e) legal requirements and other requirements to which the organization subscribes that relate to its OH&S management system;

f) historical and current OH&S performance of the organization such as statistics or reports of incidents;

g) opportunities for continual improvement and what needs to be done to prevent injury and ill health;

h) what is needed to establish achievable objectives.

The requirements regarding OH&S policy in ISO 45001:2018 are not meant to define specific text that should be in an OH&S policy but can be covered through other words with the same meaning. The OH&S policy can be linked or integrated with other policy documents of the organization and should be consistent with the organization's overall business policies.

Communication of the policy should assist in:

— demonstrating the commitment of top management and the organization to OH&S;

— increasing awareness of the commitments made in the policy statement;

— explaining why the OH&S system is established and maintained;

— guiding individuals in understanding their OH&S responsibilities and accountabilities.

In communicating the policy, consideration should be given to how to create and maintain awareness in both new and existing workers and how to verify if it has been properly understood. The policy can be communicated in alternative forms, such as through the use of rules, directives and procedures, wallet cards, posters, using QR codes, etc. In communicating the policy, the diversity of workers should be taken into account. Plain language and short sentences can be helpful to achieve maximum accessibility. Making the policy available in both written and audio formats and translated into relevant languages can also help.

It is for the organization to determine how it wishes to make the policy available to its interested parties, e.g. through publication on a website or by providing printed copies on request.

Change is inevitable, as legislation and societal expectations evolve. Consequently, the organization's OH&S policy should be reviewed periodically to evaluate ongoing suitability and effectiveness. If changes are made to the policy, the revised policy should be communicated throughout the organization and to relevant interested parties.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 5.2.

A medium-sized organization in the food industry chooses to use one-page policies, which are easy to communicate to workers so that they are aware of what it says. The organization develops a policy that is signed by the chief executive officer. It states that:

"Organization X is committed to continually improving its OH&S management system in order to provide safe and healthy working conditions for the prevention of work-related injury and ill health, eliminating hazards and reducing OH&S risks.

OH&S objectives will be linked to key challenges for this organization, which include ergonomics, machine guarding in production, psychosocial issues including workload issues, and traffic safety.

We promote the consultation of workers on all levels in our OH&S efforts, ensuring the views of all workers are taken into account, and we are committed to comply with laws and other agreed-upon commitments.

This policy is reviewed annually during management review activities and is made available through our intranet and internet web pages and made visible in reception, lunchrooms and other locations."

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 5.2.

A large organization with operations in many different countries writes a one-page corporate OH&S policy that is valid throughout the operations but allows local operations to add to the corporate OH&S policy if there are specific challenges that go beyond the corporate ones. The corporate policy states:

"We are a leading company in the ZZZ business and the safety and well-being of our employees and others that perform work for us is a core value. Key challenges include chemical safety, organization of work and air quality. We are committed to:

— continually improving our OH&S management system performance, in order to provide workplaces that are physically, socially, and organizationally sustainable;

— eliminating hazards and reducing OH&S risks;

— meeting or exceeding applicable legal requirements and other requirements we choose to comply with;

— educating, motivating and consulting workers to contribute to improving our OH&S management system;

— encouraging our contractors, suppliers and consultants to adhere to the same standards we do;

— openly communicating our OH&S performance and participating in external initiatives that improves our knowledge and performance;

— ensuring prompt reporting of any incidents, adequately monitoring and measuring our OH&S performance and regularly providing assurance that our processes and management systems are working effectively, promoting the consultation and participation of workers on OH&S related issues."

EXAMPLE 3 Real life case 3 on how to implement requirements in ISO 45001:2018, 5.2.

A small retail store with 25 employees develops its OH&S policy at a regular staff meeting. The owner reviews and shares the requirements with employees and together they devise a policy that meets the requirements in words that employees clearly understand. At the end of process, each employee signs the policy to demonstrate their commitment. New employees sign the policy as part of their orientation process and are given a copy of the policy. Each year, the policy is reviewed in a staff meeting and renewed, and the process repeated.

5.3 Organizational roles, responsibilities and authorities

For the OH&S management system to be effective and deliver its intended outcomes, it is essential that responsibilities and authorities for relevant roles within the OH&S management system, are assigned to workers by top management and understood within the organization. Workers should be able to make decisions and implement change to the area and/or processes to which they have been assigned. It is essential to emphasize that although authority can be delegated, the overall responsibility and accountability for the OH&S management system remains with top management. Top management should:

a) identify who needs to do what with respect to the management of OH&S, including regulatory requirements and making sure workers are aware of their responsibilities and authority;

b) ensure there is clarity of responsibilities at the interfaces between different functions (e.g. between departments, between different levels of management, between workers, between the organization and contractors, between the organization and its neighbours);

c) assign the responsibility and authority for reporting on the performance of the OH&S management system to top management in, for example, management meetings, reports, key performance indicators and reviews.

In some organizations, there can be a limited number of people with the required competence available to carry out the tasks required. In such situations, it can be useful to plan for sharing roles and responsibilities. Such plans are also valuable during holidays, when managers are away from the facility, or in cases of incidents or illness.

Top management should determine how to communicate the assigned responsibilities and authorities of relevant roles within the OH&S management system. This can be done through relevant documented information (e.g. procedures, instructions, job/project/task descriptions, training/induction packages), meeting updates, electronic or face-to-face team communication, or through a combination of approaches.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 5.3.

A small chemical company communicates OH&S responsibilities and authorities by including these in job descriptions and job performance evaluation processes. This company has developed descriptions for each OH&S-related role in the organization to provide clarity on expectations related to the OH&S management system. This helps top management demonstrate that responsibilities and authorities have been assigned, communicated and documented. Once assignments have been formalized, top management also shows its commitment by following up on their performance.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 5.3.

A global management consultancy has over 40 locations which have implemented an OH&S management system. The management of operations differs at each location. The organization decided to develop a checklist of the OH&S management system requirements and required each location to identify the roles at their location which were assigned responsibility and authority for meeting each requirement. By doing so, the organization ensured that the location's OH&S management system conforms to the requirements of ISO 45001.

5.4 Consultation and participation of workers

Top management should involve workers at applicable levels and functions (and their representatives, where such representatives exist) when the OH&S management system is established, implemented, maintained and continually improved.

The organization should ensure that workers and their representatives are consulted (i.e. be given the opportunity to give their suggestions and opinions) and participate (i.e. be involved in the decision-making) and be given adequate time and training on the OH&S management system. Workers should be given adequate information to be able to effectively participate and/or be consulted, and obstacles and barriers to involvement should be removed or at least minimized. The organization should inform workers, and especially new workers, of who their representatives in OH&S-related matters are.

Organizations typically focus on involving all levels of management and OH&S experts, but sometimes fail to involve other non-managerial workers such as workers on the shop floor, administrative staff, sales staff and others on lower levels of the organization's hierarchy. Since this is common, there are specific requirements in ISO 45001 that emphasize the importance of involving non-managerial workers. The requirements in this subclause specify when participation and consultation is necessary.

Organizations also typically focus on groups of workers who are in the majority and accepted historic views, and so can fail to understand or take into account the needs of specific workers or groups of workers. Mechanisms for participation and consultation can be important to ensure a full representation of women, people with disabilities, and ethnic and other minority groups, and that issues raised, suggestions made, and views on decisions are respected and acted upon.

Consultation is required for determining needs and expectations, how to fulfil legal requirements and other requirements, assigning who does what, establishing the OH&S policy and objectives, operational controls, monitoring and measurement, and for establishing the audit programme.

Participation is essential for identifying hazards, assessment of risks and opportunities and determining action to manage these. Participation is also essential for making decisions about competence, training, communication, control measures and investigation on incidents and nonconformities, as well as for taking action on these.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 5.4.

A medium-sized organization manufacturing, selling and distributing products directly to customers experienced a high number of OH&S incidents and cases of ill health. It recognized the need to involve workers more. To address this, the organization:

— asked for views from the worker representative, and feedback from workers, at team meetings and from talking to workers on the shop floor, then reviewed this feedback in management team meetings;

— reframed the OH&S committee to include representation from all parts of the business, including those working off-site and shift workers;

— improved effectiveness of OH&S committee meetings by having flexible meeting agendas, structuring meetings in a more consistent way and encouraging participants to provide examples of good meeting practice;

— displayed feedback from meetings in the workplace;

— encouraged workers to provide feedback to their representative or directly to the OH&S committee;

— introduced rotation of the chair of the OH&S committee, once trust was established between the members of the committee;

— included planning for OH&S, assessing and prioritizing risks and best solutions in the agenda for OH&S committee meetings;

— introduced no-blame hazard reporting;

— jointly investigated OH&S incidents, asked for ideas to prevent recurrence and reviewed these with input from top management and the OH&S committee;

— introduced monthly joint inspections by members of top management and non-managerial workers;

— reviewed OH&S training needs and plans in the OH&S committee;

— held weekly team meetings to discuss how to improve OH&S issues (this led to improvements in machine guarding and in the working environment, including use of a better ventilation system);

— included OH&S in monthly toolbox talks, encouraging workers to deliver these.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 5.4.

To demonstrate the involvement of workers at all levels of the organization, a medium-sized logistics company found it helpful to create a matrix of all the processes within its OH&S management system where workers or worker representatives are consulted or participate.

This company has found that a matrix with the touchpoints down the left-hand column and the different roles who are consulted or participate in the OH&S management system across the top is helpful when demonstrating not only conformity to ISO 45001:2018 but also when internally promoting the organization's commitment to worker involvement.

EXAMPLE 3 Real life case 3 on how to implement requirements in ISO 45001:2018, 5.4.

Company X saw the value of structured regular meetings to ensure that knowledge and ideas are exchanged, and that information is not lost. They implemented this once per month as part of a brainstorming meeting with workers in which one person moderates and top management documents the results.

They set up learning teams, which are mixed teams comprising top management and other workers, to regularly exchange ideas and experiences about working together and dealing with risks.

The learning team discusses different topics, including frequent near misses or tasks with a particularly high risk without blaming anyone. The learning team in company X consists of five to seven people. The meeting takes place in two stages. In the first meeting, participants discuss how different activities are linked to each other in the work process:

— Exchange of experiences: What are the important steps in the activity? Who does what, when? How often does it happen? How long does it take? What instruments/materials are used? What are the known risks?

— What is needed to do the activity? Which requirements must be fulfilled? When does it become difficult to comply with them?

— Exchange of problems: What problems have you encountered and what did you do? What are good or bad conditions for the activity? What do you worry about when doing the activity? What have you already experienced (near misses, incidents, etc.)?

After a short reflection time (e.g. 1 to 2 days), a second meeting deals with suggestions for improvement. The meetings are moderated, and the moderator documents the findings:

— Collecting ideas for solutions: What are your ideas about how to resolve the problems? How can we have a direct impact on it? What suggestions are simple to implement?

— Make specific agreements: Who takes care of what? What do we agree on for all of us? When do we meet again to discuss results?

6 Planning

6.1 Actions to address risks and opportunities

6.1.1 General

Planning is where the organization goes into the details about the external and internal issues, needs and expectations and the scope determined (see Clause 4). During planning, the organization determines risks and opportunities that need to be addressed, related to OH&S hazards, to the OH&S management system and to legal requirements and other requirements. Then, it decides what should be managed and the best way to do that.

ISO 45001:2018, 6.1.1, serves as a general introduction to planning with a few added requirements that are not detailed in the following subclauses. The added requirements in ISO 45001:2018, 6.1.1, concern maintaining documented information of risks and opportunities and that an organization should assess risks and opportunities related to change before these changes take place.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 6.1.1.

A medium-sized company in the automotive industry took the following approach to conform to the requirements in 6.1.1.

The company found that the requirements related to the issues identified during consideration of context (from Clause 4), and what to take into account when determining risks and opportunities, were all covered by the processes established to conform to the requirements in 6.1.2 to 6.1.4.

Regarding requirements for documented information, they found that 6.1.2 to 6.1.4 do not cover the actual risks and opportunities, only methods and criteria for risks. Nor is there a specific requirement for keeping documented information of hazards. The company decided that keeping the additional documented information was helpful, so it included registers for hazard, risks and opportunities in the planning processes. Using these registers meant that the methodologies and criteria for risks and opportunities can be understood more clearly.

Finally, the company found that the remaining requirement in 6.1.1, about management of change, would be covered by the processes used to meet the requirements in 8.1.3 (management of change) so there was no need to do anything additional to conform to this requirement.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 6.1.1.

To demonstrate its commitment to taking actions to address risks and opportunities, a construction company incorporated an assessment process into its existing practices.

When considering a new business proposal, an assessment of the risks and opportunities related to the OH&S management system are required criteria and are incorporated in the rating and approval process. The negative or positive impact the proposal has on the OH&S management system are among the other ranked indicators such as financial, reputation, etc. considered during decision-making.

6.1.2 Hazard identification and assessment of risks and opportunities

6.1.2.1 Hazard identification

Hazard is defined in ISO 45001:2018, 3.19, as “source with a potential to cause injury and ill health”. Hazards therefore need to be identified before the risks associated with them can be assessed.

Hazard identification should proactively determine sources, situations or tasks (or combinations of these) arising from an organization’s activities that have the potential to cause physical or psychological injury or ill health. Examples include sources (e.g. moving machinery, radiation or energy sources, introduction of new technologies and processes, work overload, poor management, bullying, harassment), situations (e.g. working at heights), tasks (e.g. manual handling or sustained work in a fixed position, high stress roles, shift work, isolation) and work environments (e.g. confined spaces, extreme temperatures, volatile or hostile situations).

In identifying hazards, consideration should be given to different groups of workers, noting, for example, that hazards for different genders, age groups or workers with disabilities can differ.

Hazard identification should take into account reasonably foreseeable types of hazards in the workplace, including, for example, physical, chemical, biological, biomechanical, technological, psychosocial, ergonomic and natural phenomena. Hazards related to outsourced processes should also be considered whether they are carried out on-site or off-site.

The organization should also identify hazards that can arise from reorganization or changes in processes, changes in knowledge, maintenance activities and potential emergency situations. Hazard identification includes looking into past incidents (including near misses) and how work is organized and actually done, rather than how it should be done. It can also be valuable to learn from the experiences of other organizations, especially if they have similar processes.

The organization should establish a hazard identification process (including tools and techniques) that is relevant to the context of the organization and the scope of its OH&S management system. Tools and techniques should take into account that workers with differing characteristics (e.g. gender, physical stature, age, cultural background, ethnicity) perceive and experience hazards differently. Care should be taken to ensure that hazard identification is not limited by a too-generic approach.

Various sources of information for identifying hazards can be used including:

— observations of behaviour and work practices, monitoring and assessment of hazardous exposures (chemical and physical agents) workflow;

— OH&S legal requirements and other requirements (e.g. those that prescribe how hazards should be identified);

— incident reviews and subsequent analyses of underlying causes;

— monitoring data, occupational exposure and health assessments, records and sick days, reports from previous audits, assessments or reviews;

— input from workers, worker representatives and other interested parties, including complaints, interviews and surveys;

— observations from safety tours and inspections;

— information from other management systems (e.g. quality management or environmental management);

— process review and improvement activities in the workplace;

— information on good practice and/or typical hazards in similar organizations, benchmarking and reports of incidents that have occurred in similar organizations;

— information on the facilities, processes and activities of the organization, including workplace design, site plans, traffic plans (e.g. pedestrian walkways, vehicle routing);

— information on the work environment: heat, lighting, noise, air quality, vibration;

— process flowcharts and operations manuals;

— inventories of hazardous materials (raw materials, chemicals, wastes, products, sub-products);

— equipment specifications and maintenance records, product specifications, safety data sheets, toxicology and other OH&S data.

Hazard identification processes should be applied to both routine and to non-routine (e.g. periodic, occasional, emergency) activities and situations. Non-routine activities and situations can include, for example:

— facilities or equipment cleaning;

— plant or equipment start-ups/shutdowns;

— off-site visits (e.g. field trips, customer supplier visits, prospecting, excursions);

— refurbishment;

— temporary arrangements.

— temporary process modifications;

— non-scheduled maintenance;

— utility disruptions (e.g. power, water, gas).

To prevent ill health, the hazard identification process should also take into account organizational and social conditions in the work environment including, for example:

— how work is organized;

— insufficient training;

— unhealthy workloads;

— inadequate resources;

— work hours;

— work patterns;

— inadequate communication;

— victimization;

— harassment;

— bullying;

— discrimination due to, for example, gender, age, sexual orientation;

— poor management of work;

— interruption of work;

— work cultures that do not support the OH&S management system.

Hazard identification process(es) should take into account persons who have access to the workplace (e.g. customers, visitors, service contractors, delivery workers, as well as employees) and the hazards and risks arising from their activities or from the use of products or services supplied to the organization by them. The hazard identification process(es) should also take into account their degree of familiarity with the workplace and their behaviours.

Human factors should be taken into account when evaluating hazards related to processes, equipment and work environments. Human factors should be considered whenever there is a human interface and take into account issues such as ease of use, potential for operational errors, operator stress and user fatigue. Human factors can include:

— human behaviour: temperament, habits, attitude;

— cognitive capabilities: understanding, attention;

— physiological capabilities and limitations: body characteristics; ergonomics, body characteristics (height, mass, body mass index (BMI)), health status (fitness level, stress level, hearing abilities).

In some instances, there can be hazards which occur or originate outside the workplace that can have an impact on individuals within the workplace (e.g. releases of toxic materials from neighbouring operations). Where such hazards are foreseeable, these should be addressed.

For the hazard identification process(es) to be effective, the organization should use an approach that includes information from a variety of sources, especially inputs from people who have knowledge of its processes, tasks or systems.

The hazard identification process(es) should be conducted by people with competence in relevant hazard identification methodologies and techniques, and appropriate knowledge of the work activity. Checklists can be used as a reminder of what types of potential hazards to consider and to record the initial hazard identification. However, care should be taken to avoid over reliance on the use of checklists because they are often a substitute for analytical and creative thinking about hazards and often do not account for non-routine or emerging hazards. Checklists should be specific to the work area, process or equipment being evaluated and regularly updated.

When identifying potential emergency situations, consideration should be given to emergencies that can occur during both routine operations and non-routine conditions (e.g. operation start-up or shut-down, construction or demolition activities) such as, for example:

— serious injuries requiring treatment or medical attention;

— fires and explosions;

— release of hazardous materials/gases;

— natural disasters, extreme/bad weather;

— loss of utility supply (e.g. loss of electric power);

— pandemics/epidemics/outbreaks of communicable disease;

— civil disturbance, terrorism, sabotage;

— workplace violence (e.g. physical assault);

— failure of critical equipment;

— traffic incidents;

— emergency situations that have occurred in similar organizations or during similar activities.

When identifying potential emergency situations it can be relevant to consider, for example:

— legal requirements;

— previous incidents and emergency experience;

— emergency situations that have occurred in similar organizations or during similar activities;

— information related to incident investigations posted on the websites of regulators or emergency response agencies.

The hazard identification process(es) should include evaluation of how emergency situations can impact people within and/or in the immediate vicinity of workplaces controlled by the organization. Consideration should be given to those with special needs (e.g. people with limited mobility, vision, hearing or capability). This can include employees, temporary workers, contractors, visitors, neighbours or other members of the public. The organization should also consider potential impacts on emergency service workers while at the workplace (e.g. firefighters).

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 6.1.2.1.

A diverse service organization identified a large number of hazards when it systematically reviewed its services.

The list of hazards was very long, but this was considered to be central to the OH&S management system and should therefore be extensive. The organization also found it useful to have a comprehensive review of activities as the organization took the next step and assessed the risks related to these hazards.

Worker participation was critically important in this process to increase the likelihood that all possible hazards were identified and that any currently not managed were swiftly brought to the attention of the organization.

The organization identified a large number of hazards. A few examples are given in Table 3. As the examples show, the organization identified several hazards for many of the processes or activities, which in turn could result in more than one risk.

Table 3 — A few of the hazards identified

Task/activity/process	Hazards
Food preparation for own staff and hospital staff	Spoiled food, hot surfaces or steam, sharp objects (e.g. knives), electric shock, wet or oily floors, torn electric cables and appliances
Cleaning the external surface of a window of the 24th floor of a building	Working at heights where there is a potential for slips and falls
Customer service information in an airport	Violent behaviour from customers when rerouting flights due to cancellations, stress from not knowing what to tell customers
Services, such as serving food and drinks, to the public during a football match	Uneven or wet and slippery walkways, harassment from members of the public, aggressive behaviour from those upset about poor service in food lines
Excavating a trench for an oil pipeline	Getting hit by mobile excavator, exposure to dust, falling from heights (the open trench), noise from machinery

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 6.1.2.1.

For a small radiator repair shop, hazard identification started by conducting a walk around, where members of a team that included workers who performed and designed work activities, were asked to spot potential hazards. The walk around included reading labels on containers and the observation of sharp objects, low clearance, working at height, unprotected sources of energy and even detection of odours. Workers involved in these activities were the key source of information on near misses related to identified hazards and risks.

The organization also completed a job hazard analysis. The process for hazard identification included discussing the findings from these activities in a sit-down meeting and asking, "what if?" questions related to potential incidents. This helped when conducting the assessment of OH&S risks and other risks to the OH&S management system. This hazard identification was not a one-time activity. It became part of normal operations whenever work was performed and was reviewed when processes, activities or equipment changed as well as when incidents happened.

6.1.2.2 Assessment of OH&S risks and other risks to the OH&S management system

Risk is defined in ISO 45001:2018, 3.20, as the "effect of uncertainty". OH&S risk is defined in ISO 45001:2018, 3.21, as the "combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or ill health that can be caused by the event or exposure(s)".

OH&S risk assessment is a process(es) of evaluating the risk arising from a hazard, taking into account the adequacy of any existing controls. Worker participation is a key for this process(es) to be effective.

Other risks to the OH&S management system are related to potential organizational, managerial and management failures, which can also result in injuries and ill-health. A risk to the OH&S management systems can be different to, for example, risks to the environmental management system (EMS), quality management system (QMS) or to the organization. Moreover, risks to the OH&S management systems can affect or can be affected by EMS risks, QMS risks, etc.

Some reference documents use the term "risk assessment" to encompass the entire process of hazard identification, risk assessment and determining controls. ISO 45001:2018 refers to the individual elements of this process separately and uses the term "assessment of risks" to refer explicitly to the second stage of this process, described in this clause.

When assessing OH&S risks and other risks to the OH&S management system, the organization should take into account the following:

a) General considerations on the risk assessment process(es):

   1) In the case of risks to the OH&S management system, the organization can decide that a person, or a group of people, analyses each source of risk and decides, applying a qualitative criterion, which ones will be addressed (high risk level) and which ones, for the time being, will not be addressed (low risk level) considering higher risk first.

   2) The assessment of OH&S risks often is regulated at national level. Regulatory guidance should be taken into account where applicable. This is often available on regulators' websites.

   3) Assessment of OH&S risks should be conducted by people with relevant competence and appropriate knowledge of the work activity.

   4) Assessment of OH&S risk should involve participation of workers and take into account legal requirements and other requirements.

   5) In some cases, assessments are performed using sampling to cover a variety of situations and locations. Care should be taken to ensure that the samples used are sufficient and adequately represent the situations and locations being assessed.

   6) The organization should consider limitations in the quality and accuracy of the data used in the assessment of risks and the possible effect this can have on the resulting calculation of risk. The higher the level of uncertainty in the data, the greater the need for caution in determining whether the risk has been reduced, so far as necessary to address OH&S risk.

   7) Good practice is also to evaluate how the assessment will take into account the number of people that can be exposed to a particular hazard.

   8) The organization should consider OH&S risks to sensitive populations (e.g. pregnant workers) and vulnerable groups (e.g. inexperienced workers), as well as any particular susceptibilities of the individuals involved in performing particular tasks (e.g. the ability of an individual who is colour-blind to read instructions).

   9) An organization can use different methodologies to assess OH&S risk as part of an overall strategy for addressing different areas or activities. When estimating likelihood of harm and severity, the effectiveness of existing control measures should be taken into account, using the hierarchy of controls. Assessment should be detailed enough to determine appropriate control measures.

   10) The description of measures to monitor and control OH&S risks can be included within operational control procedures. The determination of competency requirements can be included within training and development processes.

   11) Some organizations develop generic OH&S risk assessments for typical activities that can occur in several different sites or locations. Such generic assessments can be useful as a starting point for more specific assessments, but they should be reviewed and customized so that they are appropriate to the particular situation. This approach can improve the speed and efficiency of the assessment process and improve the consistency of assessments for similar tasks.

b) Inputs to the risk assessment process(es): inputs to a process(es) for assessing OH&S risks can include information or data on the following:

   1) details of location(s) where work is carried out;

   2) the proximity and scope for hazardous interaction between activities in the workplace;

   3) human capabilities, behaviour, competence, training and experience of those who normally and/or occasionally carry out hazardous tasks;

4) toxicological data, epidemiological data and other health-related information;

5) proximity of other people (e.g. cleaners, visitors, contractors, the public) who can affect or be affected by work activities;

6) effectiveness of existing controls (e.g. details of any work instructions, systems of work and/or permit-to-work procedures, preparations for hazardous tasks, supplier instructions);

7) the potential for failure of plant and machinery components and safety devices or their potential degradation from exposure to the elements or process materials;

8) details of access to, and adequacy/condition of, emergency procedures, emergency escape plans, emergency equipment, emergency escape routes (including signage), emergency communication facilities and external emergency support;

9) monitoring OH&S-related data including those related to previous incidents and unsafe acts by individuals performing the activity or by others (e.g. adjacent workers, contractors, visitors);

10) the duration and frequency at which tasks are carried out and the number of workers involved;

11) any legal requirements and other requirements which prescribe how assessment of OH&S risk has to be performed or what constitutes risk reduction.

c) Specific methodologies:

1) OH&S risk assessment can use simple methodologies and can be qualitative. These approaches typically involve a greater degree of judgement since they place less reliance on quantifiable data. In some cases, these methods can serve as initial screening tools, to determine where a more detailed assessment is needed.

2) When determining levels for likelihood and severity and to review what controls are necessary the organization can:

i) consider the risk level with no control measures applied;

ii) consider the risk level with currently applied control measures;

iii) consider the risk level using the hierarchy of controls protection factors;

iv) recalculate the risk level after additional control measures have been applied to show the benefits in reducing OH&S risk.

3) For complex situations, such as OH&S risks relating to chemical manufacture and processing, specific methodologies can be useful (e.g. bowtie, hazard and operability analysis (HAZOP), failure mode and effective analysis (FMEA)). For less complex situations such as slips and trips, a simple risk matrix (high, medium, low) can be more appropriate.

4) The number of levels for each variable (severity, likelihood/exposure, levels of risk) and the description of each level should be adapted to the organization's context, processes, past OH&S experience, current needs and concerns, OH&S policy and business strategies.

5) When the organization's OH&S risk assessment method uses descriptive categories for assessing severity or likelihood of harm, they should be clearly defined (e.g. clear definitions of terms such as "likely" and "unlikely" are useful so that different individuals interpret them consistently).

6) Some organizations promote the use of a specific type of assessment in some circumstances (e.g. where a pre-prepared OH&S risk assessment covers the likely situation), but the situation can quickly develop, and new risks can emerge (e.g. emergency situations, home visits).

7) Such an assessment relies on the assessor being competent to consider rapidly changing circumstances and reassess the OH&S risk and take appropriate action, but it is no substitute for pre-planned and documented assessments.

8) Some specific OH&S risk assessment methodologies are complex and appropriate to special or particularly hazardous activities.

9) Risk assessment of a chemical process plant can require complex mathematical calculations of the probabilities of events that can lead to a release of agents that can affect people in the workplace or the public. In many countries, there is sector-specific legislation that helps to identify where this degree of complexity is required.

10) Assessments to evaluate the harm from exposure to chemical, biological and physical agents can require measurement of exposure with appropriate instruments and sampling methods. Comparison of these measurements should be made to applicable occupational exposure limits or standards. Worker exposure to airborne hazards should be assessed against applicable exposure levels by the organization and determined using correctly calibrated equipment. The organization should ensure that the assessment considers both the short-term and long-term consequences of exposure and the additive effects of multiple agents and exposures.

d) Output of the risk assessment process:

The risk assessment process is completed when a risk level (quantitate or qualitative) has been assigned to each hazard identified. The information is usually collected in a document called a "risk matrix". Small organizations have a single matrix covering all process, while larger organization can have several matrixes (e.g. per worker, per roles, per process, per plant, per functions). The next step is to determine action plans to addresses those risks.

e) Review and update:

1) The requirement in ISO 45001:2018, 6.1.2.2, to identify hazards and assess OH&S risks from these hazards and assess other risks to the management system should not be interpreted as a one-time activity, as this needs to be done on an ongoing basis. This requires the organization to consider the timing and frequency of such reviews, as affected by the following types of issues:

i) determination of whether existing risk controls are effective and adequate;

ii) response to new hazards;

iii) response to changes that the organization itself has made;

iv) response to feedback from monitoring activities, incident investigation, emergency situations or the results of testing of emergency procedures;

v) changes in legislation;

vi) external factors, e.g. emerging occupational health issues;

vii) advances in control technologies;

viii) changing diversity in the workforce, including contractors;

ix) changes proposed by corrective action;

x) changes requested by workers or worker representatives;

xi) changes in external or internal issues;

xii) changes in needs and expectations of interested parties.

2) Periodic reviews can help ensure consistency across assessments carried out by different people at different times. If conditions change and/or better technologies for controlling risk become available, improvements should be made, as necessary.

f) Documented information:

The organization should document and keep the results of hazard identification, assessments of risks and determined controls.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 6.1.2.2.

The following is an example of how an organization in the mining industry evaluated one of their identified OH&S hazards, performing a semiquantitative risk assessment using a risk matrix (see Table 4) and the hierarchy of controls and other risk assessment tools to calculate the level of risk associated with a particular hazard and to assess potential risk treatment options.

An employee working at height must periodically remove the cover of a container to refill it. Other employees working below could be struck by the heavy cover if it slipped from the grasp of the employee working at above. Using a risk matrix (see Table 4) the organization calculated the risk of this activity to be unacceptably high (very high) using the formula (likelihood × severity) = risk level score (4 × 4 = 16).

Table 4 — Risk matrix for one of the hazards

Severity (1 to 5)	Likelihood (1 to 5)				
	Very unlikely (1)	Unlikely (2)	Possible (3)	Likely (4)	Very likely (5)
Death or permanent total disability (5)	5	10	15	20	25
Permanent partial disability and/or hospitalization (4)	4	8	12	16	20
Injury or occupational illness resulting in one of more days away from work (3)	3	6	9	12	15
Injury or occupational illness not resulting in a lost workday (2)	2	4	6	8	10
First aid only, or no injury or illness (1)	1	2	3	4	5

Very high
High
Medium
Low

Realizing the very-high-risk level (current state), the organization considered the hierarchy of controls protection factors (see Table 5) to identify possible additional controls (future state) to reduce the hazard risk to an acceptable level.

Table 5 — Hierarchy of controls risk protection factors

ISO 45001:2018 Hierarchy of control	Multiply risk level by
Eliminate the hazard	0
Substitute with less hazardous processes, operations, materials or equipment	0,2
Use **engineering controls** and reorganization of work	0,4
Use **administrative controls**, including training	0,6
Use adequate PPE	0,8
None	1

The organization analysed several options to try to reduce the risk level to an acceptable level. The result was that the organization determined it needed several controls (layers of protection) to bring the risk down to an acceptable level. Figure 2 is the result of the future state risk assessment.

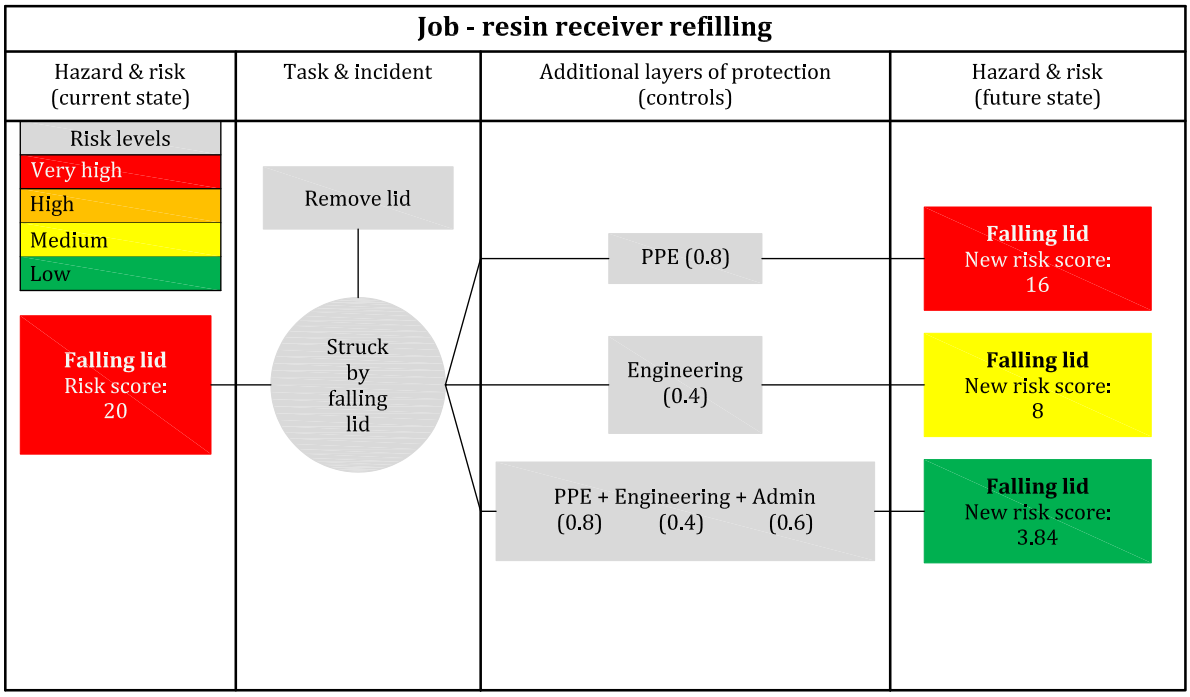


Figure 2 — Bowtie risk assessment example

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 6.1.2.2.

A service organization based their assessment of risk on Table 3. That was now expanded as given in Table 6.

Table 6 — Assessment of risk

Process	Hazard(s)	Consequence/likelihood	Risk level
Food preparation for own staff and hospital staff	Spoiled food	Severe food poisoning in rare cases	Medium
	Hot surfaces or steam	Burns quite frequently	High
	Sharp objects (e.g. knives)	Typically, infrequent minor cuts	Low
	Wet or oily floors	Injuries from slips and falls quite frequently	High
	Torn electric cables and appliances	Electric shock rarely	Low
Customer service information service in an airport	Frustrated customers when rerouting flights due to cancellations	Infrequent aggressive behaviour from customers resulting in mental stress	Low
	Inadequate knowledge of what to say or do in your job	Mental stress frequently	Medium
Services, such as serving food and drinks, to the public during a football match	Walking on uneven or slippery surfaces	Injuries from slips and falls frequently	High
	Harassment from persons in the public	Infrequent mental stress	Medium
	Aggressive behaviour from those upset about poor service in food lines	Infrequent severe mental stress	High

Table 6 *(continued)*

Process	Hazard(s)	Consequence/likelihood	Risk level
Excavating a trench for an oil pipeline	Getting hit by mobile excavator	Injury/crushing by heavy equipment but this has not yet happened	Medium
	Exposure to dust	Respiratory problems or eye irritation and this is common	Medium
	Falling from heights (the open trench)	Injuries (or worse) from falls but this is rare	High
	Noise from machinery	Exposure to high noise levels during longer periods can cause hearing loss	High
	Trench collapse	Crushing/suffocation from falling material	High

Table 7 gives examples from other risks to the OH&S management system.

Table 7 — Other risks to the OH&S management system

Risk source	Risk	Risk level
Lack of OH&S interest from top management	Develop an OH&S management system with no visible leadership	High
Lack of financial resources for investing in OH&S improvements	Not ensuring that the current control measures are effective	High
Suppliers of OH&S protection equipment are not always able to deliver required goods when there is increased market demand. For example, a supplier of respirators and face masks to mitigate for virus exposure is leaving the country in three months.	For example, running out of the current stock of filters and not being able to replace them if the organization fails to find another supplier	Medium

EXAMPLE 3 Real life case 3 on how to implement requirements in ISO 45001:2018, 6.1.2.2.

A smaller hospital identifies its hazards and assesses its risks in a combined manner through brainstorming sessions with the help of its workers. This lets the organization leverage the collective knowledge of the team.

For more complex processes, the organization performs a more detailed quantitative analysis combining the assessment of severity (or consequences) with frequency using the results from performance monitoring such as routine safety inspections, health hazard assessments or industrial hygiene exposure assessments to hazardous materials.

To complement these exercises, and to strengthen its assessment of risks to the OH&S management system, the organization takes input from internal audits and from other OH&S management system processes, e.g. from reviews of incidents and nonconformities.

6.1.2.3 Assessment of OH&S opportunities and other opportunities for the OH&S management system

The organization should assess the following:

a) Opportunities for improving the OH&S performance by, for example:

   1) buying equipment or introducing a new activity or practice, or planning changes such as control equipment that can reduce emission discharge;

   2) improving well-being even where no significant risks have been determined;

   3) working with interested parties such as OH&S experts to reduce significant risk.

   It is important to consider that the process of seeking, assessing and managing opportunities is different from the improvement resulting from identifying hazards, assessing risks and defining controls.

b) Opportunities for improving the OH&S management system by, for example:

1) increasing worker participation in OH&S decision-making and improving the organizational culture related to safety and training;

2) learning from other organizations, both from positive and negative examples

3) making the scope of the OH&S management system broader.

An important part of determining opportunities is prioritization based on the potential benefits to the overall improvement of OH&S. Priority should be given to opportunities to improve the OH&S management system that can result in elimination or significant reduction of the likelihood or severity of injury or ill health. This can include addressing common hazards which result in frequent less severe impacts as well as those with the potential for less frequent but more significant impact.

It is important to clarify that the process of seeking, assessing and managing opportunities is not simply about improvements resulting from identifying hazards, assessing risks and defining controls.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 6.1.2.3.

A building maintenance company that identified hazards and assessed risks in previous examples determined opportunities not directly related to hazards during the context analysis. Table 8 provides some examples.

Table 8 — Other opportunities

Opportunity	Assessment	Worthwhile to be pursued?
Replace outdated software that is used to manage the OH&S management system information.	The new software offers much more user-friendly tools, and we know that four competitors have adopted it.	Yes
A new technology developed by another company to clean the windows of tall buildings from outside, using devices operated from inside the building. This technology can be useful in our headquarters' offices.	The hazards will be eliminated. There are potentially new hazards related to the use of electrical equipment.	Revisit next year
The steel plant nearby is relocating to another part of the country. They have good OH&S staff that could be offered a job in our organization.	Will our organization benefit from the available OH&S resources?	No
A new card-box manufacturing plant is being installed across the road. We could offer them to share our ambulance and fire brigade combining the emergency preparedness plans.	This would save us some money and would increase our response capabilities.	Yes

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 6.1.2.3.

A bank struggled to identify opportunities that were not simply about minimizing risks (flip side of risks). They wanted to maximize the positive impact of identifying opportunities and found it very helpful to utilize the participation of workers. They formed a committee of workers from various locations or departments to identify and assess opportunities to improve the health and well-being of workers, as well as opportunities to improve the OH&S management system.

EXAMPLE 3 Real life case 3 on how to implement requirements in ISO 45001:2018, 6.1.2.3.

A small machine shop identified potential risks of laceration from exposed blades on a frequently used table saw. The organization then determined what could be done, such as placing a guard over the blade. From a management system perspective, the opportunity for improvement was the purchase of a new machine that cuts without the need to place the operator's hands close to the saw blade. This small machine shop also considered outsourcing the activity or purchase pre-cut materials from a qualified supplier but decided to buy a new machine instead as their production volume was quite limited.

6.1.3 Determination of legal requirements and other requirements

ISO 45001:2018, 6.1.3, goes into detail on OH&S legal requirements and other requirements, including legislation, corporate requirements and voluntary requirements that the organization chooses to comply with (e.g. sectorial agreements). It requires organizations to have processes(es) to determine what these requirements are, how access to requirements is managed, and how these are kept up to date. Worker consultation can help with this process(es). Some of these requirements can address a range of issues in addition to OH&S matters.

Whether the business is simple or complex, information regarding OH&S legal requirements and other requirements can be gathered in straightforward ways. For example, with the help from the organization's legal department, subscription services, membership to associations, government websites, competent consultants, and attendance at conferences or training.

It can be beneficial for the organization to involve workers from different backgrounds (OH&S, legal, production) in the determination of legal requirements and other requirements.

In the case of legal requirements, some organizations provide specific external training activities for workers that are affected by these requirements. Insurance companies and other OH&S providers, including government authorities, can also be a source of information and education on obligatory requirements. Having advance knowledge of future regulatory requirements can also help an organization identify potential hazards by outlining what should be considered when addressing OH&S risks and potential sources of injuries and ill health.

For organizations operating in hundreds of locations worldwide, the challenges with this can be greater as access to, and interpretation of, legal requirements can be difficult. In such cases, it can be helpful to use local legal contacts, either within the organization or through consulting external service providers to identify, track and monitor OH&S regulations.

The organization should determine the following:

— How it can access information about legal requirements and other requirements. There is no requirement to maintain a library; it is sufficient that the organization is able to access the information when needed.

— Who, within the organization, is responsible for ensuring compliance to legal requirements and other requirements and what has to be done to ensure compliance. This usually requires a review of process(es) related to each requirement and who is responsible for those processes.

— Who should receive information on legal requirements and other requirements and how to ensure that relevant information is communicated to them.

Documented information should be maintained and kept up to date. For example, maintaining a spreadsheet that includes a brief summary of the OH&S legal requirements and other requirements, their status (e.g. current, under review, superseded), the person responsible for ensuring compliance, the last review date, areas of the organization involved, the requirement impacts, controls in place to maintain compliance and perhaps any challenges identified. These challenges can be seen as some of the "other risks and other opportunities" for the organization.

It is important to remember that this is not a one-time exercise. To keep requirements up to date, the organization should identify a way to regularly ensure that knowledge about legal requirements and other requirements is current, complete, analysed and followed up.

Examples of an assessment of risks and opportunities are given in Table 9.

Table 9 — Examples of assessment of risks and opportunities related to requirements

Type of requirement	Requirement	Risk/opportunity level
Legal	Workers shall use protective clothing to protect against very high or low temperatures in the workplace	High (workers using the wrong clothing)
Legal	Workers shall normally not work more than eight hours per day to prevent work overload	High (workers not having enough rest, not being at home, loss of concentration)
Corporate	Establish a kindergarten at each work site, to look after young children during working hours to prevent parental stress	Medium (stressed workers)
Corporate	Publicly recognize workers who have been helpful in improving the OH&S management system and performance	Opportunity to be pursued (more committed workers)
Voluntary	Management commitment to OH&S should be supported by routine weekly site tours by all managers	Opportunity to be pursued (more committed managers and workers)

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 6.1.3.

A large organization wanted to simplify setting up a register of legal requirements and other requirements. To do this, it used a central online database to help identify legal requirements and other requirements relevant to each location or department. By doing so, it reduced the risk of omissions and was able to share information more readily.

When it created the register of legal requirements and other requirements, the organization reviewed hazards identified and held interviews with both managerial and non-managerial workers to ensure that requirements related to all materials, equipment and activities were identified.

The controls in place to establish and maintain compliance were noted in the registry to clarify why a certain process or procedure was important and to prevent processes or procedures being skipped or changed and negatively affecting future compliance.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 6.1.3.

An international organization started operating in a country where regulations required organizations to contract an external supplier service to provide medical services 7 days a week, 24 h a day. This contract had to include first aid services and emergency response. After lengthy discussion with worker representatives, the organization decided to go beyond the legal requirement, and chose to provide a doctor on-site for three hours each day to assist with work-related and non-work-related injuries and ill health; this is a voluntary requirement that the organization commits to comply with.

When assessing priorities, the organization decides to:

— address the risk of the doctor being unable to assist all workers in need of assistance, by agreeing with the contractor that a second physician is made available if necessary;

— benefit from the opportunity presented on days when few workers need assistance, by asking the physician to use this time to analyse the results of annual medical checks, and monitor (e.g. by group, department and age) specific results such as levels of glucose, cholesterol or blood pressure, to determine the need to take further action (e.g. improve nutrition level of meals offered on-site, enable physical exercise during work hours, provide workers with information on how to adapt meals at home). Note that these data were not made available to anyone other than the doctor.

6.1.4 Planning action

An organization should plan how to take action to address hazards, legal requirements and other requirements, potential emergency situations and other risks and opportunities (see 6.1.1, 6.1.2, 6.1.3). The organization can plan to take action in a variety of ways, using its OH&S management system

processes or other business processes. The organization should also determine the effectiveness of the actions taken.

In doing this the organization can take into account other OH&S management and other business processes that can have an impact on the best way to address OH&S risks and opportunities and other risks and opportunities to the OH&S management system.

When the organization has completed the assessment of its risks and taken into account existing controls, it should be able to determine whether existing controls are adequate or need to be improved, or if new controls are necessary.

If new or improved controls are necessary, their selection should be determined using the hierarchy of controls. This means that hazards should be eliminated where practicable, followed in turn by risk reduction (either by reducing the likelihood of occurrence or potential severity of injury or harm) and with the use of PPE being seen as the lowest form of control.

Planning to take action can include a single action, such as establishing an OH&S objective, providing training, adding resources, implementing an operational control or, for example, planning for emergencies. Alternatively, the organization can use a combination of actions that include OH&S objectives and operational controls using the hierarchy of controls. In planning actions, the organization should consider technological options and feasibilities, and financial, operational and business requirements. As with any planned action, the potential for any unintended consequence should be considered, e.g. short or long-term adverse impacts on OH&S.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 6.1.4.

A sales company with a warehouse containing various products, considered how to meet the requirements of planning action and to control risks, so far as reasonably practicable as well as to take advantage of opportunities to improve OH&S management. It was decided that some hazards, especially those related to legal requirements, should be eliminated but risks related to other hazards needed at least to be reduced.

Other OH&S risks and risks to the OH&S management system were on levels where they did not require prioritization and could simply be monitored to ensure that controls were maintained. In other cases, the organization decided to take additional action which included short-term as well as long-term measures. For example, more power outlets would be installed to eliminate the need for using long extension cords and multi-strip outlets.

They were also in the process of reviewing a proposed layout for a remodelling of the office and decided to take measures to ensure adequate power outlets, as well as putting in place life safety devices before occupancy occurs. Plans and preparation also included consideration for unplanned events such as a power outage affecting the local exhaust fan for controlling chemical emissions or other emergencies such as a fire, earthquake or medical incidents. The organization found it beneficial to document internal safety standards and practices and the actions to be taken when hazards are identified, and risks assessed.

6.2 OH&S objectives and planning to achieve them

6.2.1 OH&S objectives

Setting objectives is an integral part of the planning of an OH&S management system. An organization should set objectives to fulfil the commitments established in its OH&S policy, including commitments to the prevention of injury and ill health to provide safe and healthy workplaces and to continually improve its OH&S management system and improve OH&S performance.

The organization should use input from different sources, such as from planning, OH&S performance monitoring, internal audits, management reviews and results of KPIs, to determine whether it should also set specific objectives for the OH&S management system, to manage risks or opportunities, or to plan for anticipated changes in relation to legal requirements or other requirements.

To ensure that objectives, when achieved, produce a positive impact on the OH&S management system and on the OH&S performance, they should be specific, measurable, achievable, relevant, timely and

consistent with the OH&S policy. When practicable, each objective should be associated with an indicator(s).

During the establishment of OH&S objectives, particular regard should be given to information or data from workers most likely to be affected, as this can assist in ensuring that the objectives are achievable and widely accepted by workers. It is also useful to consider information or data from sources external to the organization, e.g. from contractors or other interested parties.

OH&S objectives can address both broad corporate OH&S issues and OH&S issues that are specific to individual functions and levels within the organization. Nevertheless, not all functions and departments are required to have specific OH&S objectives.

OH&S objectives can be broken down into smaller, more manageable objectives, depending on the size of the organization, the complexity of the OH&S objective and its timescale. There should be clear links between the various levels of tasks and the OH&S objectives.

Organizations are not required to continually improve the performance of all processes or all systems at the same time. It is possible that some processes need to be improved while others require ongoing maintenance to ensure a certain level of performance.

Monitoring of objectives can be completed as part of team meetings, periodic reports to top management or integrated into other reports already in place within the organization.

Established objectives and their achievement should be communicated throughout the organization.

With a focus on continual improvement, an organization should regularly review and update its objectives to stay aligned with the context of the organization and the OH&S policy.

Small organizations can choose to start with simpler, less complex or detailed objectives and metrics, and progress to more detailed objectives and metrics as the OH&S management system becomes more mature. Regardless of context, objectives should realistic and suitable for the organization.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 6.2.1.

A smaller organization with one manufacturing site developed the objectives given in Table 10 for their operations.

Table 10 — OH&S objectives

Area/process	Objective next year
Training and awareness on OH&S issues	Increase 10 %
Site tours by OH&S inspectors during the night shifts	Increase 15 %
Absentees during winter months of workers in outdoor yards and ports due to low temperatures	Decrease in 25 %
Incidents during outdoor cleaning of tall buildings	Decrease in 13 %
Nonconformity and corrective actions	Maintain the current value of 30 days (maximum)
Monitoring outsourced processes	Maintain: one audit per year, two inspections per month
Worker training and awareness	Maintain a rate of two meetings per week per section

6.2.2 Planning to achieve OH&S objectives

In considering how to plan to achieve OH&S objectives, the organization should examine the resources required (e.g. financial, human, infrastructure) and the tasks to be performed. Depending on the complexity of a plan to achieve a particular objective, the organization should assign responsibility, authority, and completion dates for individual tasks to ensure that the objective can be met within the agreed time frame.

Reviews of plans should be conducted regularly, and the programmes adjusted or modified where necessary. This can be as part of management review, or more frequently.

A time frame should be established to ensure that those responsible, clearly understand when they have to do the actions planned. Simple objectives can be managed through, for example, a spreadsheet. More complex projects can need the intervention of engineering, purchasing and construction expertise.

Successfully completing planned actions does not always lead to achievement of the objectives. Reviewing and modifying plans can help to achieve better outcomes; however, it can also be necessary to create a new plan which takes a different approach.

As a plan is being implemented and indicators are set by the organization, workers responsible for achieving the objective should monitor the indicator established when the objective was defined;

Participation and consultation of workers can help to ensure that the best options are selected and that workers at all levels are committed to achieve the objectives.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 6.2.2.

A logistics company has 350 trucks to deliver non-perishable products, with five sites in a country. Workers complain that they drive too much during night-time hours, which increases the likelihood of incidents. The company establishes an objective of reducing night-time driving (8 pm to 6 am) to less than 5 % of the total driving time within six months with the current value being 21 %. They form a task group (TG) with the participation of the workers from sales, human resources, maintenance and operations, and include worker representatives. The TG submits the plan given in Table 11 for approval by top management.

Table 11 — Plans to achieve objectives

Action	Month					
	1	2	3	4	5	6
Gather all necessary information (customers, current contacts, drivers' home addresses, etc.)	TG					
Develop basic requirements (maximum time of continuous driving, criteria to change drivers during the trip, criteria for meals and resting time)		TG				
Develop a preliminary mathematical model that can allocate the best trip plan for each delivery that meets those basic requirements			Contractor			
Test the software in one branch				Operations contractor		
If successful, extend the use of the software to the whole company					Operations contractor	
Check if night-time driving is reduced to 5 % or lower						TG
Insert the use of the model in the business processes of the company						Sales

After top management approved these action plans, they were included in regular meetings with workers where all workers were invited and departments updated. Shared information related to OH&S objectives raised awareness of the organization's commitment to OH&S and helped those responsible for their completion.

This organization understood that what gets measured gets managed. This often led to an action to get things done and where recognized or rewarded, done well. They applied these two principles to plans to achieve OH&S objectives as this increased the likelihood and success of implementation by employees. Celebrating milestones and regular communication were found to be key to ensuring that actions were achieved. They also integrated OH&S objectives into business decisions related to projects or requests for funding. Demonstrating the link to how a proposal helps meet OH&S objectives or improves the OH&S management system provided clear linkages for workers.

This logistic company also realized that they needed to be careful that rewards and celebrations did not cause incidents or information that could negatively impact success to be under-reported.

7 Support

7.1 Resources

The requirement in ISO 45001:2018, 7.1, is very general, stating that the organization needs to determine the resources needed to establish, implement and maintain the OH&S management system. To meet this requirement the organization should consider:

a) the financial, human and other resources (e.g. time and materials to accomplish management-system-related tasks) specific to its operations;

b) the technologies specific to its operations;

c) infrastructure and equipment;

d) information systems;

e) the need for competence, expertise and training;

f) externally provided resources.

The organization should provide relevant resources in a timely and effective manner. Resources and their allocation should be reviewed to ensure achievement of intended outcomes and give consideration to planned changes and/or new projects or operations.

Knowledge is an important resource for establishing or improving the OH&S management system. When addressing future challenges, the organization should take into account its current knowledge base and determine how to acquire or access any necessary additional knowledge.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 7.1.

When a medium-sized organization in the service sector implemented an OH&S management system in accordance with ISO 45001:2018 they realized that, once initial resources to support the OH&S management system were determined, they needed to establish a process to identify changes in resource needs, when new processes, products, locations, services, equipment, etc. were introduced into their organization.

One way to accomplish this was to include resource needs in business cases or other approval processes, used when determining if a proposed change or new activity was approved.

By doing so, the organization could ensure its OH&S management system resources remained adequately aligned with business growth and other changes.

7.2 Competence

Competence is defined in ISO 45001:2018, 3.23, as the “ability to apply knowledge and skills to achieve intended results”. Competence enables a person or organization to act effectively in a job or situation and is acquired through training, education, experience or a combination of these, as determined by the organization.

Workers whose activities affect or can affect an organization’s OH&S performance, including its ability to fulfil legal requirements and other requirements, should be competent. Competence can also include the ability to determine the activities or tasks that can have an impact on OH&S performance.

When determining competence of personnel, organizations can take the following steps:

a) Determining the required competence:

   1) The organization should determine the competence requirements for individual functions, roles and tasks. The organization can seek external advice in defining competence requirements. When determining the competence required, the following factors should be considered:

      i) roles and responsibilities in the workplace (including the nature of the tasks to be performed, and their associated OH&S risks);

      ii) the complexity and requirements of operating procedures and instructions;

      iii) results of incident investigations;

      iv) legal requirements and other requirements;

      v) individual capability (e.g. literacy, language skills);

      vi) the need for workers to understand general OH&S prevention principles so that safer, healthier judgements can be made when the unexpected happens.

   2) The organization should give specific consideration to the competence requirements for workers who:

      i) report on the performance of the OH&S management system to top management;

      ii) assess exposure to OH&S hazards and OH&S risks;

      iii) perform audits and behavioural observations;

      iv) perform incident investigations;

      v) undertake tasks with specific hazards, such as using specific machinery/equipment.

b) Determining and addressing the gaps with current workers competence:

   1) An organization should determine and assess any differences between the competence needed in relation to OH&S risks and risks to the OH&S management system and competence currently possessed by the workers, including contractors and temporary workers. These differences should be addressed through, for example, training, additional education and skills development, hiring competent workers or reassigning currently employed staff taking into account the existing capabilities of the individual.

   2) Training should take into account OH&S risks and individual capabilities, such as literacy and language skills. For example, it can sometimes be preferable to use pictures and diagrams or symbols that can be easily understood. The organization should determine if the training materials are needed in multiple languages or if the use of translators is necessary. In many countries, providing free training to workers is a legal requirement.

   3) Organizations that do not have access internally to all of the required competence can procure competent service providers, to ensure the achievement of the intended outcomes of the OH&S management system.

   4) OH&S competence requirements should be considered prior to recruiting new workers and/or the reassignment of workers. The organization should also require contractors to demonstrate that their workers have the required competence to work safely.

c) Evaluating effectiveness of actions taken: The organization should evaluate the effectiveness of the training or other actions taken. This can be done in several ways, e.g. by written or oral examination, practical demonstration, observation of behavioural changes over time, or other means that demonstrate competence. In the case of skills-based competence, the evaluation of effectiveness can be made by witnessing workers doing what they have been trained to do.

d) Documented information: Documented information is useful to ensure that identified competence needs are addressed, track progress on closing gaps, and to enable communication of relevant information to interested parties. Appropriate documented information should be retained as evidence of competence.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 7.2.

A small organization with very limited experience in systematic OH&S management implemented these requirements using the following steps:

— a process was established to determine competency needs for workers performing activities affecting OH&S performance;

— training was provided to satisfy those needs and the training was monitored;

— training was evaluated to check the effectiveness;

— improvements were made to the training programme when this was found to be necessary.

Processes for recruitment and training development were also developed to ensure that competent workers were appointed and maintained for roles.

A systematic assessment of the role(s) that affected or could affect OH&S performance was established to ensure that necessary competences (education, training, skills, experience) were regularly defined and maintained in the organization.

Once determined, the company opted to advertise (externally and internally) in various ways (noticeboards, internal memos, media outlets, etc.).

Competent candidates were then evaluated (through use of written or oral interviews) and the recruitment team referred to the necessary competences required for the position.

The recruitment process was always checked to comply with relevant laws.

Selected candidates were given job descriptions and made aware of the relevance and importance of their activities, and how they could contribute to the achievement of OH&S objectives. Documented information as evidence of education, training and experience was maintained in worker files in the human resources department.

A process for induction was also established for newly hired candidates.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 7.2.

A manufacturing company created a matrix when determining the training required for each job position. The matrix lists all the identified training requirements down the left side (i.e. forklift operation, orientation, ladder safety, ergonomics) and a list of major job categories across the top. (i.e. electricians, office workers, shipping/receiving workers, production workers).

The organization uses this to identify with an '"x'" the training required by each major job category. Then, supervisors identify training needs for each worker.

This identification of training needs helps the organization understand the competence requirements for each job and each worker and enables it to develop a training programme to address those needs.

The assessment also assists with understanding the operational impacts of training and prioritizing scheduling.

7.3 Awareness

While competence is about workers having the skills to do a job in the right way, workers should also be made aware of, for example, OH&S policy, risks and objectives. The organization should also ensure that workers are made aware of what they should do and how they should act on a daily basis to keep themselves and others safe, and to support the intended outcomes of the OH&S management system. Important things for workers to be aware of can include:

— the OH&S policy and objectives;

— their contribution to the effectiveness of the OH&S management system;

— the consequences of not conforming to the OH&S management system requirements;

— incidents and the results of their investigation.

An essential element of workers keeping themselves safe, requires the organization to ascertain how to make their workers aware of their right to remove themselves from work situations that they consider present an imminent and serious danger to their life or health, as well as the arrangements for protecting them from undue consequences for doing so.

Good practice is to begin this awareness training when workers are first recruited, to ensure that they know the basics of OH&S before they start work. Actions to raise the awareness of OH&S for visitors is also important. In addition to workers (including temporary workers, contractors and volunteers), visitors and others that can be in the workplace should also be made aware of the OH&S hazards they can be exposed to and the measures to apply.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 7.3.

To ensure that workers at each level of the organization are aware of their role and their potential impact on OH&S performance, a larger organization took the following actions:

a) It displayed the OH&S policy and OH&S objectives in workplaces (using boards, emails, in-house memos), with appropriate translations to enable all workers to understand them. The policy and objectives were also presented and explained in departmental meetings.

b) It used planned training sessions to regularly explain how important worker contribution is to the effectiveness of the OH&S management system. The benefits of improved OH&S performance were clearly highlighted in the same sessions.

c) It explained the potential result of nonconformity to OH&S management system requirements in regular meetings, including the potential indirect or direct related costs (e.g. penalties paid, loss of production, cost of absenteeism/presenteeism).

d) It put in place a clear and simple process to report incidents (including a whistleblowing policy). The same process was also used to explain how relevant OH&S incidents would be communicated to workers, including through email, daily dashboards and morning safety or operational meetings, such as toolbox talks.

e) It involved relevant workers in the investigation process of incidents and as stated above, shared key findings from these in regular meetings or through normal reporting systems.

f) It presented and explained identified hazards and OH&S risks and actions taken to control these to all relevant workers, through training and regular meetings (informal or formal).

g) It trained workers to be aware of likely hazards and OH&S risks related to a job and how to deal with these, before the worker began the job.

h) It explained measures put in place to prevent incidents to workers, through on-site training and demonstrations and made them aware of how to remove themselves from any potentially harmful situation that exposed.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 7.3.

A manufacturer of office supplies considered how to best implement the requirements for awareness. It found that providing instructions and information to workers about OH&S, and the need to comply with OH&S requirements was crucial. Top management ensured instructions were given:

— before workers start work for the first time;

— at regular intervals (at least once a year);

— for new working processes and procedures;

— after incidents or critical events;

— when behaviour that can increase risks was observed.

The instruction was adapted for each individual workplace or activity, using the results of the risk assessment. Each instruction covered specific activities, associated hazards and measures to prevent injury and ill health.

Operating instructions for work equipment and machines, diagrams, photos and other media were also used. Materials such as posters helped to make the instructions clear.

When giving instructions, managerial workers actively involved other workers, e.g. by looking for and assessing situations and activities that present an OH&S risk. From these activities, solutions to reduce the risk were developed. Workers who use PPE were instructed to practise how to use this equipment before they start working, especially in situations where PPE could protect them from fatal hazards.

After receiving an instruction, workers signed that they had attended the training sessions to ensure that no workers were overlooked.

7.4 Communication

7.4.1 General

An organization should establish processes for communication relevant to the OH&S management system, taking into account the organization's legal requirements and other requirements.

It is practical to consider at least three types of communication:

— internal communication among the various levels and functions of the organization;

— communication with contractors and other visitors to the workplace;

— external communication with relevant interested parties.

The organization should effectively communicate information concerning hazards and the OH&S management system.

When developing communication processes, the organization should:

a) determine the target audience and their information needs;

b) select information relevant to the audience's needs and ensure this is made available;

c) decide on appropriate communication methods and media;

d) evaluate and periodically determine the effectiveness of the communications process.

In doing this, the organization should take into account factors including, but not limited to:

— local culture(s), preferred styles, available technologies, organizational complexity, structure and size;

— barriers to effective communication in the workplace, including for contractors' workers, such as illiteracy or language;

— legal requirements and other requirements;

— the effectiveness of various methods of communication across all functions and levels of the organization.

OH&S-related matters can be communicated to employees, visitors and contractors through methods such as OH&S briefings and meetings, induction/orientation talks, newsletters, posters, emails, suggestion boxes or schemes, websites and noticeboards.

To be effective, the organization's communication processes can:

— provide workers with the ability to transmit and receive information quickly, and to act on it;

— build trust and transparency;

— transmit the importance of the OH&S management systems and improving OH&S performance;

— highlight opportunities for improvement.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 7.4.1.

A medium-sized sales organization with several warehouses, establishes a communication process using a documented procedure, that sets out roles and responsibilities in connection with external and internal communication, with regards to the policy, objectives and processes of the organization's OH&S management system.

This procedure covers:

— communication with workers;

— communication with external interested parties, including suppliers, contractors, visitors and customers;

— receiving, documenting and responding to relevant communications from external parties.

It also describes the following responsibilities:

a) Top management: authorizing communications and assuring documented information (records) are maintained relating to formal OH&S-related communications and the responses.

b) OH&S manager: providing advice on the content of communications and responses to official correspondence relating to the OH&S management system, as well as ensuring compliance with applicable legal requirements and other requirements is always taken into account.

c) Supervisors: ensuring that the OH&S policy and OH&S management system responsibilities are communicated to workers, taking into account their area of responsibility.

d) Supervisors: responsibility for ensuring that contractors working on behalf of the organization are informed (through official meetings, emails or training) of the organization's OH&S policy and OH&S management system prior to beginning work.

e) Workers responsible for visitors: informing site visitors of safety requirements and warning visitors not to participate in any unsafe activity during a site tour.

f) Workers in general: how to raise concerns and/or make suggestions, and specific responsibilities relating to roles or activities.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 7.4.1.

To implement these requirements, an IT service organization where a lot of work is done from home and on customers' sites developed a matrix that, on the left side, listed the various aspects of the OH&S management system which require communication. Across the top of the matrix, the organization then listed the various interested parties who receive the information such as workers, contractors or supervisors.

The organization also identified the need to review:

— the use of social media to communicate with workers/work groups;

— the effectiveness of meetings held remotely;

— the use of mobile devices to record evidence of operations on-site and communicate good practice.

The organization finally indicated with a symbol who receives the communication and used the symbol to identify the channel used to deliver the information such as "O" for orientation, "OJT" for on-the-job training or "P" for policy.

7.4.2 Internal communication

It is important to effectively communicate information about OH&S risks and the OH&S management system at various levels and between various functions of the organization.

This should include information relating to:

a) top management's commitment to the OH&S management system (e.g. programmes undertaken, resources committed to improving OH&S performance);

b) the identification of hazards and risks (e.g. information on process flows, materials in use, equipment specifications, observation of work practices);

c) OH&S objectives and other continual improvement activities;

d) incident investigation (e.g. the type of incidents that are taking place, factors that can contribute to the occurrence of incidents, results of incident investigations);

e) progress in eliminating hazards and controlling risks (e.g. status reports showing progress of projects that have been completed or are underway), relating to changes that can impact on the OH&S management system;

f) performance of OH&S management processes (e.g. distribution of lists of actions to be taken during OH&S planning, departments and workers involved in programmes, follow-up of actions, training needs).

It is also important to develop and maintain processes for communicating with contractors and other visitors to the workplace. The communication should be appropriate to the hazards and risks associated with the activities to be performed. In addition to communicating requirements, the organization should communicate the consequences associated with nonconformity with OH&S requirements.

The communication should include information about operational controls related to the specific tasks to be performed or the area where the work is to be done. This information should be communicated before the contractor comes on-site and then supplemented with additional or other information (e.g. a site tour), as appropriate, when the work starts. The organization should also have processes in place for consultation with contractors when there are changes that can affect their OH&S risks.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 7.4.2.

An IT hardware company with operations in different countries decides to set up OH&S communication principles to ensure communication is both top-down and bottom-up.

The organization determined that:

— top-down communication refers to any form of communication from top management or other levels of management to other workers and should use simple language and take into account the culture and education level of the final receiver;

— bottom-up communication refers to any suggestions or complaints concerning OH&S or the OH&S management system, from an individual worker or group of workers; it requires a response from top management or its representatives and should be considered input for potential improvement opportunities and discussed in management meetings.

To maintain the effectiveness of the OH&S management system, the organization ensures that relevant interested parties are informed in a timely manner of changes to, for example:

a) existing products or the introduction of new products;

b) production systems and equipment;

c) legal requirements and other requirements;

d) knowledge about hazards, OH&S risks and control measures;

e) relevant enquiries from external interested parties;

f) other conditions that can have an impact OH&S performance.

7.4.3 External communication

The organization should have one or more processes in place for receiving, documenting and responding to relevant communications from external interested parties. External interested parties can include, for example, regulators, surrounding communities, insurers, contractors, suppliers, consumers and the general public.

The organization should provide appropriate and consistent information about hazards and risks and its OH&S management system, in accordance with its OH&S policy and relevant legal requirements and other requirements. This can include information concerning normal operations or potential emergency situations.

External communication processes often include the identification of designated contact individuals. This allows for appropriate information to be communicated in a consistent manner, which can be especially important for communicating with external interested parties in case of emergency situations that can affect or concern them.

Contracts are often used to communicate OH&S requirements. Contracts can be supplemented with other on-site arrangements (e.g. pre-project OH&S planning meetings) to ensure that appropriate controls are implemented to protect individuals at the workplace.

In addition to the specific OH&S requirements for activities carried out on-site, the following can also be relevant when developing processes for communication with contractors:

a) information about individual contractors' OH&S management systems and OH&S practices (e.g. established policies and procedures to address relevant hazards);

b) legal requirements and other requirements that impact on the method or extent of communication;

c) previous OH&S experience (e.g. OH&S performance data);

d) the existence of multiple contractors at the worksite;

e) numbers of competent workers needed to accomplish OH&S activities (e.g. exposure monitoring, equipment inspections);

f) emergency response;

g) the need to align contractor's OH&S policies and practices with those of the organization and other contractors at the worksite;

h) the need for additional consultation and/or contractual provisions for high-risk tasks;

i) requirements for the assessment of conformity to agreed OH&S performance criteria;

j) processes for incident investigation, reporting of nonconformities and corrective action;

k) arrangements for day-to-day communication.

l) clarity on roles and responsibilities of the client and contractor, particularly for managing and supervising the work on-site, and overseeing the work on behalf of the client.

For visitors (including delivery workers, customers, members of the public, service providers, etc.), communication can include warning, directive and advisory signs and security barriers, as well as verbal or written communication. Information that should be communicated to visitors includes:

— OH&S requirements relevant to their visit;

— evacuation procedures and responses to alarms;

— traffic controls;

— access controls and escort requirements

— any required PPE (e.g. safety glasses).

While not a formal requirement of ISO 45001, some organizations can find it useful to document their processes for external communication.

Communication with external parties on OH&S matters can be done through formal correspondence, informal discussions, emails, telephone, faxes and, where practical, regular workplace visits.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 7.4.3.

To ensure that communication to external interested parties was maintained, an insurance company created an online contact directory for its external interested parties. The information was regularly reviewed and updated and readily available in emergency situations. In addition, the organization created an online library of its correspondence with external interested parties to demonstrate conformity to ISO 45001:2018 communication requirements and its legal requirements and other requirements.

7.5 Documented information

7.5.1 General

An organization should develop and maintain adequate documented information to ensure that its OH&S management system is operating effectively, is understood by workers and other relevant interested parties, and that processes associated with the OH&S management system are carried out as planned. Documented information should be collected and maintained in a way that reflects the culture and needs of the organization.

Typical inputs to determining what documented information is needed include:

a) details of relevant documented information and the information systems the organization develops to support the OH&S management system and OH&S activities, and to fulfil the requirements of ISO 45001:2018;

b) details of responsibilities and authorities;

c) information on how the local documented information is used, and constraints that this can put on the physical nature of documented information, or the use of electronic or other media.

In deciding which processes and instructions should be documented, the organization should determine where documented information is needed to ensure that tasks are performed as required, also taking into account legal requirements and other requirements.

While not a formal requirement of ISO 45001, the organization can choose to document its management system in a manual (this can be paper-based or online), which contains all of the documented information necessary to operate the OH&S management system, or just an overview or summary of the system with a description of the main elements and providing direction to related documented information. An OH&S management system manual does not need to follow the clause structure of ISO 45001:2018 or any other standard, but can instead be based on, for example, the organization's processes.

The extent of documented information can differ from one organization to another. Creating unnecessary or complicated documented information can diminish the effectiveness of the OH&S management system. When considering the extent of the documented information it creates, the organization should consider the benefits of the documented information for the effectiveness, continuity and continual improvement of the OH&S management system.

Processes for the OH&S management system should be aligned with those of other management systems and the organization can combine relevant OH&S documented information with documented information for other management systems where relevant.

Table 12 provides a more detailed examination of the minimum requirements for documented information in ISO 45001:2018.

Table 12 — Requirements for documented information in ISO 45001

ISO 45001:2018 subclause	Requirement
4.3 Determining the scope of the management system	The scope shall be available as documented information.
5.2 OH&S policy	The OH&S policy shall be available as documented information.
5.3 Organizational roles, responsibilities and authorities	Responsibilities and authorities for relevant roles within the OH&S management system are maintained as documented information.
6.1.1 Actions to address risk and opportunities — General	The organization shall maintain documented information on risks and opportunities, and the process(es) and actions needed to determine and address its risks and opportunities to the extent necessary to have confidence that they are carried out as planned.
6.1.2.2 Assessment of OH&S risks and other risks to the OH&S management system	Documented information shall be maintained and retained on the methodology(ies) and criteria for the assessment of OH&S risks.
6.1.3 Determination of legal requirements and other requirements	The organization shall maintain and retain documented information on its legal requirements and other requirements.
6.2.2 Planning to achieve OH&S objectives	The organization shall maintain and retain documented information on the OH&S objectives and plans to achieve them.
7.2 Competence	The organization shall retain appropriate documented information as evidence of competence.
7.4 Communication	The organization shall retain documented information as evidence of its communications, as appropriate.
7.5.1 Documented information — General	The organization's OH&S management system shall include documented information determined by the organization as being necessary for the effectiveness of the OH&S management system (in addition to what is specifically required in other clauses).
7.5.3 Control of documented information	Documented information of external origin determined by the organization to be necessary for the planning and operation of the OH&S management system shall be identified, as appropriate, and controlled.
8.1.1 Operational planning and control — General	The organization shall maintain and retain documented information to the extent necessary to have confidence that the processes have been carried out as planned.
8.2 Emergency preparedness and response	The organization shall maintain and retain documented information on the process(es) and on the plans for responding to potential emergency situations.
9.1.1 Monitoring, measurement, analysis and performance evaluation — General	The organization shall retain appropriate documented information as evidence of the results of monitoring, measurement, analysis and performance evaluation as well as on the maintenance, calibration or verification of measuring equipment.
9.1.2 Evaluation of compliance	The organization shall retain documented information of the compliance evaluation result(s).
9.2.2 Internal audit programme	The organization shall retain documented information as evidence of the implementation of the audit plan and the audit results.
9.3 Management review	The organization shall retain documented information as evidence of the results of management reviews.
10.2 Incident, nonconformity and corrective action	The organization shall retain documented information as evidence of the nature of the incidents or nonconformities and any subsequent actions taken as well as of the results of any action and corrective action, including their effectiveness.
10.3 Continual improvement	The organization shall maintain and retain documented information as evidence of continual improvement.

7.5.2 Creating and updating

There is no requirement in ISO 45001:2018 to develop documented information in a particular format or media, nor is it necessary to replace existing documented information such as manuals, procedures or work instructions where these adequately describe required arrangements. If the organization already has an established, documented OH&S management system, it can prove more convenient and effective for it to develop, for example, an overview document describing the interrelation between its existing processes and the requirements of ISO 45001.

The organization should take the following into account:

a) the responsibilities and authorities of those that create, review, approve and maintain documented information and the degree of security, accessibility and change controls that should be implemented (particularly with electronic media);

b) the identification and description (title, author, date, etc.) of the documented information;

c) the format in which documented information (paper document, sign, video, audio, electronic) is used and the language to be used, ensuring this is tailored to the needs of users.

Documented information is only as good as its availability and should support the needs of the worker or other user. As such, it needs to be identified clearly (e.g. date, title) and maintained so that users can access the information, understand it and apply what is intended. Small organizations can choose to have written instructions and procedures in hard copy (paper), while other organizations, such as one with a remote workforce, can choose to use electronic documents posted on company internal websites. Documented information should be reviewed on a periodic basis to evaluate its ongoing suitability to deliver the right information at the right time and to ensure it is appropriate and sufficient to support the performance of the OH&S management system.

7.5.3 Control of documented information

Control of documented information is important to ensure that:

a) information can be identified with the appropriate organization, division, function, activity and contact person;

b) information maintained by the organization is regularly reviewed, revised as necessary and approved by authorized workers prior to issue;

c) current versions of relevant documented information are available at locations where operations essential to the effective functioning of the system are performed, including those necessary to ensure requirements are met;

d) obsolete information should be properly identified to prevent its unintentional use.

Documented information can be effectively controlled by:

— developing an appropriate format that includes unique titles, numbers, dates, revisions, revision history and authority;

— assigning the review and approval of documented information maintained by the organization to individuals with sufficient technical capability and organizational authority;

— maintaining an effective distribution system.

In addition to maintaining and retaining the correct documented information, the organization should ensure that documented information is available when and where needed. Documented information should also be protected to ensure its integrity of the document and effective communication. For example, hard copy (paper) documents that can be affected by various factors such as heat, humidity, dust, insects, etc. should be protected to ensure the information (e.g. work procedures) are legible and readable.

Electronic documented information, such as those from monitoring and measurement, should be stored to avoid unintended loss through changes in software or automatic systems for retention and disposal. Electronic documented information can be protected through periodic backup, regular tests to ensure information can be retrieved and regular re-assignment of passwords to ensure confidentiality, and protection against hackers. The need for confidentiality should be taken into account, including the protection of personal information (e.g. individual worker's health records), against unauthorized access.

Organizations usually have to use documented information of external origin, such as safety data sheets from suppliers, maintenance manuals from equipment manufacturers, legal requirements and contracts with workers' insurance companies. The requirements for control of documented information also apply to documentation of external origin.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 7.5.3.

A medium-sized engineering company viewed tracking the requirements to control documented information as a daunting task. To help ease this and to maintain conformity, the company created a one-page matrix which listed down the left side all the documented information necessary to meet the requirements described in ISO 45001:2018, 7.5.1.

Across the top of the matrix, the company listed the requirements for control of the documented information.

Examples include format of the document, where it is stored, who is in charge of the document, how it is accessed, how long it is retained and how it is disposed of.

8 Operation

8.1 Operational planning and control

8.1.1 General

Operational planning and control of processes is about managing processes to meet the requirements of the OH&S management system, and to improve the OH&S performance and the OH&S management system.

The organization should determine those processes, activities, products and services that are associated with identified hazards and where the implementation of controls is necessary to manage the OH&S risks and opportunities, and other risks and opportunities to the OH&S management system, in accordance with planned actions. In doing so, the organization should consider:

a) OH&S policy and objectives;

b) results of hazard identification, assessment of risks and opportunities, evaluation of existing controls and determination of new controls;

c) management of change processes;

d) internal specifications (e.g. for materials, equipment, facilities layout);

e) information on existing operating procedures;

f) legal requirements and other requirements to which the organization subscribes;

g) product supply chain controls related to purchased products, equipment and services;

h) feedback from participation and consultation;

i) the nature of, and extent to which, tasks are to be performed by contractors and other external workers;

j) access to the workplace by visitors, delivery workers, service contractors, etc.;

k) adapting work to workers;

l) communication;

m) emergency preparedness and response.

The organization should stipulate operating criteria (e.g. what needs to be done and how), particularly where these are necessary for the prevention of injury or ill health and where the absence of operating criteria can lead to deviation from the OH&S policy and objectives.

Operational controls should be implemented and evaluated on an ongoing basis to verify effectiveness and be integrated into the OH&S management system. Operational controls should be reviewed on a periodic basis to evaluate ongoing suitability and effectiveness. Changes that are determined to be necessary should be implemented.

In addition, processes should be in place to determine circumstances where new controls and/or modifications of existing operational controls are needed. Proposed changes to existing operations should be evaluated for hazards and risks before they are implemented. When there are changes to operational controls, the organization should consider whether there are new or modified training needs.

Operational controls should be established and implemented as necessary to address OH&S risk. Operational controls should be implemented for all operational areas and activities, including on-site and off-site work, and home-based working.

Operational controls can include procedures or work instructions as well as physical devices such as barriers or access controls, pictograms, alarms and signage.

The organization should base warning, directive and advisory signs on accepted design principles, emphasizing standardized graphical symbols and minimizing the use of text. If text is required, accepted signal words, e.g. “danger” or “warning”, should be used. For further guidance, see the relevant International Standards or national standards.

The organization should establish operational controls to eliminate, or reduce and control, OH&S risks that can be introduced into the workplace by workers, contractors, other external people, members of the public and/or visitors. Operational controls should also take into account situations where OH&S risks extend into public areas or areas controlled by other parties (e.g. when employees of the organization are working at a client’s site). Consultation and cooperation with relevant external interested parties is needed in such circumstances.

Table 13 sets out examples of OH&S risk factors and possible associated control measures.

Table 13 — Examples of control measures

Risk factor	Control measures
General	— internal traffic controls (i.e. separation of vehicle and pedestrian movements) — provision and maintenance of workplaces — maintenance of the thermal environment (temperature, air quality) — maintenance of the ventilation systems and electrical safety systems — maintenance of emergency plans — job safety analyses — performance criteria, work instructions or approved working methods — policies related to travel, bullying, sexual harassment, drug and alcohol abuse

Table 13 *(continued)*

Risk factor	Control measures
	— health programmes (medical surveillance programmes) — training and awareness programmes — access controls — workers competence requirements — entry and exit control processes and equipment requirements — specification provision, control and maintenance of PPE — site safety briefings — warning signage/administrative controls — emergency preparedness requirements — cleaning and hygiene of workplaces — washing facilities and toilets
Using hazardous materials	— approved chemical lists and exposure limits — inventory levels, storage locations and storage conditions — safety data sheets — secure and safe storage provisions and control of access — safe and healthy methods of handling and use — shielding of radiation sources — isolation of biological contaminants
Facilities and equipment	— inspection, testing, maintenance and repair of facilities, machinery and equipment to prevent unsafe conditions from developing — housekeeping and maintenance of clear walkways, and traffic management — manual handling techniques to be applied
Purchase of goods, equipment and services	— establishment of OH&S requirements for products, equipment and services to be purchased — communication of the organization's OH&S requirements to suppliers — pre-approval requirements for the purchase or transport/transfer of hazardous chemicals, materials and substances, machinery and equipment — coordination requirements between contractors and the organization when they develop activities on the same premises — approval of the design of OH&S provisions for new facilities
Contractors	— establishment of criteria for the selection of competent contractors — communication of the organization's OH&S requirements to contractors (e.g. prior approval, permits to work) — evaluation, monitoring and periodic re-evaluation of the OH&S performance of contractors

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 8.1.1.

A machine tool supplier discussed how to control its operations from an OH&S management system point of view. It considered various forms, such as procedures, work instructions, physical controls, competence of workers or any combination of these. The choice of the specific control methods depended on a number of factors, such as the skills and experience of people carrying out the operation and the complexity of the processes, activities, products and services involved. The organization also planned and established processes to improve its ability to implement controls in a consistent manner.

For this organization, operational controls included:

a) choosing a method of control;

b) selecting acceptable operating criteria, e.g. operating features of machines and measurements or mass or temperature;

c) establishing processes, as needed, that define how identified operations are to be planned, carried out and controlled;

d) documenting processes, as needed, in the form of instructions, signs, forms, videos, photos, etc.;

e) applying technological options, such as automated systems, materials, equipment and software.

The operational controls also included provisions for measurement, monitoring and evaluation, and for determining if operating criteria are being met. When the operational controls had been established, the organization started monitoring the continuing application and effectiveness of these controls, as well as planning to take action as needed.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 8.1.1.

A shop operates an online order and collect by car service where goods are picked in the shop by workers for collection by customers. It implemented the operations controls required in ISO 45001:2018, 8.1.1 a), in the following way:

— regular inspection and maintenance of retail racking, displays and carts used to move stock;

— regular inspections of aisles to prevent clutter and slip/trip hazards;

— use of signage to remind workers to keep aisles clear;

— implementation of a traffic management plan to indicate parking spots close to the building for customers picking up online orders, in order to minimize worker exposure to traffic in the parking area; high visibility vests and signage were also introduced;

— implementation of ergonomically sound workstations to minimize the risk of injury to workers unpacking and packing boxes;

— establishment of an emergency plan with regular implementation practices for workers;

— documented policies related to bullying, harassment, cash handling, online order delivery, etc.;

— a competence assessment that is completed for each new worker to ensure they have the knowledge, skills and experience to minimize OH&S-related injury and ill health;

— access controls put in place to prevent customers from entering hazardous areas such as stock rooms.

8.1.2 Eliminating hazards and reducing OH&S risks

When an organization has identified hazards and determined risks, it should ensure a process(es) is in place to eliminate hazards, or where this is not possible, to reduce the OH&S risks, using the hierarchy of controls.

At the top of the hierarchy of controls is elimination. This is the most effective way of preventing injury and ill health. The lowest level of the hierarchy of controls is use of PPE, which should only be used if other controls are not possible. In many cases, a combination of controls is needed to address the OH&S risk, if the hazard cannot be eliminated.

Examples of implementing the hierarchy of controls can be found in ISO 45001:2018, Annex A. The basic principle is as follows:

— First try to eliminate a hazard by changing the process, materials, products, etc.

— If that is not possible, substitute what is causing the hazard with something less hazardous.

— If substitution is not possible or does not lower the risk enough, implement engineering controls or reorganize work to mitigate the OH&S risk.

— Further actions can include applying administrative controls (e.g. instructions) and training to make workers more competent and aware of hazards and risks.

— Finally, PPE can be used to minimize worker exposure to remaining OH&S risks if the previous steps are not effective enough to keep workers safe and healthy.

In applying the hierarchy, consideration should be given to risk reduction benefits and reliability of the available options. With risk being a combination of likelihood and severity, any action to reduce risk should reduce the likelihood or the severity, or both.

An organization should take into account:

a) the need for a combination of controls, combining elements from the hierarchy (e.g. engineering and administrative controls);

b) established good practice in the control of the particular hazard;

c) adapting work to the individual (e.g. to take account of individual mental and physical capabilities);

d) taking advantage of technical progress to improve controls;

e) using measures that protect everyone (e.g. by selecting engineering controls that protect everyone in the vicinity of a hazard in preference to PPE);

f) human behaviour and whether a particular control measure will be accepted and can be effectively implemented;

g) human factors (e.g. simple failure of a frequently repeated action, lapses of memory or attention, lack of understanding or error of judgement, breach of rules or procedures) and how to take these into account when reducing risks, if possible, by eliminating or minimising reliance on human reaction or decision-making for safe operation;

h) the need to introduce planned maintenance of, for example, machinery safeguards;

i) the possible need for emergency/contingency arrangements where risk controls fail;

j) potential lack of familiarity with the workplace and existing controls for workers and other relevant interested parties not in the direct employment of the organization (e.g. visitors, contractors);

k) existing good practices applied in companies with similar situations (examples of good practice can be found in, for example, national institutes, international organizations, sectoral organizations).

Once the controls have been determined, the organization should prioritize its actions to implement them. The organization should prioritize actions that address a high-risk activity or offer a substantial reduction of risk, rather than those have only limited risk reduction benefit. In prioritizing actions, the organization should take into account:

— the potential impact on the risk through the planned controls;

— the severity of the consequences of the risk;

— the magnitude of the risk (combination of likelihood and severity of the risk);

— the number of workers who will benefit from the reduction of risk;

— the complexity and feasibility of the measures that need to be put in practice.

In some cases, it is necessary to modify work activities until risk controls are in place or apply temporary risk controls until more effective actions are completed. For example, using hearing protection as an interim measure until the source of noise can be eliminated, or segregate the work activity to reduce the noise exposure. Temporary controls should not be regarded as a long-term substitute for more effective risk control measures.

Sometimes the term "residual risk" is used to describe the risk that remains after controls have been implemented.

The organization should conduct ongoing monitoring to ensure that the adequacy of the controls is being maintained.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 8.1.2.

Roadside parking enforcement workers for a parking control organization were experiencing violent incidents.

The organization reviewed working practices with the relevant workers and introduced additional controls, as follows:

a) In one car park, where there had been a lot of attacks on workers, number plate recognition and closed-circuit television (CCTV) equipment were introduced. Penalty tickets were then issued automatically with no face-to-face involvement required (elimination/substitution/engineering controls).

b) High-risk streets were identified, and parking permits introduced to reduce the incidence of illegal parking (administrative controls).

c) Parking enforcement workers were provided with additional training to help recognize anger and aggression and provide techniques for preventing violence (administrative controls).

d) Parking enforcement workers were paired up in high-risk situations, and body cameras and improved PPE were introduced (administrative/PPE controls).

e) Incident follow up and worker support arrangements were improved (administrative controls).

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 8.1.2.

A small construction company employs many tradespeople who work independently, travelling to customer locations with minimal supervision.

The owner, using the hierarchy of controls as a guide, implements the following operational controls to address the most significant risks in the organization:

a) travel to and from customer locations;

b) working without supervision.

As travel cannot be eliminated, the owner considers substitution but cannot identify a means to achieve that type of control. When looking at engineering/design controls, the use of Global Positioning System (GPS) monitoring systems provides a way to monitor safe operation of the vehicle and provide an emergency communication mechanism in case an incident occurs. In addition, the owner supplies each worker with a cell phone and develops a training programme to outline the safe use of mobile devices while driving and the expectations related to travel in, for example, poor weather (administrative controls).

Working with minimal supervision could not be eliminated but the owner implemented a requirement to coordinate supervision with other companies working on the site to negotiate joint OH&S responsibilities (administrative controls). The workers were also provided with "work alone" software applications on their phones which required them to check in periodically with the owner by simply tapping their phone (engineering controls). Training and processes were developed around these operational controls and communicated to all workers (administrative controls).

8.1.3 Management of change

The organization should plan for change and ensure sufficient resources are available to make sure that changes do not introduce new and unforeseen hazards or increase the OH&S risks and other risks to the management system. Planned changes also give organizations the chance to address opportunities for improvements.

The organization should consider hazards and potential risks associated with new processes or operations as well as changes in the organization, technology, existing operations, infrastructure, products, services or suppliers. Conditions that should initiate a management of change process include the following:

a) new or modified technology (including software), equipment, facilities or work environment;

b) new or revised procedures, work practices, designs, specifications or standards;

c) different types or grades of raw materials;

d) changes in legal requirements or other requirements;

e) significant changes to the site's organizational structure and workforce, including the use of contractors;

f) modifications of health and safety devices and equipment or controls;

g) changes related to other risks to the OH&S management system

Before implementing a change, organizations can give consideration to the following questions to ensure that any new or changed risks are acceptable:

— Is there a potential for new hazards to be introduced to the workplace?

— What are the OH&S risks associated with the potential new hazards?

— Can OH&S risks from existing hazards change?

— Can changes adversely affect existing OH&S risk controls?

— Have the most appropriate controls been chosen, bearing in mind usability and acceptability?

One of the keys to successful management of change is to ensure that interested parties are aware of the impending change as early in the process as possible, and that management of change is integrated into other business or project approval projects.

The management of change process should consider OH&S risk of any product, service, material, machinery or equipment with significant OH&S impact prior to approval of their purchases. This also applies to new property, services or companies, etc.

By doing so, the organization helps create a business culture that incorporates OH&S into its everyday business and strategic decision-making.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 8.1.3.

A small manufacturing company decided to implement the requirements on management of change, by adding consideration of hazards and OH&S risks to existing change procedures. How these procedures worked in reality was then checked in some detail during project follow-up reviews and, more generally, twice a year during management reviews held for environmental, health and safety, and quality management.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 8.1.3.

An electrical service company struggled with significant OH&S risks not being identified through its management of change processes. Upon review, it was discovered that workers largely relied on their memory or experience to review changes from an OH&S perspective.

To ensure consistency of implementation, the company initiated a continual improvement project to formalize the identification of hazards and risks by creating checklists of key considerations that fit the context of their organization. For example, a list of key electrical, confined space, machine guarding and ergonomic considerations was established to ensure they were not missed when reviews were undertaken.

8.1.4 Procurement

8.1.4.1 General

The requirement in ISO 45001:2018 on procurement concerns hazards and OH&S risks related to products, equipment, materials and services that are internally and externally sourced and introduced into the workplace(s). The organization should establish a process to prevent anything that is sourced from adding new hazards or raising OH&S risks to workers or others present in the workplace.

This can be done by integrating OH&S requirements into general business procurement processes. Where appropriate, the organization should consider including specifications that take potential OH&S risks into account and should ensure products and services provided are checked according to these specifications. If the organization procures services or installations, these should be checked to be safe and in line with the organization's OH&S management system requirements. The organization should also ensure that any usage requirements, precautions or other preventive and protective measures are communicated, understood and made available.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 8.1.4.1.

A manufacturer of tools considers how to ensure that procurement of supplies and equipment does not introduce or increase OH&S risk into the workplace. They decide to implement a process where a competent person inspects the supplies or equipment to ensure it conforms to the requirements provided to the supplier and the organization's OH&S management system.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 8.1.4.1.

A company with 70 workers provides cleaning services to different offices in a downtown area. The company decided to change to different cleaning substances, and proceeded as follows:

a) it required a relevant safety data sheet from all potential suppliers;

b) it selected a supplier whose products can be used in a safe way;

c) it assessed risks related to the use of those products and implemented appropriate operation controls;

d) it trained all workers on the new hazard and the related new operational controls, taking into account the suppliers' information;

e) it checked if the supplier delivered the products as required;

f) if PPE was found to be the most effective available control, it checked, during the first two months, if workers were using the required PPE and using the products according to supplier's safety information;

g) it introduced the changes made into the processes of the OH&S management system;

h) it notified clients of the change in cleaning substances and provided safety data sheets for the new materials.

8.1.4.2 Contractors

The organization should coordinate the implementation of OH&S requirements with contractors and other external interested parties, where appropriate. There can be a need for the organization to consult with regulators concerning certain OH&S matters (e.g. applicability and interpretation of OH&S legal requirements), or with emergency services.

Contractors to work on-site should be selected following OH&S criteria defined during the procurement process.

Coordination of work can be more effectively implemented when all parties are aware of the needs and expectations of both organizations. These needs and expectations should be formally communicated so both parties are aware of their existence. The list of needs and expectations of both parties should be reviewed on a periodic basis to evaluate its ongoing suitability and effectiveness so operational controls that are already in place can be utilized to address OH&S risk or new ones implemented as needed.

The organization should consider OH&S risk and other risks arising from the interaction between contractors and the organization's planned activities. The organization should consult with contractors on risks that the contractor's activities and operations can create, and on risks that the organization's activities and operations can create for the contractor. This should include potential impact on operational controls and on interested parties in the workplace.

The list of operational controls should be communicated to affected workers of both organizations. The organization should ensure regular inspection of the status of operational controls, or meetings can be held to discuss any concerns raised during the contractor activity.

Contracts which express OH&S needs and expectations can also include consequences for nonconformance and a process for resolution between the parties.

These steps help mitigate the potential OH&S risk for both parties and provide necessary information to affected workers.

It is a good practice to ask contractors to communicate and manage incidents (including near misses) that occur in the organization's workplace.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 8.1.4.2.

A company with buildings in need of repair and maintenance summarized issues to be considered for specific OH&S requirements and controls when hiring contractors:

a) a plumbing contractor removing asbestos pipe insulation;

b) an electrical contractor working on the power panel of machinery being operated by organization's workers;

c) a logistics contractor operating forklift equipment along an assembly line;

d) a logistics contractor operating a forklift in a hazardous high-noise area without wearing hearing protection;

e) a mechanical contractor doing welding in an area with combustible material;

f) access arrangements to include restricting access to hazardous areas, and the need for specific processes (e.g. permit to work for confined space entry/work).

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 8.1.4.2.

An organization with diverse and complex relationships with contractors considers how to implement these requirements. The issues involved can vary, depending on the nature and extent of the services provided and the associated hazards and risks. When deciding how to coordinate, the organization considered factors such as:

a) reporting hazards between itself and its contractors;

b) controlling contractor's worker access to the organization's hazardous areas and activities;

c) reporting contractor or interested party injuries and/or ill-health;

d) processes to follow in emergencies.

The organization sets up contracts that clearly define the responsibilities of everyone involved to help manage contractors' activities effectively.

They include contract award mechanisms and pre-qualification criteria that take into account past OH&S performance, safety training, OH&S capabilities and direct contract requirements.

8.1.4.3 Outsourcing

The organization should identify outsourced processes that can have an impact on the intended outcomes of the organization's OH&S management system, if applicable. The organization is required to ensure the control of these processes to prevent injury and ill health to workers and to provide safe and healthy workplaces.

The degree of control exercised by the organization depends on the degree of integration of the outsourced operations with the organization's processes. For example, outsourcing the heat treating of metal parts to an off-site heat-treating specialist requires less control than outsourcing maintenance or logistics functions to a contractor who works side-by-side with the organization's workers in the same worksite.

The degree of control exercised by the organization can also depend on legal requirements. For example, an organization can outsource medical services for injury treatment and medical surveillance related to occupational exposure or fitness for duty. Privacy laws can regulate the degree of control the organization has over the personal medical information of workers collected by medical services.

When outsourcing processes or functions to another organization, there are key specifications that should be considered in contractual agreements, so the needs and expectations of each party are clearly understood.

Information to be shared can include, among others:

a) individual OH&S management system requirements, where they exist;

b) inventory of equipment, materials used in the processes and their OH&S risks and controls;

c) competence requirements for workers;

d) known hazards and OH&S risks associated with the work;

e) an agreed audit of conformity schedule;

f) details about supervision and compliance to legal requirements and other requirements;

g) details about consequences for nonconformity with agreed requirements.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 8.1.4.3.

A car manufacturer has a breakdown in one of its three painting stations. To meet customer requirements, it outsources the painting of doors for one model to an external company. The car manufacturer needs to approve the process suggested by the external company. The organization is aware that it shares accountability for OH&S of workers by specifying the methods of the work activities while the external painter paints the doors. It proceeds as follows:

a) it informs the external company of hazards identified, results from risk assessments and operational control requirements of the painting process;

b) it requires that the company trains workers accordingly;

c) it requires the company to keep documented information as required by the car manufacturer's management system;

d) it assigns an OH&S inspector from the car manufacturer to witness the operations;

e) it includes these processes at the external company in its own internal audit programme.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 8.1.4.3.

A manufacturer of gardening equipment reviewed how it could outsource some of its processes and considered the degree of control. It decided on three categories:

a) The organization has the competence and ability to perform the process but chooses to outsource it (for economical or other reasons). A high level of control is needed. The organization may provide instructions on how to handle the process safely.

b) The organization does not have the competence to perform the process itself and chooses to outsource it. A different type of control is needed. The determination of criteria needed to choose which organization to outsource to is much more important.

c) The organization outsources a process that comes downstream of its production process, e.g. the transport of the goods produced. A lower level of control may be needed.

8.2 Emergency preparedness and response

The organization should have a process for preparing and responding to potential emergency situations that have been identified in the planning process. This should include planning of response, training, testing, evaluating, and improving performance, communication and retaining documented information. The process should also take into account applicable legal requirements and other requirements. Emergency services and regulators are likely to have further information and supporting guidance available.

Emergency preparedness should ensure that the needs of specific workers and groups of workers are taken into account. This can include personal emergency evacuation plans for people with disabilities and limitations, and should take into account issues such as mobility, sight, hearing and cognition. Plans should include provision for workers who are older, pregnant, new parents, recovering from illness or injury, or who have ongoing or underlying health issues, including those of a psychological nature.

Where OH&S emergency processes are combined with other emergency response procedures, the organization should ensure that it addresses potential OH&S risks. The organization should not presume that processes relating to fire safety, environmental emergencies, etc. will be sufficient.

When addressing emergency preparedness and response, organization should take into account the following aspects:

a) Assessment of identified emergency situations:

   1) The organization should determine and assess how emergency situations will impact anyone within workplaces and anyone in the immediate vicinity of workplaces controlled by the organization. Consideration should be given to people with limited mobility, vision, hearing or other specific needs. This can include employees, temporary workers, contractors, visitors, neighbours or other members of the public. The organization should also consider potential OH&S risks on workers in the emergency services while at the workplace (e.g. firefighters).

   2) Potential emergencies can originate inside or outside the organization's workplace. Some possible origins for emergencies can be, for example:

      i) major OH&S incidents including sudden ill health (e.g. asthma attacks, allergic reactions or a worker suffering a heart attack);

      ii) biological hazards (e.g. microorganisms, toxins, viruses);

      iii) weather-related events (e.g. wind, floods, electrical storms);

      iv) earth movements;

      v) gas leakages, fires and explosions;

      vi) security issues and terrorism threats;

      vii) major construction or equipment failure;

      viii) serious behavioural or mental ill health incidences (e.g. psychotic episodes, emotional breakdowns, consequences of violent attacks);

ix) unexpected exposure to major chemical or physical hazards;

x) the death of a worker(s) on-site or when working in another workplace.

b) Planning preparation and response:

1) Emergency response should focus on the prevention of injury and ill health, and on the mitigation of OH&S risk to workers exposed to an emergency situation. Processes for responding to emergency situations should be developed, and these should take into account applicable legal requirements and other requirements.

2) Emergency processes should be clear and concise to facilitate their use in emergency situations. They should also be accessible and ready for use by emergency services. Emergency processes and procedures that are stored as documented information on a computer or other electronic means can sometimes be inaccessible (e.g. in the event of a power failure), so paper copies and off-site/cloud back-up should also be maintained in readily accessible locations.

3) Consideration should be given to, for example, the following, when developing emergency response processes:

i) identification of potential emergency situations and locations, including potential outbreaks of epidemics/pandemics and outbreaks of disease in, or affecting, the workplace;

ii) details of the actions to be taken by workers during the emergency (including actions to be taken by people working off-site, contractors and visitors) including evacuation procedures as well as numbers and locations of people;

iii) responsibilities, and authorities of workers with specific response duties and roles during the emergency (e.g. fire-wardens, first-aid staff and spill clean-up specialists);

iv) medical equipment, first aid kits and preparedness for debriefing and other supportive talks with the concerned;

v) communication with workers (both on-site and off-site), emergency services, regulators and other interested parties (e.g. family, neighbours, local community, media);

vi) information necessary for undertaking the emergency response (e.g. plant layout drawings, identification and location of emergency response equipment, identification, location and monitoring systems of hazardous materials, utility shut-off locations, contact information for emergency response providers);

vii) provision of training for emergencies;

viii) detection and emergency control measures, including fire detection and suppression systems;

ix) control systems that can impact OH&S, and any supporting secondary or parallel/ multiple control systems, including emergency power sources;

x) availability of and coordination with local emergency services and the details of any emergency response arrangements currently in place (e.g. an inventory of hazards on-site, accessibility information and any other local conditions which can affect the emergency response);

xi) legal requirements and other requirements;

xii) previous emergency response experience.

xiii) a command structure presiding over the emergency including who determines when it's safe for workers to return to work.

4) It is important to involve workers who are members of emergency response teams in the development of the processes and procedures to ensure they are fully aware of the type and

scope of emergencies that they can be expected to handle, as well as the arrangements needed for coordination. Relevant training and information for internal and external emergency services should be provided to facilitate their involvement in response activities.

c) Provision of emergency equipment and materials:

1) The organization should determine and review its emergency response equipment and material needs. Emergency response equipment and materials can be required to perform a variety of functions during an emergency, such as evacuation, leak detection, fire suppression, chemical/biological/radiological monitoring, communication, isolation, containment, shelter, personal protection, decontamination, and medical evaluation and treatment.

2) Emergency response equipment should be available in sufficient quantity and stored in locations where it is readily accessible. It should be stored securely and protected from damage. This equipment should be inspected and/or tested at regular intervals to ensure that it will be operational in an emergency situation.

3) Special attention should be paid to equipment and materials used to protect emergency response workers. Individuals should be informed of the limitations of PPE and trained in their proper use.

4) The type, quantity and storage locations for emergency equipment and supplies should be evaluated as a part of the review and testing of emergency procedures.

d) Provision of competent internal and external human resources:

1) Workers should be trained in how to initiate the emergency response and evacuation procedures.

2) The organization should determine training needs for workers who are assigned emergency response duties and should ensure training is provided regularly to all relevant workers to ensure emergency response workers remain competent and capable to carry out their assigned activities.

3) The need for retraining or other communications should be determined when modifications are made that impact on the emergency response.

4) When the organization determines that external services are needed for emergency response (e.g. professional firefighters, specialist experts in handling hazardous materials, external testing laboratories), pre-approved (contractual) arrangements should be put in place. Particular attention should be paid to worker levels, response schedules and emergency service limitations.

e) Testing emergency plans including drills:

1) Periodic testing of emergency procedures should be performed to ensure that the organization and external emergency services can appropriately respond to emergency situations and prevent or mitigate associated OH&S consequences. This can improve communication and cooperation during an emergency.

2) Emergency exercises (drills) can be used to evaluate the organization's emergency procedures, equipment and training, as well as increase overall awareness of emergency response protocols. Internal interested parties (e.g. workers) and external interested parties (e.g. fire department workers) should be included in exercises to increase awareness and understanding of emergency response procedures.

f) Reviewing and updating emergency plans:

1) Emergency response planning should also be reviewed on a periodic basis to evaluate ongoing suitability and effectiveness as a part of the management of change. Changes in operations can introduce new potential emergencies or necessitate changes to emergency response procedures.

2) Examples of when this review can be done are:

   i) on a schedule defined by the organization, based on the results of tests and actual emergencies;

   ii) as a result of management review, management of change or corrective action;

   iii) following a real emergency or test that identified deficiencies in the emergency response,

   iv) changes in facility layout that can impact, for example, emergency evacuation routes;

   v) following external changes impacting emergency response, including changes to legal requirements and other requirements.

3) When changes are made in emergency preparedness and response processes and procedures, these changes should be communicated to workers and functions impacted by the change; their associated training needs should also be evaluated.

g) Documented information:

   1) Documented information should be maintained on emergency plans and retained on results of response to, and review of, actual emergencies and emergency tests.

   2) When appropriate, this information should be reviewed with relevant interested parties to share feedback and recommendations for improvement.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 8.2.

A logistics company has a warehouse in an area prone to earthquakes. When establishing its emergency response plans, the owner:

a) contacted the local fire department to gain information on the best guidance for their workplace during an earthquake and to understand their role in the event of an emergency;

b) communicated that guidance and responsibilities to each employee during a staff meeting;

c) developed a one-page procedure to outline what to do in case of an earthquake;

d) made a decision to practise the procedures by scheduling drills twice yearly in their calendar;

e) installed signage to identify safe places to shelter;

f) implemented a process to track daily attendance by using a phone application.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 8.2.

A governmental agency occupying a six-storey office in a city centre, recognized that they had an evaporative cooling tower serving their ventilation system and that there was a risk of legionella growth and dissemination.

They put in place a water management system to reduce the risk of legionella in their water system, but also recognized that if something went wrong people could contract Legionnaires' disease.

They reviewed procedures for sickness absence and what to do in the event of an outbreak of a disease in the workplace and updated them.

They took advice from their occupational health provider and the regulatory body and identified who to report to and where to get advice on the measures to take to exclude persons from work, and what remedial measures to take.

They also followed up with their water treatment company to check how water quality in the water system is monitored and how potential issues are escalated to them so that further actions can be taken.

9 Performance evaluation

9.1 Monitoring, measurement, analysis and performance evaluation

9.1.1 General

For organizations to understand how they are doing on OH&S performance and management, they need to have a systematic approach for measuring and monitoring OH&S performance and OH&S management. Monitoring involves determining the status of a system, a process or an activity. Measurement is the process to determine a value, using equipment or techniques that have been confirmed as being fit for purpose.

Monitoring and measurement (ISO 45001:2018, 9.1.1, a)) includes:

— the extent to which legal requirements and other requirements are fulfilled;

— activities and operations related to hazards, risks and opportunities;

— progress towards achieving OH&S objectives, by means of relevant leading and lagging indicators;

— effectiveness of operation controls and other controls.

Then, the results are collected and analysed (ISO 45001:2018, 9.1.1, b)) to allow the evaluation (ISO 45001:2018, 9.1.1, d)) of the organization's OH&S performance.

When addressing monitoring, measurement, analysis and performance evaluation, organizations should take into account the following:

a) Planning monitoring and measurement:

   1) To achieve these purposes, the organization should plan what will be measured, where and when it will be measured, what measurement methods and equipment will be used, and the competence requirements for workers who will perform the measurements. To focus resources on the most important measurements, the organization should determine the characteristics of processes and activities that can be measured, and measurements that provide the most useful information.

   2) When planning, it is good practice to use both proactive and reactive (leading and lagging) performance indicators as proactive/leading measures tend to be more efficient in driving performance improvement and injury reduction.

   3) Proactive (leading) indicators can include:

      i) assessments of compliance with legal requirements and other requirements;

      ii) assessment of the number of eliminated hazards;

      iii) effective use of near miss incidents to prevent injury and ill health;

      iv) effective use of the results of workplace safety tours or inspections;

      v) achievement of OH&S objectives and implementation of actions to do this;

      vi) evaluation of the effectiveness of OH&S training;

      vii) OH&S behaviour-based observations;

      viii) perception surveys to evaluate OH&S culture and related employee satisfaction;

      ix) effective use of the results of internal and external audits;

      x) completion of legally required and other inspections as scheduled;

xi) extent to which plans have been implemented;

xii) effectiveness of the worker participation process;

xiii) use of health screening;

xiv) exposure modelling and monitoring;

xv) benchmarking against good OH&S practices;

xvi) work activity assessments.

4) Reactive (lagging) indicators can include:

i) monitoring of ill health;

ii) occurrences and rates of incidents and ill health;

iii) lost time incident rates;

iv) lost time ill health rates;

v) actions required following assessments by regulators;

vi) actions following receipt of comments from interested parties.

b) Collection and analysis of data:

1) The results of measurement and monitoring are collected and analysed and used to identify both successes and areas requiring correction or improvement.

2) The organization should ensure consistency in measurements and the reliability of data produced. The analysis of data can require the use of statistical tools if there are a lot of data.

c) Tracking performance and achieving objectives through indicators:

1) After analysing monitoring and measurement data using suitable methods (e.g. statistical tools), the organization can:

i) track progress on meeting action plans, achieving objectives and targets, and continual improvement using leading and/or lagging indicators;

ii) check compliance with applicable legal requirements and other requirements;

iii) analyse trends relating to incidents, injuries and ill health;

iv) evaluate the effectiveness of operational controls, or to evaluate the need to modify or introduce new controls;

v) proactively and reactively measure the organization's OH&S performance against established criteria;

vi) evaluate the performance of the OH&S management system; and other processes such as provision of resources, communication, worker consultation and participation;

vii) evaluate the need for improving competence of workers.

d) Measuring instruments:

1) The organization should select OH&S monitoring and measurement equipment that is suitable and capable of providing accurate and consistent results for characteristics to be measured. The organization should ensure the validity of results and maintain monitoring equipment that is used to measure OH&S performance in good working order. Such equipment should be regularly calibrated or verified, and adjusted, if necessary, against measurement standards,

traceable to international or national measurement standards. If no such standards exist, the organization should ensure that the basis used for calibration is recorded. Such monitoring equipment includes equipment for work environment (e.g. sampling pumps, noise meters, toxic gas detection equipment) and occupational health monitoring (e.g. tensimeter, weighing scales).

2) Where computer software or computer systems are used to gather, analyse or monitor data and can affect the accuracy of OH&S performance results, the organization should validate these to test their suitability, prior to use.

3) The organization should ensure that the calibration status of measuring and monitoring equipment is clearly identified to the users through, for example, labels or marking and should prevent its use if the calibration status is unknown or out of date. This can be done by removing it or through clear marking or labelling, to prevent misuse.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 9.1.1.

A company producing steel parts in several smaller production units set up the monitoring and measurement plan given in Table 14 for their OH&S management.

Table 14 — OH&S monitoring and measurement

What?	Measure/ monitor?	When?	Who?	Criteria?	Result?	Evaluation?
Workers' complaints	Monitor	As they occur	Supervisor	All answered within 48 hours	10 % not answered	Not acceptable Take action
Particles in the air inside the plants	Measure	Continuously	Sensor with alarms (Maintenance checks)	Less than 50 parts per million (ppm) (legal)	34 ppm Average in the last month, without exceeding 50 ppm	Acceptable
Time to close nonconformities (OH&S objective current year)	Measure	Every 3 months	OH&S manager	All closed in less than 30 days	20 % > 30 days	Continue with the plan until December
Health condition of workers in the laboratory	Monitor (e.g. X-ray) and measure (blood test)	Every 6 months	Health centre hired by the organization	Health features established by the law	X-ray image and blood test of each worker	Acceptable? No further action Not acceptable? Further test will be needed
Workers' competence	Monitor	Continuously	Supervisor	Meet the requirements	Not met in 6 % of the workers,	Not acceptable Consider the need of additional training
Use of PPE in all production sites	Monitor	Continuously	Supervisor	100 %	Two out of 56 workers with no PPE	Unsafe act Take action

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 9.1.1.

A large construction company establishes incident rate indicators at four levels, as follows:

a) Incidents resulting in first aid injuries or ill health. Key performance indicator is rate of incidents per 100 workers.

b) Incident resulting in medical aid and up to three days lost time. Key performance indicator is rate of incidents per 100 workers.

c) Incidents resulting in medical aid of three or more days. Key performance indicator is rate of incidents per 100 workers.

d) Incidents resulting fatality. Key performance indicator is rate of incidents per 100 workers.

EXAMPLE 3 Real life case 3 on how to implement requirements in ISO 45001:2018, 9.1.1.

A bottling company reviewed different OH&S monitoring and measurement data they used and determined that they also needed to assess the level of noise at the filling stations where workers expressed concern over their ability to hear conversation as well as possible hearing loss. The organization hired external services, in this case a national accredited laboratory, to determine sound pressure levels, using calibrated instruments.

From this activity, the organization received data on noise levels that were compared against legal decibel requirements and internal noise exposure limits. The external service provider produced the report including the results, recommendations and calibration certificates by the manufacturer containing the names of the instruments, calibration results, measurement errors, uncertainty, traceability, etc.

9.1.2 Evaluation of compliance

An organization should establish, implement and maintain one or more processes for periodically evaluating its compliance with legal requirements and other requirements. This should be done at regular intervals to ensure that the organization still complies with these requirements. ISO 45001:2018 does not state how often this should be done but many organizations do this once or twice per year.

Evaluation of the organization's compliance should be performed by competent workers, either from within the organization and/or using external resources. A key input to this process is an analysis of legal requirements and other requirements. A variety of other inputs can be used to assess compliance, including:

a) results of audits;

b) results from inspections by OH&S regulatory authorities;

c) nonconformity finding including findings from previous evaluations;

d) reviews of documents and/or records of incidents and risk assessments;

e) results of interviews with workers and worker representatives;

f) facility, equipment and area inspections;

g) project or work reviews;

h) analysis of test results from monitoring and testing;

i) facility tours and/or direct observations.

The organization's processes for the evaluation of compliance can depend on its nature (size, structure and complexity). A compliance evaluation can encompass multiple legal requirements or a single requirement. The frequency of evaluations can be affected by factors such as past compliance performance or specific legal requirements. The organization can choose to evaluate compliance with individual requirements at different times or at different frequencies, or as appropriate.

A compliance evaluation plan can be integrated with other assessment activities. These can include management system audits, environmental audits or quality assurance checks.

An organization can choose to establish different processes to verify compliance with legal requirements and to verify compliance with other requirements. It can, however, also choose to combine these in a single process.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 9.1.2.

A medium-sized cement organization used the documented information generated by a review of the requirements in ISO 45001:2018, 6.1.3 "Determination of legal requirements and other requirements".

The organization used workers who were competent in OH&S legal matters (and used external help with this) to review evidence of compliance and noted instances where the organization complied with requirements and where there were gaps or noncompliances. In this work, they used data from monitoring and measurement activities. To fill these gaps, they raised a nonconformity in their OH&S management system and required the relevant workers to plan action to close the gaps as quickly as possible. In the meantime, they took measures to ensure that no injury or ill health resulted from the noncompliance. For two, slightly more complicated issues, the workers reported the issues to top management for further action. They also considered if reports to authorities were needed for each issue.

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 9.1.2.

A construction company in the product realization phase performed an internal audit to review compliance to legal requirements and other requirements as part of an internal audit. The organization also used observation audits by the OH&S committee of the construction company to gather information about compliance to legal requirements and other requirements.

9.2 Internal audit

9.2.1 General

The organization should conduct internal audits of its OH&S management system at planned intervals to determine and provide information to top management on whether the system conforms to planned arrangements and has been properly implemented and maintained. The results can be used to identify opportunities for improving the OH&S management system.

9.2.2 Internal audit programme

The organization should establish an internal audit programme to direct the planning and conduct of internal audits. This helps to identify the audits needed to achieve the audit programme objectives in conformance with ISO 45001:2018 and internal OH&S management system requirements. The audit programme, and the frequency of internal audits, should be based on the nature of the organization's operations, in terms of its hazards, risks and opportunities that need to be addressed, the results of previous internal and external audits, and other relevant factors (e.g. changes affecting the organization, monitoring and measurement results and previous emergency situations). Outsourced processes that have audit provisions as controls should be considered in the planning of the audit programme.

The organization should determine the frequency of the internal audits. The audit programme can, for example, cover one year or multiple years, and can consist of one or more audits. Individual internal audits are not required to cover the entire system, so long as the overall audit programme ensures that all organizational units and functions, system elements and the full scope of the OH&S management system are audited periodically.

Internal audits should be planned and conducted by an objective and impartial auditor or audit team, aided by technical experts, where appropriate, selected from within the organization or from external sources. Their collective competence should be sufficient to achieve the audit objective and to meet the scope of the particular audit, and to provide confidence as to the degree of reliability that can be placed on the results. The organization should consider, for example, involving those who have such expertise in safety, occupational health and well-being at work to ensure the competence of the audit team.

A smaller organization can sometimes struggle to achieve impartiality and objectivity, but this can often be resolved by enabling different workers or parts of the organization to audit each other, or by the use of external auditors.

To facilitate consultation and participation of workers, the auditing process can involve worker representatives that feed into the auditing process and review/comment on the audits. It can be beneficial for workers to be included in the audit team (e.g. as subject matter experts) and not only as auditees. For organizations with limited internal resources, using external competence such as partnering with a local educational institution which teaches audit principles for students to conduct audit as part of class project can be beneficial.

The results of an internal audit can be provided in the form of a report as the basis for verification and used to correct or prevent specific nonconformities, or to achieve one or more audit programme objectives, and to provide input to the management review. ISO 45001 requires the organization to ensure that relevant audit results are reported to workers.

NOTE Guidance on management system auditing is provided in ISO 19011.

EXAMPLE 1 Real life case 1 on how to implement requirements in ISO 45001:2018, 9.2.2.

A toy manufacturing company developed an audit programme under the format of a table, such as Table 15, to record where audits have been done on time and which have been postponed.

This is also used to develop programmes for other types of audits that the organization has to carry out. These additional audits do not necessarily cover the complete management system but are used to cover specific processes (e.g. outsourced) or some parts of the contractor's organizations, as agreed in binding agreements.

The audit team writes a report with conformities and nonconformities detected during the audit. This report is submitted to top management and to other managerial levels as required. Workers who participated in the audit as "auditees" are also informed of the relevant audit results.

The "x" in Table 15 indicates when a function or process is scheduled to be audited. If something is postponed, this is marked in the table as "pp". Depending on the function/process, relevant ISO 45001:2018 requirements were audited.

Table 15 — Audit programme based on functions/process

Function/process	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Top management	x						x					
Purchases		x										
Sales	x			x				x			x	
Production			x			x						
Logistics		x							x			
Dispatch				pp								x
Human resource			x									
Communication		x						x				
Administration					x							
Contractor 1			x					pp				
Contractor 2				x						x		
Legal audit		x										
Outsourced process 1	x					x				x		
Outsourced process 2			x								x	

Another year the company tried another approach where clauses in ISO 45001:2018 were the base for the programme. The "x" in Table 16 indicates when a specific clause was scheduled to be audited. If something was postponed, this is marked in the table as "pp". Depending on the clause, relevant functions/processes were audited.

Table 16 — Audit programme based on requirements

ISO 45001:2018 clause/subclause	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4 Context of the organization	x						x					
5 Leadership and worker participation		x								x		
6.1 Actions to address risks and opportunities	x			x				x			x	
6.2 OH&S objectives and planning to achieve them			x			pp						
7 Support		x							x			
8.1 Operational planning and control				x								x
8.2 Emergency preparedness and response			x									
9 Performance evaluation		x						x				
10 Improvement					x							

EXAMPLE 2 Real life case 2 on how to implement requirements in ISO 45001:2018, 9.2.2.

An oil production company determines the frequency of its audit programme using applied risk-based thinking. This considers the frequency with which its processes are carried out, the complexity of its processes, results from previous audits and the objectives of the audit programme. For example, more mature processes require less frequent internal audits and more complex processes require more frequent internal audits.

EXAMPLE 3 Real life case 3 on how to implement requirements in ISO 45001:2018, 9.2.2.

An educational organization with many different locations and processes performs internal audits to obtain information on the performance and effectiveness of the OH&S management system from an impartial point of view.

To ensure that this is done at "planned intervals", the organization has a four-year audit programme during which each location and processes relevant to OH&S performance are audited at least twice.

The organization uses audit methods of direct observation of the process, interviews with workers and contractors and reviews of documented information (e.g. internal procedures, documents, records, standards, legal requirements). Since the locations are spread over several countries, and some workplaces are quite small, the organization has developed methods to do audits, including remote audits, and audit findings follow-up online even though they require that all locations be visited at least once during the four-year period. The audits procedure was modified to include remote audit practices; auditors were retrained to make them aware of the advantages and limitations of the new methodology.

The organization considers the result of internal audits as opportunities to improve the OH&S management system.

9.3 Management review

Top management should, at intervals that it determines, review its OH&S management system to evaluate the system's adequacy and effectiveness as well as a driver for continual improvement.

It should also review trends in incidents and nonconformities, corrective actions and continual improvement, monitoring and measurement results including from evaluation of compliance, audit results and trends in consultation and participation of workers.

The output from management review should focus on decisions related to how to improve the OH&S management system to better achieve its intended outcomes. Management reviews should be retained as documented information and relevant results communicated to workers and their representatives.

In planning for a management review, it is important to consider key issues to focus on that can be of higher importance for achieving the intended outcomes of the OH&S management system and identify who needs to participate given the issues to discuss.

A management review can coincide with other management activities (e.g. board meetings, operational meetings) or can be conducted as a separate activity. Management review can be coordinated with the organization's planning and budgeting cycle, and OH&S performance can be evaluated during top management's review of its overall business performance, so that decisions on priorities and resources for the OH&S management system are balanced with other business priorities and resource needs.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 9.3.

A large chemical producer wanted to improve the efficiency of its OH&S management system reviews. The organization had been doing these reviews twice a year in meetings at different levels in the organization, with the full agenda stated in ISO 45001:2018. The outputs from these meetings were then aggregated and served as input into the top management review once per year. This was not seen to add much value to the organization and did not help with the focus on OH&S.

To improve the process, they decided to check what was typically covered during weekly or monthly management meetings and found that many of the management review issues were covered in these meetings.

This resulted in a change where many parts of the organization became more focused on covering OH&S matters during general management meetings. They then decided what, if anything, needed to be escalated to top management from these meetings. Table 17 gives an example of what was noted at one of these management meetings.

Table 17 — Example of management review decisions

Issue	Decision
Is the OH&S management system achieving its intended results?	Indicators reviewed showed good results, with the exception of the number of site tours by managers, for which planning has to be revised (deadline: one-month, general manager)
Opportunities for improvement to be pursued	Alarms shall be installed in all moving parts of our production line No. 2 (deadline: six months, maintenance manager)
Necessary changes to the OH&S management system	No changes needed
Resources needed	Further resources are needed to meet this year's training plan (one-month, human resources manager)
Opportunities to integrate the OH&S management system with other business processes	The stock policy of PPE will be managed by the purchasing manager (one week, purchasing manager and OH&S manager)
Impact on the strategic direction of the organization	No impact identified

10 Improvement

10.1 General

The organization should determine opportunities for improving its OH&S performance and OH&S management system through input from, for example:

a) monitoring, measurement, analysis and evaluation related to OH&S performance;

b) evaluation of compliance with legal requirements and other requirements;

c) audits of the OH&S management system;

d) management review.

10.2 Incident, nonconformity and corrective action

The organization should have one or more processes for reporting, investigating and analysing incidents and nonconformities. The purpose of this is to provide a structured, proportionate and timely approach for determining and dealing with the underlying (root) causes of incidents and nonconformities.

Nonconformity is defined in ISO 45001:2018, 3.34, as a "non-fulfilment of a requirement". A requirement can be stated in relation to the OH&S management system or in terms of OH&S performance.

Incident investigation is an important tool for preventing reoccurrence of incidents and identifying opportunities for improvements. It can also be used for raising the overall OH&S awareness in the workplace.

The organization should seek to prevent under-reporting of incidents and nonconformities. This can occur in diverse circumstances, such as:

— lack of awareness on the need for a complete reporting;

— the need to reach an objective linked to a bonus;

— fear of reprisal by the organization.

Incidents and nonconformities should be investigated in proportion to their foreseeable consequences. For very minor incidents (e.g. paper cuts), a description in an incident register is likely to be sufficient. In determining the nature of the incident or nonconformity, the resources needed, and the priority to be given to investigation of an incident or nonconformity, the organization should take into account:

— the actual or potential outcome and consequences of the incident or nonconformity;

— the frequency of such incidents and nonconformity and their potential consequences.

In developing those processes, the organization should give consideration to the following:

a) the need for a common understanding and acceptance of what constitutes an "incident" and a nonconformity and the benefits that can be gained from its investigation;

b) capturing all types of incidents and nonconformities through reporting, including major and minor incidents, emergencies, near misses, instances of ill health and those that take place over a period of time (e.g. exposure);

c) the need to meet any legal requirements relating to the reporting and investigation of incidents (e.g. maintenance of a register of incidents);

d) defining the assignment of responsibilities and authorities for the reporting of incidents and nonconformities and subsequent investigations;

e) the need for immediate action to deal with imminent risks;

f) the need for investigation to be impartial and objective;

g) the need to focus on determining underlying (root) causes;

h) the benefits of involving those with knowledge of the incident;

i) defining the requirements for the conduct and recording of various phases of the investigation process, such as:

    1) establishing and appointing members to the investigation group;

2) gathering facts and collecting evidence, in a timely manner;

3) analysing the results;

4) communicating the need for any identified corrective action;

5) providing feedback into the processes for hazard identification, risk assessment, emergency response, OH&S performance measurement and monitoring, and management review.

The organization should ensure that workers conducting incident investigations are competent.

Issues from OH&S management system performance that, for example, can lead to nonconformities:

— failure of top management to demonstrate commitment;

— failure to establish OH&S objectives;

— failure to define responsibilities required by an OH&S management system, such as responsibilities for achieving objectives;

— failure to periodically evaluate compliance with legal requirements;

— failure to meet training needs;

— documentation being out of date or being inappropriate;

— failure to carry out communications.

Issues from OH&S performance that, for example, can lead to nonconformities:

— failure to implement the plan to achieve improvement objectives;

— consistent failure to achieve performance improvement objectives;

— failure to meet legal requirements or other requirements;

— failure to record incidents;

— failure to implement corrective action in a timely manner;

— consistent high rates of illness or injury that are not being addressed;

— deviations from established OH&S processes;

— introduction of new materials or processes without appropriate risk assessments being conducted.

Inputs into determining necessary corrective actions can include the results of:

— periodic tests of emergency procedures;

— incident investigations;

— internal or external audits;

— periodic evaluations of compliance;

— performance monitoring;

— maintenance activities;

— worker suggestion schemes and feedback from worker opinion/satisfaction surveys;

— exposure assessments.

Identification of nonconformities should be made part of individual responsibilities, with individuals closest to the work encouraged to report potential or actual problems.

Once a nonconformity or incident is identified, action should be taken to control or correct it. This can include first aid assistance or trigger an emergency plan. Without delay the cause of the incident or nonconformity should then be investigated to determine causes, so that corrective action can eliminate the cause(s) and focus on improving the appropriate part of the OH&S management system. An organization should consider what actions should be taken to address the problem, and/or what changes should be made to correct the situation. The response and timing of such actions should be appropriate to the nature and scale of the nonconformity and the OH&S risk.

Any action needed, including corrective actions, should:

— be determined in accordance with the hierarchy of controls and the management of change;

— be taken after having assessed the OH&S risks related to the change;

— be followed up to assess its effectiveness.

Documented information should be retained as evidence of the nature of incidents and nonconformities and as evidence of the results of any action taken, including its effectiveness. It should be noted that all incidents themselves are not necessarily nonconformities and an incident can occur where there is no nonconformity. Determination of conformity is one of the outputs of the incident investigation.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 10.2.

A sales organization implemented the requirements in ISO 45001:2018, 10.2, as follows.

The organization wanted to ensure that any relevant interested party would have the ability to report incidents and nonconformities relating to the operation of the organization. The organization set up a single point of contact with a published telephone number and email address to which all such reports would be directed. This ensured that it could capture all incidents and nonconformities in a consistent format and that these were recorded centrally before being allocated out for investigation or corrective action. This was also possible to operate with more than one point of contact as it put procedures in place to ensure that incidents and nonconformities were directed to the appropriate place to prevent these from getting sent to a worker who was unable to deal with them, or in the report simply getting lost.

The organization gave each incident or nonconformity a unique identification number to assist with its initial recording and allocation, and the subsequent monitoring of it through to successful resolution. Other key information that was logged was a clear description of the incident or nonconformity (so that anyone reviewing the record for the first time would be able to understand the nature of the issue), the date it was received, the author, its significance (e.g. major, minor), the individual to whom it was passed to for resolution, the required next action, the date by which the next action should be completed, target completion date and current status (e.g. open, closed).

Incidents and nonconformities were always investigated. For very minor issues, these were simply recorded to see if there were any alarming trends. For more serious issues, the investigations could take the form of an audit by an internal auditor, or an external auditor, including regulators when appropriate. Alternatively, the investigation was conducted by workers themselves using techniques such as root cause analysis, fault tree analysis, 5 whys or 4M+E (material, machine, method, manpower + environment in the workplace).

However, when the incident or nonconformity was investigated, the root cause of the problem was always determined, and the necessary corrective action taken to eliminate any similar problems reoccurring. The organization finally reviewed weaknesses in the OH&S management system that allowed the incident or nonconformity to occur and took action to improve the system if needed.

10.3 Continual improvement

This subclause in ISO 45001:2018 focuses on ensuring that the OH&S management system leads to continual improvements and shows some of the key drivers of this, including:

— promotion of a culture that supports prevention of injury and ill health as a core value;

— involvement of workers at all levels in improving the OH&S management system.

The organization should continually evaluate its OH&S management system and its performance to identify how it can be improved. Top management should be involved directly in this evaluation through the management review process.

Promotion of OH&S as a core value can be done in many different ways, including the use of meetings where OH&S is on the agenda and all workers are invited to participate, ties to strategic plans, review of continual improvement projects at key meetings with workers, celebration of workers' personal contribution to OH&S performance, achievement of milestones in OH&S performance, etc.

Continual improvement does not imply that improvement should take place each and every day. Instead, the organization should be able to demonstrate that, over time, both its OH&S management system and its OH&S performance are better than they were previously.

Suggestions for improvement can come from within the organization itself or from external interested parties. It is important that the organization has arrangements in place to capture and evaluate such suggestions, and to develop suggestions into actions which can be implemented.

Improvement can be gradual, such as falling incident rates as a result of enhanced awareness training, or can be a step change, involving more immediate and significant changes such as the introduction of new machinery or process methods to reduce hazards.

The organization can show evidence of both gradual and step-change improvement. Evidence of improvement can take many forms and can be qualitative or quantitative in nature. For example, managers can demonstrate positive trends in OH&S performance using OH&S key performance indicators, top management can review progress towards the achievement of OH&S objectives as a means to determine if the OH&S strategy is being delivered, and worker representatives can refer to OH&S survey data to support claims that workers believe the organization's OH&S culture is improving.

EXAMPLE Real life case 1 on how to implement requirements in ISO 45001:2018, 10.3.

To demonstrate its conformance to ISO 45001:2018, 10.3, an organization maintains documented information on OH&S performance and improvements. The document is shared at key meetings to communicate and celebrate improvements to OH&S performance with interested parties. The document included items such as:

— OH&S programmes that were implemented;

— additional guarding installed on machinery;

— creation of new training courses;

— participation meetings held for workers;

— OH&S responsibilities added to job descriptions;

— online incident reporting implemented;

— competency matrix enhanced;

— OH&S awareness course created for new hires and contractors;

— internal webpage created to house OH&S management system documents and records;

— OH&S performance objectives added to all supervisor performance plans;

— number of risk assessments completed or reviewed;

— substitution of safer chemicals on the production line;

— installation of noise-cancelling booths around equipment.

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