



International
Standard

ISO 19650-6

**Organization and digitization of
information about buildings and
civil engineering works, including
building information modelling
(BIM) — Information management
using building information
modelling —**

**Part 6:
Health and safety information**

*Organisation et numérisation des informations relatives aux
bâtiments et ouvrages de génie civil, y compris modélisation des
informations de la construction (BIM) — Gestion de l'information
par la modélisation des informations de la construction —*

Partie 6: Informations relatives à la santé et à la sécurité

**First edition
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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 document 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).

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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 59, *Buildings and civil engineering works*, Subcommittee SC 13, *Organization and digitalization of information about buildings and civil engineering works, including building information modelling (BIM)*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 442, *Building Information Modelling (BIM)*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 19650 series can be found on the ISO website.

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

At the heart of this document is the requirement to identify, record, use and share information on health and safety risks which can result in harm to any person involved in the asset throughout its life. Information captured can include any site-wide health and safety risks associated with location, previous use, or the site's physical characteristics. ISO 31000 and ISO 45001 to ISO 45006 cover risk management and occupational health and safety

Health and safety related tasks such as allocation, registration and treatment can be performed by any party. They represent a specific opportunity for making improvements to asset management using the ISO 19650 series but also a challenge because health and safety information is a collective responsibility rather than a deliverable by an individual appointed party.

The exchange and use of health and safety information is intended to support:

- representation of the nature and characteristics of the works being undertaken, the site and the asset;
- representation of health and safety risks, hazards and associated factors;
- generalization, dissemination and re-use of health and safety knowledge and experience.

Health and safety information becomes meaningful when interpreted in the light of the history of events and accidents associated with such risk, and in the context of the immediate and underlying circumstances in which the risk is identified. The schema provided within this document includes a structure for recording contextual information and incidents. One important use of incident information is to link incidents to design factors, so that designers can learn about how their designed assets perform in use.

Organizational information requirements developed by the appointing party can reflect the required integration of health and safety as well as modelling and sharing of information across the supply chain. This contextual information can include information to identify characteristics of location, product, systems, element or plant or equipment, and scope of work activity to be carried out, which are associated as sources of the health and safety risk. Health and safety risks can be linked where appropriate to risk treatments which prioritize the production of inherently safer outcomes during the delivery and operational phases of an asset's life cycle. Prior to construction, health and safety risks can be progressively defined and linked to the context in which the harm can occur. During the construction stage the health and safety information can be used to identify, record, use and share barriers and controls to reduce health and safety risk.

During handover and close out of the project, the health and safety information can be used to ensure that the project information model is used to update the asset information model. This information is handed over to those who will be responsible for managing and assessing health and safety risks during the operational phase of the asset.

This document intends to support the use of health and safety and related information to:

- provide a safer and healthier environment for end users as well as for design, construction, operation and maintenance personnel;
- mitigate the inherent health and safety risks and hazards across the asset life cycle;
- result in improved health and safety performance, fewer incidents and associated impacts;
- provide for clearer, more assured and relevant health and safety information to the 'right people' at the 'right time';
- increase construction and operational value.

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling —

Part 6: Health and safety information

1 Scope

This document specifies concepts and principles for classifying, sharing and delivering health and safety information collaboratively, to secure the economic, environmental and social benefits.

This document:

- a) specifies requirements for the collaborative sharing of structured health and safety information throughout project and asset life cycles;
- b) supports the digitization of structured health and safety information in project and asset life cycles progressively from the outset;
- c) provides specification on how health and safety information is shared for use throughout project and asset life cycle;
- d) sets out a health and safety information cycle framework for the identification, use, sharing and generalization of health and safety information through information management processes.

This document is applicable to individuals and organizations that contribute to and influence the procurement, design, construction, use (including maintenance) and end-of-life of building and infrastructure assets.

The principles and requirements of this document can be applied equally to delivery or in-use phases not using BIM.

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 19650-1, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 1: Concepts and principles*

ISO 19650-2, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 2: Delivery phase of the assets*

ISO 19650-3, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 3: Operational phase of the assets*

ISO 19650-4, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 4: Information exchange*

ISO 19650-5, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 5: Security-minded approach to information management*

ISO 31000, *Risk management — Guidelines*

ISO 45001, *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 19650-1, ISO 19650-2, ISO 19650-3, ISO 19650-4, ISO 19650-5, ISO 31000, ISO 45001 and the following 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/>

3.1

health and safety information

information relating to the health and safety risks across the project and asset life cycle

Note 1 to entry: Health and safety information includes, but is not limited to, health and safety risks and risks arising from the environment and from an activity.

3.2

risk treatment

action to lessen risk

Note 1 to entry: Eliminating, reducing, informing and controlling are ways a risk can be modified.

Note 2 to entry: A risk treatment can be that the risk is accepted and no action is required.

Note 3 to entry: ISO 45001 uses 'corrective action' in a slightly different sense.

[SOURCE: ISO 31073:2022, 3.3.32, modified — The original notes to entry have been replaced by 3 new ones.]

3.3

generalization

act of removing or modifying details to make information suitable for wider publication and re-use

Note 1 to entry: This can include replacing personal and protected characteristics.

3.4

hazard

source of potential harm

[SOURCE: ISO 31073:2022, 3.3.12, modified — Note 1 to entry has been removed.]

3.5

level of risk

risk priority

risk level

magnitude of risk or combination of risks

Note 1 to entry: ISO 31000 uses 'level of risk' and ISO 45002 uses 'risk level'.

[SOURCE: ISO 31073:2022, 3.3.22, modified — The admitted terms "risk priority" and "risk level" have been added; "expressed in terms of the combination of consequences and their likelihood" has been removed from the definition; note 1 to entry has been added.]

4 Health and safety information

4.1 Objective

To deliver effective health and safety outcomes, health and safety information shall be documented, stored, shared and presented as outlined in [4.2](#) to [4.5](#).

4.2 General requirements

4.2.1 Initiation

The appointing party shall adopt the common method for structuring health and safety information (defined in [4.3](#) to [4.5](#)) to support the risk management cycle including identification, sharing, use and generalization of information and supporting evidence relating to:

- a) health and safety risk management;
- b) hazard and incident management;

NOTE ISO 45001 defines 'incident'.

- c) optionally, the recording of previous and existing states of the health and safety information which can affect works on the current project or asset.

The appointing party in determining the expectations in [4.3](#) to [4.5](#) shall consider the legal, regulatory, supervisory and management concerns.

4.2.2 Types of health and safety risk

The scope of the health and safety risk management should include sharing sufficient information to support the collaborative management of the risks and hazards concerning:

- a) health, safety and well-being;
- b) optionally, environment;
- c) optionally, social/community interest.

NOTE Other types of risk can be managed using this method without collaborative sharing.

4.2.3 Context

The context within which health and safety risks are being managed shall be documented in terms of:

- a) the site and surroundings, and any exceptional spatial zones or space-types or activities;
- b) the asset and any exceptional physical systems or product types;
- c) the project/program and any exceptional work-packages or method-statements and work sequences.

4.2.4 Health and safety risk prioritization

All known or perceived health and safety risks shall be documented. Health and safety risks shall be prioritized to identify those needing further scrutiny to ensure the correct risk treatment is proposed.

Prioritization shall be assessed:

- a) before consideration of the opportunities for risk treatment;
- b) after agreement on risk treatment.

4.2.5 Risk treatment

Opportunities for risk treatment shall be documented including:

- a) those agreed;
- b) those identified as relevant but not agreed.

NOTE All parties can propose treatment measures; the parties responsible for agreeing treatment can accept them depending on their scope of services.

4.2.6 Incidents

All incidents shall be recorded including ‘near miss events’, where an incident is perceived to have been possible but did not occur.

NOTE The recording of incidents can depend on legislation and the scope of services of parties. Incidents can be formally reportable. It can be necessary for the recording to reflect personal and protected categories of information.

4.3 Schema

4.3.1 Overview

Health and safety context, risks, incidents and treatments shall be described using the schema in 4.3.2 to 4.3.5 or as identified in the project/asset information standard. Figure 1 illustrates the relationships between health and safety context, risks, incidents and treatments, showing that a project/asset context can have both risks and incidents which can have treatments.

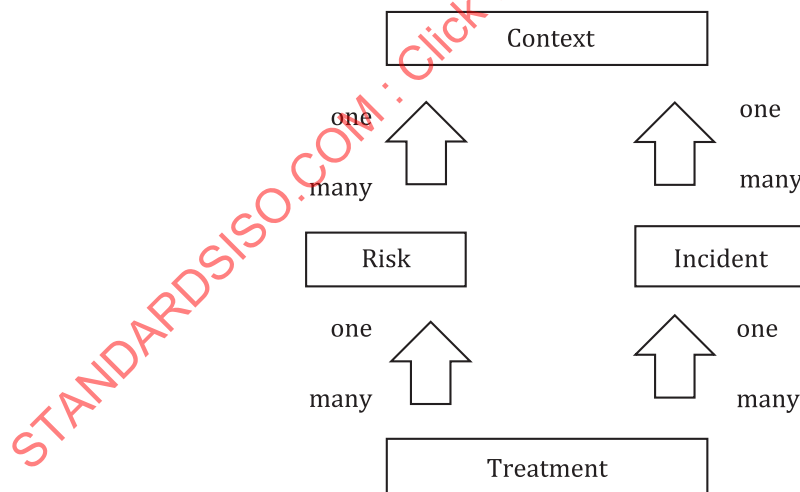


Figure 1 — Relationships between context, risks, incidents and treatments

NOTE 1 [Annex A](#) contains a tabulated summary of this schema.

NOTE 2 [Annex D](#) suggests an implementation using IFC 4.3 schema and other versions in ISO 16739-1 which supports the documentation of the health and safety risk situation in a geometric or construction and operation model.

There shall be consideration of the implementation requirements need to ensure that the provided health and safety information meets necessary integrity, availability and confidentiality requirements.

4.3.2 Context sub-schema

Information about the context shall be described so that any risks and incidents can be assessed appropriately. The context sub-schema shall use the property fields defined in [Table 1](#).

Table 1 — Context sub-schema

Property field	Specification	Description	Notes
Identifier	Text	Unique context identifier	See 4.3.3
Category	Enumeration	Classification of the asset	-
Description	Text	Detailed description and narrative of the asset	-
Associated product	Text or identifier	Facility or system	Only systems that are exceptional given the overall context need to be recorded
Associated activity	Text or identifier	Asset life cycle stage or work package	Only work packages that are exceptional given the overall context need to be recorded
Associated location	Text or identifier	Site or zone	Only zones that are exceptional given the overall context need to be recorded
Contextual location	Coordinates	Coordinate system-based location	Optional This can be cartesian, geo-spatial or alignment based
Context link	Text or link to main context	-	See 4.3.2
Context linkage	Inverse links to sub-contexts	-	Optional depending on implementation See 4.3.2
Risk linkage	Inverse linkage to risks	-	Optional depending on implementation See 4.3.3
Incident linkage	Inverse linkage to incidents	-	Optional depending on implementation See 4.3.4
History	Varies	Record of dates and actions including creation, updates	Entries shall not be deleted

4.3.3 Risk sub-schema

Risks shall be described to support their communication and assessment. The health and safety risk schema shall use the property fields defined in [Table 2](#).

Table 2 — Health and safety risk schema

Property field	Specification	Description	Notes
Identifier	Text	Unique risk identifier	Defined in 4.4.2
Category	Enumeration	Classification of the risk	Defined in 4.3.7
Description	Text	Detailed description and narrative of the risk	-
Associated product	Text or identifier	Product, material, type, component or system associated	Optional if other associations given This can be a name, category, description or specification or model entity reference
Associated activity	Text or identifier	Activity, process, task, job type, package or project/program associated	Optional if other associations given This can be a name, category description or construction or operation program or model entity reference
Associated location	Text or identifier	Space, location, zone or site associated	Optional if other associations given This can be a name, category description or model entity reference
Contextual location	Coordinates	Coordinate system-based location	Optional This can be cartesian, geo-spatial or alignment based
Application stage	Enumeration — Inception — Briefing — Design — Production — Handover — Operation — Repurposing — Demolition	The stage at which this risk applies	Based on ISO 22263 with the addition of operation as a non-project, in-use stage and repurposing Handover, including commissioning and testing, is included
Status	Enumeration — Open — Closed — Unknown	Status of the risk indicating the need for review and treatment	Status will be unknown until it has been assessed
Documentation	File reference or URL	Documentation of any expert or detailed risk analysis	-
Level of risk	Text	Prioritization provided to support communication and review	Annex C offers an extended implementation
Affected party	Text	Name or role of party affected by this risk	Privacy can need protection
Raised by	Text	Name or role of individual or organization who raised this risk	Privacy can need protection

Table 2 (continued)

Property field	Specification	Description	Notes
Owned by	Text	Name or role of individual or organization who is responsible to determine the appropriate risk treatment	Privacy can need protection
Context	Text or linkage	Association to a context	See 4.3.2
Treatments linkage	Inverse of links from treatments	-	Optional depending on implementation See 4.3.5
Review date	Date	Date review is due or has been carried out	Optional
History	Varies	Record of dates and actions including creation, updates	Optional Entries shall not be deleted

4.3.4 Incident sub-schema

Incidents shall be described to support their communication and assessment. The incident sub-schema shall use the property fields defined in [Table 3](#).

Table 3 — Incident sub-schema

Property field	Specification	Description	Notes
Identifier	Text	Unique risk identifier	Defined in 4.4.2
Category	Enumeration	Classification of the risk	Defined in 4.3.7
Description	Text	Detailed description and narrative of the risk	-
Associated product	Text or identifier	Product, material, type, component or system associated	Optional if other associations given This can be a name, category, description or specification or model entity reference
Associated activity	Text or identifier	Activity, process, task, job type, package or project/program associated	Optional if other associations given This can be a name, category description or construction or operation program or model entity reference
Associated location	Text or identifier	Space, location, zone or site associated	Optional if other associations given This can be a name, category description or model entity reference
Contextual location	Coordinates	Coordinate system-based location	Optional This can be cartesian, geo-spatial or alignment based

Table 3 (continued)

Property field	Specification	Description	Notes
Application stage	Enumeration — Inception — Briefing — Design — Production — Handover — Operation — Repurposing — Demolition	The stage at which this risk applies	Based on ISO 22263 with the addition of operation as a non-project, in-use stage and repurposing Handover, including commissioning and testing, is included
Status	Enumeration — Open — Closed — Unknown	Status of the incident indicating the need for review and treatment	Status will be unknown until it has been assessed
Documentation	File reference or URL	Documentation of any detailed risk analysis	-
Level of risk	Text	Prioritization provided to support communication and review	-
Affected party	Text	Name or role of party affected by this incident	Privacy can need protection
Raised by	Text	Name or role of individual or organization who raised this risk	-
Owned by	Text	Name or role of individual or organization who is responsible to determine the appropriate risk treatment	-
Context link	Text or links	Association to a context	See 4.3.2
Treatments linkage	Inverse of links from treatments	-	Optional depending on implementation See 4.3.5
Review date	Date	Date review is due or has been carried out	Optional
History	Varies	Record of dates and actions including creation, updates	Optional Entries shall not be deleted

4.3.5 Risk and incident treatment sub-schema

Treatments shall be described to support their communication and implementation. The risk treatment sub-schema shall use the fields defined in [Table 4](#).

Table 4 — Risk and incident treatment sub-schema

Property field	Specification	Description	Notes
Identifier	Text	Unique treatment identifier	Defined in 4.4.2
Category	Enumeration — Elimination — Substitution — Control — Information — Unknown		Substitution can include reduction Controls can include engineering controls, administrative controls, and personal protective equipment See ISO 45001, ISO 45002 and ISO 45006 for detail
Description	Text	Detailed description and narrative of the risk treatment	
Associated product	Text or identifier	Product, material, type, component or system associated	Optional if other associations given This can be a name, category, description or specification or model entity reference
Associated activity	Text or identifier	Activity, process, task, job type, package or project/program associated	Optional if other associations given This can be a name, category description or construction or operation program or model entity reference
Associated location	Text or identifier	Space, location, zone or site associated	Optional if other associations given This can be a name, category description or model entity reference
Application stage	Enumeration — Inception — Briefing — Design — Production — Handover — Operation — Repurposing — Demolition	The stage at which this risk applies	Based on ISO 22263 with the addition of operation as a non-project, in-use stage and repurposing Handover, including commissioning and testing, is included
Status	Enumeration	Status of the risk treatment indicating the need for review and approval	Status will be unknown until it has been assessed
Documentation	File reference or URL	Documentation of any detailed risk treatment analysis on which the entry is based	-
Raised by	Text	Name or role of party who raised or originated (authored) this risk treatment	-

Table 4 (continued)

Property field	Specification	Description	Notes
Owned by	Text	Name or role of individual or organization who is responsible to determine the appropriate risk treatment	-
Approved by	Text	Name or role of party who approved this risk treatment	Optional till approved
Risk links	Text or links	Association to a risk record	See 4.3.3 One or more risk treatments can be associated to a risk
Incident links	Text or links	Association to an incident record	See 4.3.4 One or more risk treatments can be associated to an incident
Review date	Date	Date review is due or has been carried out	Optional
History	Varies	Record of dates and actions including creation, updates	Optional Entries shall not be deleted

4.3.6 Properties

Properties requirements necessary to enable health and safety information to be used shall be documented throughout the asset life cycle. Automated queries, health and safety risk related studies and the specified health and safety risk tasks to be undertaken shall have these properties incorporated.

NOTE Properties linked to geometric and construction and operation sequencing models can also enable engineering analysis, support judgements on health and safety risk factors such as deflection limits, load capacities and inform decisions on compliance checking, enabling active near-real-time digital monitoring techniques.

4.3.7 Categorization

Assets, health and safety risk and incidents shall be categorized according to the regional, national or project/asset convention identified in the project/asset information standard.

Risk treatment is categorized in the schema (see [Table 4](#)).

NOTE 1 Categorization can be determined by legal reporting requirements.

NOTE 2 [Annex B](#) provides an outline classification.

4.3.8 Level of risk

The outcome of an assessment of a health and safety risk using any appropriate method shall be communicated.

NOTE 1 The grading and prioritization of risks can be the legal responsibility of a specific party.

NOTE 2 ISO 45001 requires that assessment be 'systematic and proactive'.

4.4 Health and safety risk, risk treatment and incident identifiers

4.4.1 General

Health and safety risk, risk treatment, context and incident identifiers shall be unique to the project or asset.

The appointing party shall consider the structures in 4.4.2 and 4.4.3.

NOTE Project/asset and originator identifiers can be defined in the project/asset standard methods and procedures. See ISO 19650-1, ISO 19650-2 and ISO 19650-3.

4.4.2 Context identifier

The content identifier (see Figure 2) shall be composed of the project/asset identifier, as identified in the project/asset information standard.

EXAMPLE PR101

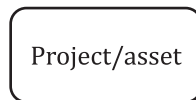


Figure 2 — Context identifier

4.4.3 Risk, risk treatment and incident identifiers

Risk, risk treatment and incident identifiers (see Figure 3) shall be composed of the project/asset identifier - the originator identifier - the sequential number (- record type).

The identifier includes the originator raising the risk, treatment or incident.

The sequential number shall be unique within the context, typically four digits.

Optionally a final element (record type) can distinguish among risk, treatment or incident.

EXAMPLE PR101-AAA-0003-Risk



Figure 3 — Risk, treatment and incident identifiers

4.5 Use of information

4.5.1 Generating information

As project/asset information model is created, enhanced and modified, the health and safety information shall be reviewed to see whether changes or additions are required across the affected parts, their interfaces and dependencies.

4.5.2 Sharing information

The appointing parties, lead appointed parties and appointed parties shall share all generated health and safety information with all parties.

The lead appointed parties shall consider the need for health and safety information to be shared with other lead appointed parties in order to effectively manage project risks, whether the appointments are concurrent or in parallel.

NOTE Other lead appointed parties and their delivery teams can contribute.

A common data environment (CDE) as described in ISO 19650-1 shall be created and used to host and manage the health and safety register and other information and to share it between members of the project team (see ISO 19650-2) or asset/facility management and operation team (see ISO 19650-3).

Each party shall:

- a) share an analysis of the health and safety risks at the start of their appointment in the case of appointed parties, or upon initiation in the case of the appointing party;
- b) implement a process that enables health and safety information to be inputted, maintained and extracted through the CDE and/or information models for use by other parties throughout the project and asset life cycle;
- c) provide health and safety information for other parties and design, construction and operation teams to assess and manage:
 - provisions, arrangements and controls;
 - key features;
 - assumptions, including required sequences and techniques;
 - zones, areas and allocated spaces;
- d) expand, populate and utilize the properties within the relevant information containers to treat, manage and communicate prioritized health and safety risks, risk treatments and incidents;
- e) access and reference publicly available information and be familiar with health and safety and health and safety risk issues being communicated from within their own organization, industry, professional and statutory bodies, and evaluate the relevance and benefit with regard to the nature of works.

4.5.3 Presenting information

Health and safety risk, risk treatment and incident information shall be exchanged and shared in open standard (non-propriety) structured forms based on [4.2](#).

Health and safety information shall be recorded in relevant information containers:

- a) by use of structured tables or databases; and/or
- b) by adding into the geometric, construction and operation sequenced or work planning model the health and safety information to physical, spatial and/or process entities or types or to annotation entities in close proximity.

NOTE Construction and operation sequencing model(s) can be used to support the development and visualization of safe methods of access and working, including implications of working at height, temporary works, exclusion zones, restricted areas and works with a permit system.

4.5.4 Using information

Each lead appointed party shall coordinate the use of the health and safety risk information.

Each appointed party shall review whether their proposals are buildable and maintainable to identify and evaluate:

- a) hazards to be eliminated by informed decisions;
- b) hazards that require the health and safety risks to be reduced through proactive health and safety risk management;
- c) health and safety information to be shared with others.

4.5.5 Generalizing information

The generalization of information shall be conducted:

- a) during information collection;

- b) at any close out stage.

The appointing party shall ensure that the health and safety information held is available throughout the asset life cycle and is used to support planning, training, health and safety inductions and health and safety risk awareness of those at risk, whilst remaining security-minded.

Each party shall release generalized information on lessons learned, innovation and improved practices associated to health and safety risk management for continued learning through their management system arrangements.

NOTE Documenting all known or perceived health and safety risks helps to provide a learning platform for other members of the industry, capturing tacit knowledge for sharing amongst a wider community.

5 Information requirements

5.1 Organizational information requirements

Each appointing party shall include health and safety requirements in the organizational information requirements (OIR). These health and safety requirements shall include:

- a) an agreed information schema capturing the categorization of health and safety information in accordance with 4.3;
- b) connections required to facilitate use of the health and safety information with other datasets;
- c) a health and safety risk management strategy, which includes:
 - 1) information capture and sharing processes;
 - 2) consistent and open information exchange formats;
 - 3) an open learning system.

Specific arrangements shall be made to allow multiple contributions to be made or submitted.

NOTE This can be through an agreed issue management process or shared access to the risk register.

5.2 Asset information requirements

An appointing party that owns and/or is responsible for assets shall include health and safety information requirements in the asset information requirements (AIR):

- a) to consider the regulatory health and safety requirements on the management/development of an asset;
- b) to ensure information generated in a delivery or in-use phase is available during subsequent phases.

The appointing party shall consider expected standards and reporting of performance criteria.

5.3 Project information requirements

An appointing party that initiates a delivery phase of an asset shall include health and safety information requirements in its project information requirements (PIR). These shall meet the needs of the health and safety risk and hazard profile of the delivery phase. These PIR shall set out, at a high level, a framework for managing health and safety information throughout the delivery phase, from inception to completion and handover.

The items the appointing party shall consider include:

- the purpose and objectives for the specified health and safety risk management tasks;
- collaborative risk studies, reviews, and discussions between subject matter experts;

- timing at which health and safety information are to be shared with external parties for regulative, approval or permit purposes;
- appointing party's internal processes, including review points to assure that collaboration and exchange is effective.

5.4 Exchange information requirements and process methods and procedures

5.4.1 General

Each appointing party shall incorporate process methods and procedures to support health and safety management procedures.

Each appointing party and lead appointed party shall incorporate health and safety information requirements into each set of exchange information requirements (EIR) established for each relevant appointment.

5.4.2 Process methods and procedures

The following process methods and procedures shall be considered:

- a) health and safety risk management processes and monitoring of their effectiveness;
- c) responsibilities, skills and training on health and safety risk management;
- b) collaborative sharing, review and use of health and safety information risks and remaining levels of risk:
 - 1) accepted treatments;
 - 2) risk studies and hazard analyses.

5.4.3 Information requirements

The following information requirements shall be considered:

- a) site and location:
 - 1) locations of land, property and activities;
 - 2) safety critical zones, areas and spaces;
 - 3) zones that contain health and safety risks;
- b) facility and product:
 - 1) the functionality of the asset;
 - 2) safety critical systems, fixed assets and equipment;
 - 3) systems, equipment, and materials and substances that entail health and safety risks;
 - 4) product suppliers;
- c) activity and process:
 - 1) construction and operation, maintenance, operation and repurposing methods, constructability and operability, critical sequences;
 - 2) processes that entail health and safety risks;
 - 3) information to enable the safe repair, maintenance or replacement of plant and equipment including assumptions;
 - 4) service providers.

NOTE These can include information requirements relating to specific health and safety risk and hazard topics such as asbestos, fire safety, temporary works, structural safety and lifting operations.

5.4.4 Supporting evidence

The following requirements for evidence supporting the delivered information shall be considered:

- a) evidence to support [5.4.2](#) and [5.4.3](#);
- b) evidence of compliance with legislative obligations and duties.

5.4.5 Re-usable information

The following information requirements for generalized health and safety information shall be considered:

- a) risk registers;
- b) lessons learned;
- c) innovation and good practices.

5.5 Review of information deliverables

Information deliverables shall be checked against information requirements in accordance with ISO 19650-2 and ISO 19650-3.

6 Process

6.1 Process overview

Health and safety information shall be managed throughout each appointment, regardless of the asset life cycle stage, in accordance with [6.2](#) to [6.6](#) and in accordance with ISO 19650-2 or ISO 19650-3.

6.2 Additional considerations for the information standard and information production methods and procedures

In preparing the information standard and the information production methods and procedures, the appointing party shall consider:

- the ability for information to be exchanged automatically between geometric and construction sequenced and work planning models, spreadsheets, and text documents;
- interoperability between the asset information model and the project information model, and with applications which supply health and safety risk information to workers faced with dealing with health and safety risks on site;
- the potential for parties to automatically extract information on relevant incidents;
- the need for coordination of risk information and responses.

6.3 Provision of existing health and safety information

The appointing party shall include existing health and safety information in the reference information and shared resources made available to their prospective lead appointed parties.

This information should include any information the appointing party already has, or can reasonably obtain, which is important to understanding the risks and risk context of the project.

NOTE Examples of this information can include survey data, asbestos management plan, existing risk register and risks adjacent to the site including vulnerable populations or hazardous access.

6.4 Additional criteria for invitation to tender or request for service

In establishing acceptance criteria as part of its invitation to tender or request for service, the appointing party shall consider:

- a) open sharing of health and safety information;
- b) collaborative behaviours around risk management and the sharing of risk and incident information;
- c) requirements for coordinating information needed from specialist sub-contractors, e.g. temporary works, to ensure collaboration across contractual boundaries;
- d) evidence required to monitor and demonstrate compliance through leading or live indicators.

6.5 Additional requirements for delivery team mobilization

As part of its delivery team mobilization, each lead appointed party shall identify health and safety information shortfalls and gaps that can prevent or compromise effective delivery and health and safety risk management.

6.6 Additional requirements for collaborative production of information

As the project information model or the asset information model is created, enhanced or modified, each appointed party shall review the health and safety information to see whether changes or additions are required across the affected parts, their interfaces and dependencies.

Each lead appointed party shall coordinate the production of health and safety information by their delivery team with any other active delivery teams.

Annex A (informative)

Schema summary

A summary of the health and safety information schema is shown in [Table A.1](#).

Table A.1 — Summary of health and safety schema

Property field	Context	Risk	Incident	Treatment	Example values
Identifier	y	y	y	y	P101-AAA-0003-Risk
Classification	y	y	y	y	nn-aaaaaa
Description	y	y	y	y	aaaaaaaaaaaaaaaaaaaa
Associated product	y	y	y	y	P101
Associated activity	y	y	y	y	TSK006
Associated location	y	y	y	y	ZN07
Contextual location	y ^a	y ^a	y ^a		30.3, 10.2, 5.7
Application stage		y	y	y	Production
Status		y	y	y	Unknown
Documentation		y	y	y	scheme:// authority path ? query # fragment
Level of risk		y	y		High
Affected party		y	y		aa@aaa.com ^b
Raised by		y	y	y	bb@bbb.com ^b
Owned by		y	y	y	cc@ccc.com ^b
Approved by				y	dd@ddd.com ^b
Links / Linkage	y / y	y / y	y / y	y / -	P101/ P101-AAA-0003-Risk
Review date		y ^a	y ^a	y ^a	2024-04-29
History	y ^a	y ^a	y ^a	y ^a	(various)
^a Optional (see 4.3).					
^b Organizational, project or role based identification can be used in preference to personal identification.					

Annex B
(informative)

Example classification

1 : Health issue

11 : Material effect

111 : Asbestos effect

112 : Lead effect

113 : Hazardous dust

1131 : Wood dust

1132 : Silica dust

114 : Chemical effect

12 : Mechanical effect

121 : Noise

122 : Loss of control using hand or power tool

123 : Vibration

2 : Welfare issue

21 : Disease

22 : Poor well-being

23 : Poor hygiene

24 : Poor self-care

25 : Stress and fatigue

3 : Safety issue

31 : Fall

311 : Fall from ladder

312 : Fall from open edge

313 : Fall from scaffold

314 : Fall through fragile material

315 : Slip or trip on the same level

32 : Trapped

321 : Confinement

322 : Crushed by excavation

323 : Unintended collapse

324 : Drowning and flooding

325 : Asphyxiation

33 : Event

331 : Electric shock

332 : Fire or explosion

333 : Machinery guarding

334 : Loss of control

34 : Handling

341 : Materials handling including manual handling

342 : Mechanical lifting operation

343 : Mobile elevating work platform (MEWP) operation

346 : Working overhead

35 : Struck

351 : Struck by falling object

352 : Struck by moving vehicle

353 : Struck by machinery or part

354 : Overturning plant or moving machinery

36 : Public protection issue

4 : Security issue

41 : Connected plant and machinery

5 : Environmental issue

6 : Commercial/Economic/Insurance issue

7 : Operational issue

8 : Social issue

NOTE Uniclass RK table^[10] provides a fuller implementation.