

BS ISO 24518:2015



BSI Standards Publication

# Activities relating to drinking water and wastewater services — Crisis management of water utilities

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**National foreword**

This British Standard is the UK implementation of ISO 24518:2015.

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**Activities relating to drinking water  
and wastewater services — Crisis  
management of water utilities**

*Activités relatives aux services de l'eau potable et de  
l'assainissement — Gestion de crise des services publics de l'eau*



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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](http://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](http://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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 224, *Service activities relating to drinking water supply systems and wastewater systems — Quality criteria of the service and performance indicators*.

## Introduction

Water is the source of life, without which humans, as well as other species, cannot survive. In many countries, there is a lack of knowledge regarding the crisis management of drinking water and wastewater services.

Impairment of the drinking water service would change the quality of life of the affected population in the immediate period while in the medium-term period it could affect their ability to survive; therefore, the continuous and orderly supply of drinking water is of paramount importance for the population. On the other hand, the collection and safe disposal of sanitary wastewater and drainage storm-water is also important if epidemics and general poisoning by contamination as well as urban inundation are to be prevented and in order to protect the environment.

This guideline describes the fundamentals of a crisis management system, including relevant recommendations for water utilities.

This guideline deals with situations where the normal supply of potable water or collection and treatment of wastewater are interrupted because of a crisis situation. It enumerates steps that should be taken in preparing the organization for a crisis situation (pre-crisis phase). It then provides general International Standards as to how a crisis should be dealt with (the crisis phase). Guidelines on re-establishing services (post-crisis phase) and on drawing conclusions and revising procedures for future events follow.

This guideline follows the Plan-Do-Check-Act (PDCA) approach to crisis management. This is a continuous process of ascertaining whether any organization has at its disposal the means for responding successfully to any crisis.

The approach of an organization when preparing for any crisis should encompass all pertinent aspects of water supply and the collection and treatment of wastewater. The organization needs to cooperate with all relevant authorities concerned with the crisis. Efficient crisis management should ensure that the actions taken before, during, and after the crisis should consider the natural environment as well as the impact on the health and wellbeing of the population. Effective communications with the public are necessary to mitigate or prevent panic and to establish trust in the organization by disclosing important information appropriately in the area affected by a crisis or in neighbouring areas.

This International Standard is complemented with an International Standard named "*Activities relating to drinking water and wastewater services — Crisis management of water utilities — Good practice for technical aspects*" to be published.

The objective of this International Standard is not to lay down systems or specifications supporting direct certification of conformity, but to provide International Standards for crisis management in water utilities. The use of this International Standard is voluntary in accordance with rules.



# Activities relating to drinking water and wastewater services — Crisis management of water utilities

## 1 Scope

This International Standard provides general guidance to water utilities to develop and implement a crisis management system.

This International Standard may be applicable to all sizes of public or private water utilities that want to prepare, respond, and recover from a crisis.

## 2 Normative references

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

ISO 24510, *Activities relating to drinking water and wastewater services — Guidelines for the assessment and for the improvement of the service to users*

ISO 24511, *Activities relating to drinking water and wastewater services — Guidelines for the management of wastewater utilities and for the assessment of wastewater services*

ISO 24512, *Activities relating to drinking water and wastewater services — Guidelines for the management of drinking water utilities and for the assessment of drinking water services*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24510, ISO 24511, ISO 24512 and the following apply.

NOTE Where there are conflicting terms and definitions, the terms and definitions given in this International Standard should be used.

### 3.1 Terms relating to “plan”

#### 3.1.1

##### **organization**

person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its *objectives* (3.1.6)

Note 1 to entry: The concept of organization includes, but is not limited to sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private.

Note 2 to entry: For the purposes of this International Standard the organization will usually be a water utility.

#### 3.1.2

##### **interested party**

stakeholder

person or *organization* (3.1.1) that can affect, be affected by, or perceive themselves to be affected by a decision or activity

### 3.1.3

#### **requirement**

need or expectation that is stated, generally implied or obligatory

Note 1 to entry: “Generally implied” means that it is custom or common practice for the organization and interested parties that the need or expectation under consideration is implied.

### 3.1.4

#### **top management**

person or group of people who directs and controls an *organization* (3.1.1) at the highest level

Note 1 to entry: Top management has the power to delegate authority and provide resources within the organization.

Note 2 to entry: If the scope of the *management system* (3.2.1) covers only part of an organization then top management refers to those who direct and control that part of the organization.

Note 3 to entry: A specified requirement is one that is stated, for example in documented information.

### 3.1.5

#### **policy**

intentions and direction of an *organization* (3.1.1) as formally expressed by its *top management* (3.1.4)

### 3.1.6

#### **objective**

result to be achieved

Note 1 to entry: An objective can be strategic, tactical, or operational.

Note 2 to entry: Objectives can relate to different disciplines (such as financial, health and safety, and environmental goals) and can apply at different levels [such as strategic, organization-wide, project, product and *process* (3.2.4)].

Note 3 to entry: An objective can be expressed in other ways, e.g. as an intended outcome, a purpose, an operational criterion, as a *crisis* (3.1.8) objective or by the use of other words with similar meaning (e.g. aim, goal, or target).

Note 4 to entry: In the context of **crisis** management systems *crisis* (3.1.8) objectives are set by the organization, consistent with the crisis management policy, to achieve specific results.

### 3.1.7

#### **risk**

effect of uncertainty

Note 1 to entry: An effect is a deviation from the expected — positive or negative.

Note 2 to entry: Uncertainty is the state, even partial, of deficiency of information related to understanding or knowledge of an event, its consequence, or likelihood.

Note 3 to entry: Risk is often characterized by reference to potential **events** (ISO Guide 73, 3.5.1.3) and **consequences** (ISO Guide 73, 3.6.1.3), or a combination of these.

Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated **likelihood** (ISO Guide 73, 3.6.1.1) of occurrence.

### 3.1.8

#### **crisis**

event or situation which affects or is likely to affect the organization or its provided services which requires more than the usual means of operation and/or organizational structures to deal with it

## 3.2 Terms relating to “do”

### 3.2.1

#### **management system**

set of interrelated or interacting elements of an *organization* (3.1.1) to establish *policies* (3.1.5) and *objectives* (3.1.6) and *processes* (3.2.4) to achieve those objectives

Note 1 to entry: A management system can address a single discipline or several disciplines.

Note 2 to entry: The system elements include the organization’s structure, roles and responsibilities, planning, operation, etc.

Note 3 to entry: The scope of a management system may include the whole of the organization, specific and identified functions of the organization, specific and identified sections of the organization, or one or more functions across a group of organizations.

### 3.2.2

#### **competence**

ability to apply knowledge and skills to achieve intended results

### 3.2.3

#### **documented information**

information required to be controlled and maintained by an *organization* (3.1.1) and the medium on which it is contained

Note 1 to entry: Documented information can be in any format and media and from any source.

Note 2 to entry: Documented information can refer to

- the *management system* (3.2.1), including related *processes* (3.2.4);
- information created in order for the organization to operate (documentation);
- evidence of results achieved (records).

### 3.2.4

#### **process**

set of interrelated or interacting activities which transforms inputs into outputs

### 3.2.5

#### **performance**

measurable result

Note 1 to entry: Performance can relate either to quantitative or qualitative findings.

Note 2 to entry: Performance can relate to the management of activities, *processes* (3.2.4), products (including services), systems or *organizations* (3.1.1).

### 3.2.6

#### **outsource**

verb

make an arrangement where an external *organization* (3.1.1) performs part of an organization’s function or *process* (3.2.4)

Note 1 to entry: An external organization is outside the scope of the *management system* (3.2.1), although the outsourced function or process is within the scope.

### 3.2.7

#### **alternative water supplies**

AWS

water provided to customers by means other than through the normal treatment and distribution system

**3.2.8  
alternative wastewater services**

AWWS

wastewater services provided to customers by means other than through the normal collection and treatment system

**3.2.9  
crisis management plan**

document specifying which procedures and associated resources should be applied by whom and where to a particular type of crisis

**3.2.10  
recovery**

the provision of policies, procedures and processes that are necessary to restore operations critical to the resumption of service

Note 1 to entry: Recovery represents the last stage to be carried out during the crisis phase and the post-crisis phase prior the routine operations.

**3.3 Terms relating to “check”**

**3.3.1  
effectiveness**

extent to which planned activities are realized and planned results achieved

**3.3.2  
monitoring**

determining the status of a system, a *process* ([3.2.4](#)) or an activity

Note 1 to entry: To determine the status there may be a need to check, supervise or critically observe.

**3.3.3  
measurement**

*process* ([3.2.4](#)) to determine a value

**3.3.4  
audit**

systematic, independent and documented *process* ([3.2.4](#)) for obtaining audit evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled

Note 1 to entry: An audit can be an internal audit (first party) or an external audit (second party or third party), and it can be a combined audit (combining two or more disciplines).

Note 2 to entry: “Audit evidence” and “audit criteria” are defined in ISO 19011.

**3.3.5  
conformity**

fulfilment of a *requirement* ([3.1.3](#))

**3.3.6  
nonconformity**

non-fulfilment of a *requirement* ([3.1.3](#))

**3.4 Terms relating to “act”**

**3.4.1  
correction**

action to eliminate a detected *nonconformity* ([3.3.6](#))

### 3.4.2

#### **corrective action**

action to eliminate the cause of a *nonconformity* (3.3.6) and to prevent recurrence

### 3.4.3

#### **continual improvement**

recurring activity to enhance *performance* (3.2.5)

## **4 Context of the organization**

### **4.1 Understanding the organization and its context**

The organization should determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcome(s) of its crisis management system.

### **4.2 Understanding the needs and expectations of interested parties**

The organization should determine the following:

- the interested parties that are relevant to the crisis management system;
- the requirements of these interested parties.

### **4.3 Determining the scope of the crisis management system**

The organization should determine the boundaries and applicability of the crisis management system to establish its scope.

When determining this scope, the organization should consider the following:

- the external and internal issues referred to in 4.1;
- the requirements referred to in 4.2.

The scope should be available as documented information.

### **4.4 Crisis management system**

The organization should establish, implement, maintain and continually improve a crisis management system, including the processes needed and their interactions, in accordance with the guidance of this International Standard.

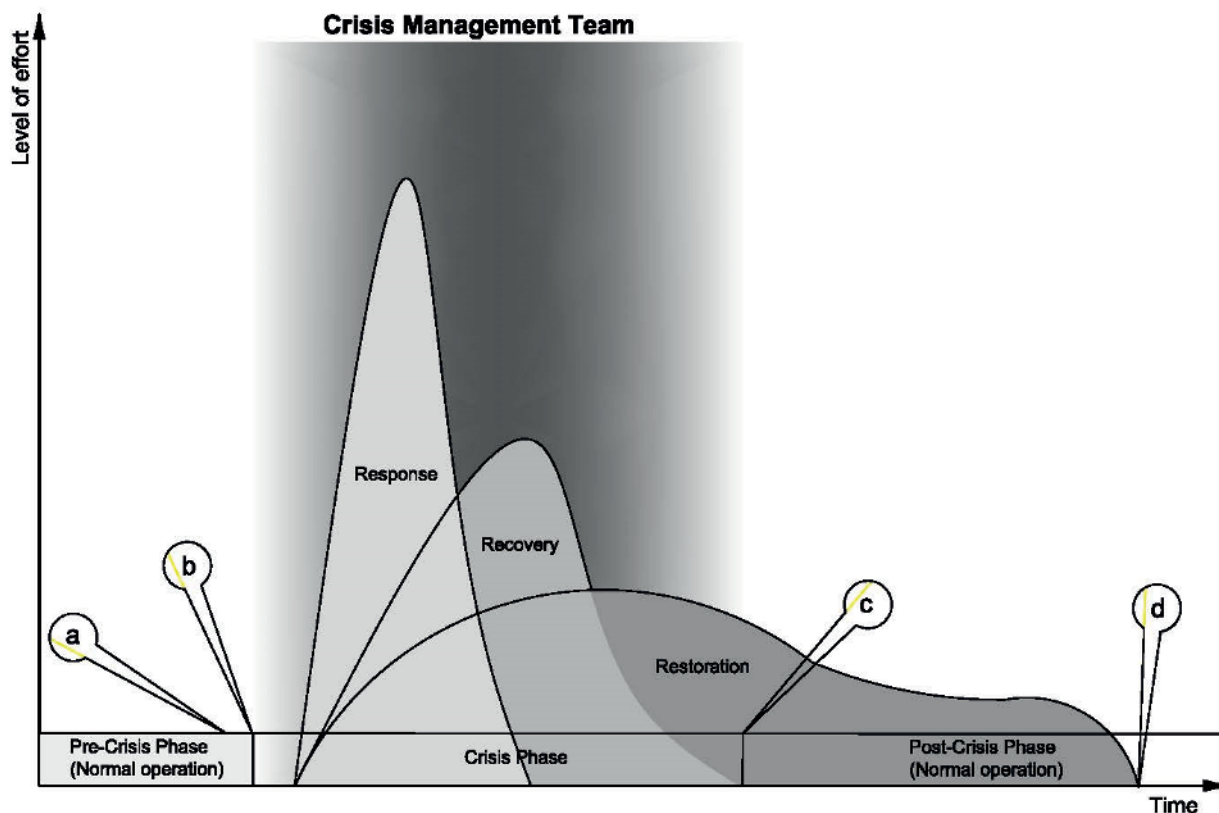
#### **4.4.1 General**

The crisis management preparedness approach and the ongoing process of continual improvement is consistent with the principle of the (PDCA) approach defined in the process approach of ISO 24510/ISO 24511/ISO 24512.

#### **4.4.2 Phases and activities over the course of a crisis**

Crisis management should start before the onset of a crisis and requires comprehensive preparation during routine operations. Crisis management is a process that can be subdivided into the following phases:

- pre-crisis;
- crisis;
- post-crisis.



**Key**



intensity of activity

- a      ascertaining the failure
- b      declaring state of crisis
- c      declaring the end of a crisis
- d      changeover to routine operation

**Figure 1 — Example of relationships of pre-crisis activities and the following response, recovery and restoration**

NOTE [Figure 1](#) illustrates that recovery activities will commence during the crisis phase as the opportunity occurs to begin restoring service to parts of the system.

## 5 Leadership

### 5.1 Leadership and commitment

Top management should demonstrate leadership and commitment with respect to the crisis management system by

- ensuring that the crisis management policy and crisis objectives are established and are compatible with the strategic direction of the organization,

- ensuring the integration of the crisis management system requirements into the organization's business processes,
- ensuring that the resources needed for the crisis management system are available,
- communicating the importance of effective crisis management and of conforming to the crisis management system requirements,
- ensuring that the crisis management system achieves its intended outcome(s),
- directing and supporting persons to contribute to the effectiveness of the crisis management system,
- promoting continual improvement, and
- supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

NOTE Reference to "business" in this International Standard should be interpreted broadly to mean those activities that are core to the purposes of the organization's existence.

## 5.2 Policy

Top management should establish a crisis management policy that

- is appropriate to the purpose of the organization,
- provides a framework for setting crisis objectives,
- includes a commitment to satisfy applicable requirements, and
- includes a commitment to continual improvement of the crisis management system.

The crisis management policy should

- be available as documented information,
- be communicated within the organization,
- be available to interested parties, as appropriate.

The organization should develop a policy for crisis management that includes the following:

- a) importance and place of crisis management within the overall strategy of the organization;
- b) level of commitment of the top management to this issue.

The crisis management policy implemented should be in compliance with the established crisis management policy of the organization and tailored to its characteristics and requirements and as a result of a risk assessment.

The crisis management policy should be agreed to by top management.

The organization should identify the scale of events including events exceeding the capability of the organization that would require the use of its crisis management system. This should be based on its own assessment of risk which should take into consideration risk assessments by relevant authorities.

The crisis management policy implemented should provide the organization with documented principles for dealing with crisis and against which its crisis management capability should be measured.

### 5.3 Structural organization for responding to crisis situations

#### 5.3.1 General

In order to enable quick planning, speedy acquisition of information and rapid response to a crisis, an efficient and structured crisis management team should be created. This team should cooperate with the crisis management teams of the relevant authorities as appropriate. The crisis management team should work with teams in the field that carry out its orders and report back the results. Hence, there are at least two levels in this structure; management and the field.

NOTE The term “field” includes not just the organization’s operational employees and agents but also those in support service functions (e.g. control rooms, laboratories, procurement etc.).

#### 5.3.2 Tasks and structure of the crisis management team

The organization should establish a competent crisis management team structure and associated procedures that will allow the performance of the following tasks:

- ascertaining and assessment of the situation;
- decision-making and implementation of decisions;
- monitoring and ensuring the implementation;
- documenting key decisions and recording actions taken;
- communicating internally and externally;
- continued supplying of adequate resources to deal with the crisis;
- providing of AWS and AWWs if required;
- coordinating the event.

### 5.4 Organization roles, responsibilities and authorities

Top management should ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the organization.

Top management should assign the responsibility and authority for the following:

- a) ensuring that the crisis management system conforms to the guidance of this International Standard, i.e. ISO 24518;
- b) reporting on the performance of the crisis management system to top management;
- c) convening the crisis management team;
- d) training of individuals from the organization that have been nominated by top management;
- e) appointment and empowerment of relevant individuals to take, implement and document decisions and determine how to proceed.



## 6 Planning

### 6.1 Actions to address risks and opportunities

When planning for the crisis management system, the organization should consider the issues referred to in 4.1 and the requirements referred to in 4.2 and determine the risks and opportunities that need to be addressed to

- ensure the crisis management system can achieve its intended outcome(s),
- prevent, or reduce, undesired effects, and
- achieve continual improvement.

The organization should plan

- a) actions to address these risks and opportunities, and
- b) how to
  - integrate and implement the actions into its crisis management system's processes, and
  - evaluate the effectiveness of these actions.

The crisis management system should enable the organization to manage a crisis in order to shorten its duration and mitigate its effects.

Whenever organizations have a risk management system, risk assessment, and treatment related to crisis situations should be included as part of all three crisis phases.

Risk evaluation involves comparing the level of risk found during the analysis process with risk criteria established when the context was considered. Based on this comparison, the need for treatment can be considered taking into account the scale of incident exceeding the capabilities of the organization.

When the organization undertakes the process of risk assessment the result is the definition of types and scales of events that may be considered crises.

Organizations should be aware when considering incidents that may trigger a crisis that an incident that can usually be controlled by normal operation may escalate and become a crisis. Also a crisis may be "imported from outside" into the organization. Incidents that may trigger a crisis are

- natural disasters,
- accidents,
- criminal or terrorist acts,
- acts of war,
- a pandemic,
- significant employee absence (e.g. due to illness; strike, transport difficulty, etc.),
- long term interruption of power supply, and
- others.

The organization should decide the type and scales of incident are defined as a crisis and determine the thresholds that necessitate the activation of its crisis management plan.

A clear structure for the crisis management team should be planned in advance, with identified back up for those individuals or units that may not be able to join the team at the moment of real crisis.

Additionally, work may be required to be done in parallel at several locations, and possibly over two or three shifts at these locations.

## 6.2 Elements of the crisis management plan — Pre-Crisis phase

Key elements needed to identify and effectively manage a crisis are listed below. The following elements should be created as part of the normal operation of the organization:

- systems, processes and procedures to monitor the parameters that enable the recognition of the beginning of a crisis as early as possible;
- procedures to inform the crisis management team of warning signals and to establish the crisis level;
- a structure for the crisis management team and associated processes and procedures (see [6.1](#));
- physical facilities from which to manage the response, including back-up should the main one not be available. This includes amenities for those involved, such as food, water latrines and a place to rest;
- sampling and analysis capability with sufficient capacity, including back-up should the principal facilities not be available, to establish and monitor the nature and extent of the crisis as well as the effectiveness of the recovery phase;
- procedures for assessing the risk to public health and the environment and determining risk control measures and risk communications;
- guidance for the crisis management team for working out an action plan for the restoration of service;
- plans and resources to provide the quantity and quality of AWS and AWWWS, if needed, in the timescale required;
- means of maintaining personnel safety including risk assessment, evacuation and shelter planning, off-site protective actions, first aid and emergency medical treatment;
- identified staff who are trained and competent to carry out the duties indicated by the crisis management plan;
- mutual aid arrangements between the organization and other utilities or competent organizations in the event of a crisis;
- communication plan and draft scripts;
- arrangements to ensure the availability of resources necessary to respond to the scale of the crisis anticipated by the organization;
- basin-wide cooperation.

## 6.3 Crisis objectives and planning to achieve them

The organization should establish crisis objectives at relevant functions and levels.

The following are the crisis objectives:

- consistent with the crisis management policy;
- measurable (if practicable);
- take into account applicable requirements;
- monitored;
- communicated;
- updated as appropriate.

The organization should document information on the crisis objectives.

When planning how to achieve its crisis objectives, the organization should determine the following:

- what will be done;
- what resources will be required;
- who will be responsible;
- how it will be done;
- when it will be completed;
- how the results will be evaluated.

Objectives may address the following points, as well as others:

- prioritization of assets and operations for restoration of service taking the criticality of the service or users into consideration;
- establishing intermediate restoration objectives and conditions to be achieved;
- establishing a target timescale for the restoration of service, while considering levels of service to be achieved during the phases of the crisis;
- establishing thresholds at which point pre-determined actions will commence or terminate;
- timely and active internal and external communication;
- deciding on type and, where applicable, quantities, of AWS (e.g. bottled water, water tankers) and the timescale for their provision and AWWs (e.g. latrines);
- provision of support to special categories of customers (e.g. hospitals, evacuation shelters, homes for the elderly, government and military establishments, persons with special needs).

## 7 Support

### 7.1 Resources

The organization should determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the crisis management system.

A procedure should be prepared to make sure that the designated head of the crisis management team is available at all times. Care should be taken to make sure that one or more communication path(s) remain continuously available together with the documents and tools that are indispensable for crisis management.

The organization should take all steps practical to ensure the availability of the necessary resources needed for managing a crisis according to the crisis management plan within the timescales required.

Resourcing issues during a crisis include personnel, equipment, systems and finance. The authority for mobilizing and requisitioning resources should be clearly identified and documented.

### 7.2 Competence

The organization should

- determine the necessary competence of person(s) doing work under its control that affects its crisis performance,
- ensure that these persons are competent on the basis of appropriate education, training, or experience,

- where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken, and
- retain appropriate documented information as evidence of competence.

NOTE Applicable actions may include, for example: the provision of training to, the mentoring of, or the re-assignment of currently employed persons; or the hiring or contracting of competent persons.

### 7.3 Awareness

Persons doing work under the organization's control should be aware of

- the crisis management policy,
- their contribution to the effectiveness of the crisis management system, including the benefits of improved crisis performance, and
- the implications of not conforming with the crisis management system requirements.

### 7.4 Communication

#### 7.4.1 General

The organization should determine the need for internal and external communications relevant to the crisis management system including

- if necessary, who is authorized to perform the communication,
- on what it will communicate,
- when to communicate,
- with whom to communicate, and
- how to communicate.

#### 7.4.2 Crisis management system communications — Internal

The organization should identify and communicate to all those within the organization who have a role in initiating and implementing the crisis management plan

- the role they are identified for,
- the process and procedures they are required to follow,
- the training and exercising that they are intended to perform in the execution of the plan, and
- any change to the crisis management system that is pertinent to their role.

The organization should determine the frequency of such communications in order to ensure that the organization maintains its state of preparedness.

#### 7.4.3 Crisis management system communications — External

The organization should identify and communicate with all external stakeholders and organizations that are included in its crisis management plan. This aims to ensure that

- there is agreement on the role of the organization and the external organization for the types of incident identified,
- there is agreement on the co-ordination and inter-organization communication arrangements,

- there is agreement on the procedures for the dissemination of public communications,
- relevant information from exercises is exchanged in order to improve the crisis management plan, and
- changes to the circumstances within the organization or an external organization, that could influence the operation of the crisis management plan, are identified and addressed.

The organization should agree with all identified organizations, the frequency method and format of such communications which should aim to ensure that the organization's plans remain up to date.

## 7.5 Documented information

### 7.5.1 General

The organization's crisis management system should include

- documented information required by this International Standard, and
- documented information determined by the organization as being necessary for the effectiveness of the crisis management system.

**NOTE** The extent of documented information for a crisis management system can differ from one organization to another due to

- the size of organization and its type of activities, processes, products and services,
- the complexity of processes and their interactions, and
- the competence of persons.

All procedures for dealing with a crisis, nominations to the crisis management team, collaboration agreements with organizations, lists of equipment and their location, special arrangements etc. should be documented to an extent that is accurate and complete but remains easy to understand. The documents, which may be either in electronic or paper format or both, should be stored in a safe, but accessible place, including off site locations, so that they can be retrieved quickly when the need arises.

### 7.5.2 Creating and updating

When creating and updating documented information the organization should ensure appropriate

- identification and description (e.g. a title, date, author, or reference number),
- format (e.g. language, software version, graphics) and media (e.g. paper, electronic), and
- review and approval for suitability and adequacy.

All decisions should be recorded in writing; the reason for each decision should be documented.

In the event of a crisis, the alerting of the crisis management team as well as its work should be documented for later reference.

**NOTE** This can be done by using templates or an "incident log".

Any changes (internal or external) that impact the organization should be reviewed in relation to its crisis management system. The review should also identify any new critical activities that need to be included in the crisis management system.

### 7.5.3 Control of documented information

Documented information required by the crisis management system and by this International Standard should be controlled to ensure

- it is available and suitable for use, where and when it is needed, and
- it is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity).

For the control of documented information, the organization should address the following activities, as applicable:

- distribution, access, retrieval and use;
- storage and preservation, including preservation of legibility;
- control of changes (e.g. version control);
- retention and disposal.

Documented information of external origin determined by the organization to be necessary for the planning and operation of the crisis management system should be identified as appropriate, and controlled.

The organization should have at least one backup set of documented information stored offsite, but readily accessible.

NOTE Access implies a decision regarding the permission to view the documented information only, or the permission and authority to view and change the documented information, etc.

## 8 Operation

### 8.1 Operational planning and control

The organization should plan, implement and control the processes needed to meet requirements, and to implement the actions determined in [6.1](#), by

- establishing criteria for the processes,
- implementing control of the processes in accordance with the criteria, and
- documenting information to the extent necessary to have confidence that the processes have been carried out as planned.

The organization should control planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

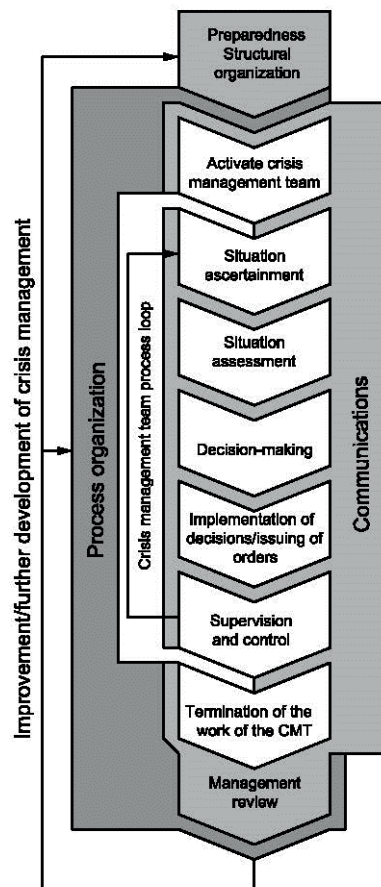
The organization should ensure that outsourced processes are controlled.

The organization should ensure that key processes of external organizations outside its control, but upon which its own crisis management processes rely are monitored. This monitoring activities should include both planned and unplanned changes which may affect the integrity of its own processes.

### 8.2 Response

#### 8.2.1 General

The processes of the phase are shown in [Figure 2](#).



**Figure 2 — Schematic work flow of a CMT**

When the criteria of the crisis situation are met, the organization should

- activate the crisis management team,
- activate links with other crisis management teams and organizations, and
- transfer authority to the crisis management team.

It should be recognized that knowledge and information are incomplete and that the situation continues to evolve and change rapidly during this phase.

### **8.2.2 Activating the crisis management team**

The procedures for convening the crisis management team should be defined in advance at the planning stage. Procedures should also have been agreed in the pre-crisis planning phase that determine which organization representatives should inform whom and in which manner, and who has been designated as head of the crisis management team.

The following steps should be organized in such a way that the crisis management team takes action as soon as possible.

- a) Decision for the crisis management team to convene, including designation of the head of the crisis management team.
- b) Convening the crisis management team. The relevant organization representatives (as defined in the pre-crisis phase) should
  - check the availability of all the members of the crisis management team,
  - ensure immediate replacement of any non-available member deemed essential,
  - check the availability of stand-by field teams, and
  - convene, and determine appropriate representation within, any additional support teams that may be necessary to address particular exposures not covered by existing standby field teams.
- c) Activate and establish links to other crisis management teams and organizations as required. The relevant organizational representatives should
  - establish links to appropriate external crisis management teams (e.g. governmental) as required,
  - activate cooperation channels with other organizations,
  - activate communication channels,
  - ensure the availability of the necessary resources needed according to the crisis management plan,
  - seek the validation by the relevant authority of the state of the crisis, and
  - verify that the authorities' ability to act and commit resources is current.
- d) Transfer of decision-making authority to the crisis management team.

The transfer of relevant decision-making authority following the convening of the crisis management team from normal corporate to crisis organization structures (e.g. from the head of top management to the head of the crisis management team) should encompass

- any required adjustments to authority to make financial commitments,
- authority transfer on the stand-by operation teams,
- transfer of locations and equipment, and
- transfer of all relevant documents prepared during the preparedness phase.

### 8.2.3 Work flow of the crisis management team

Once the crisis management team is activated, it should undertake the following:

- a) situation ascertainment;
- b) situation assessment;

The assessment of the situation results from the analyses, interpretation and integration of the findings of the situation ascertainment,

- c) decision making;

The head of the crisis management team with the input of their team should make decisions based on the resources and information available, taking into account the requirements of the relevant organization representatives.



All decisions should become documented information.

d) implementation of decisions and issuing of orders;

The head of the crisis management team should issue the necessary orders on the basis of the decisions taken.

e) supervision and operational control

The head of the crisis management team should supervise and control the execution of orders to ensure that orders are carried out properly.

### 8.2.4 Communications and cooperation

The head of the crisis management team should ensure that the communications plans are implemented to ensure effective communications

- within the crisis management team,
- with customers and the general public,
- with external stakeholders,
- with other organisations included in the crisis management plan, and
- within the organization.

The head of the crisis management team should also ensure that the protocols agreed with the relevant authorities are enacted.

### 8.3 Recovery to normal operation

Recovery is part of crisis management. It may be carried out by an allocated operational management team responsible to the crisis management team during the crisis.

The effectiveness of the recovery operational management team may have a decisive impact on the response measures affecting other elements of the crisis management team.

The sequence of actions during the recovery stage should be:

a) recovery plan:

- developing a priority recovery plan based on clear criteria for determining the order of priorities;
- developing a plan for the deployment of the measures for recovery;

b) implementation of the recovery plan:

- repairing the damage;
- verification;
- restoring the service;

c) assessments during recovery stage.

The crisis management team should conduct a separate situation assessment, in order to evaluate the situation during the recovery stage.

NOTE Recovery may start during the response stage.

Changeover to routine operations

When clear and sufficient information for resumption of normal operational management is available, deactivation of the crisis management team should be declared by the relevant organization representative.

Upon deactivation of the crisis management team, the operation shifts to the post-crisis phase of evaluation and review followed by consideration of continuous improvement actions.

## **9 Performance evaluation**

### **9.1 Monitoring, measurement, analysis and evaluation**

The organization should determine the following:

- what needs to be monitored and measured;
- the methods for monitoring, measurement, analysis and evaluation, as applicable, to ensure valid results;
- when the monitoring and measuring should be performed;
- when the results from monitoring and measurement should be analysed and evaluated.

The organization should retain appropriate documented information as evidence of the results.

The organization should evaluate the crisis performance and effectiveness.

#### **9.1.1 Monitoring and review of the implementation of the crisis management system**

##### **9.1.1.1 General**

Monitoring and review of the implementation of the crisis management system may be incorporated within other evaluation systems of the organization.

##### **9.1.1.2 System evaluation**

The organization should evaluate the crisis management system, procedures, and capabilities through periodic reviews, testing, post-crisis reports, lessons learned, performance evaluations, audits and exercises. Procedures should be updated promptly to reflect significant changes due to these factors.

Monitoring of the crisis management system should include the effectiveness of the following:

- a) implementation of the crisis management system in the organization;
- b) system during a crisis;
- c) system during an exercise.

Consistent with its commitment to compliance, the organization should establish, implement and maintain procedures for periodically evaluating compliance with applicable legal requirements and compare industry good practices and compliance with its own policy and objectives related to crisis management.

The organization should keep records of the results of the periodic evaluations.

##### **9.1.1.3 Testing and exercises**

The crisis management system should include the types of training and exercises to be undertaken and their frequency.

Training should provide the staff of the organization with the competency to handle a crisis. Exercising should test the effectiveness of the training.

The organization should document the level of competency required of the staff that are likely to make up the crisis management team.

The exercise programme should be consistent with the objectives of the organization and the regulations to which it is subject.

Exercises may include a predetermined outcome, tabletop exercises, simulations, and fully operational exercises.

The communication channels should be part of the exercise. Exercises should be based on realistic scenarios and take into account risk assessments. They should be carefully planned and affected parties informed so that there is minimum risk of disruption to normal operational processes.

Every exercise should have clearly defined objectives and result in a post-exercise report that contains recommendations. This report should be used to improve crisis management arrangements, including the capability of the people involved in the exercise, in a timely manner.

Exercises should be monitored by the organization's staff or independent organizations who are not involved in the design or implementation of the crisis management system.

Emergency resources such as communication equipment, response equipment, and backup generators should be tested during an exercise.

## 9.2 Internal audit

The organization should ensure that internal audits and self-assessments of the crisis management system are conducted at planned intervals to provide information on whether the crisis management system

- a) conforms to
  - organization's own requirements for its crisis management system,
  - requirements of this International Standard, and
  - all relevant specific arrangements,
- b) is effectively implemented and maintained.

The organization should establish procedures to

- a) plan, establish, implement and maintain an audit or self assessment programme(s), including the frequency, methods, responsibilities, planning requirements and reporting. The audit programme(s) should take into consideration the importance of the processes concerned, the resilience of operations concerned and the results of previous audits,
- b) define the audit criteria and scope for each audit,
- c) select auditors and conduct audits to ensure objectivity and the impartiality of the audit process,
- d) ensure that the results of the audits are reported to relevant management, and
- e) document information as evidence of the implementation of the audit programme and the audit results.

Audit and self-assessment procedures should be established, implemented and maintained that address responsibilities and requirements for planning and conducting audits, reporting results and retaining associated records, determination of audit criteria, scope, frequency and methods, and provide information on the results of audits to management.

Self assessment should be conducted against the organization's objectives. It should also take into account relevant industry standards and good practice.

### 9.3 Management review

Top management should review the organization's crisis management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.

The management review should include consideration of the following:

- a) the status of actions from previous management reviews;
- b) changes in external and internal issues that are relevant to the crisis management system;
- c) information on the crisis performance, including trends in the following:
  - nonconformities and corrective actions;
  - monitoring and measurement results;
  - audit results;
- d) opportunities for continual improvement.

The outputs of the management review should include decisions related to continual improvement opportunities and any need for changes to the crisis management system.

The organization should document information as evidence of the results of management reviews.

## 10 Improvement

### 10.1 Nonconformity and corrective action

When a nonconformity occurs, the organization should

- a) react to the nonconformity, and as applicable
  - take action to control and correct it, and
  - deal with the consequences,
- b) evaluate the need for action to eliminate the causes of the nonconformity, in order that it does not recur or occur elsewhere, by
  - reviewing the nonconformity,
  - determining the causes of the nonconformity, and
  - determining if similar nonconformities exist, or could potentially occur,
- c) implement any action needed,
- d) review the effectiveness of any corrective action taken, and
- e) make changes to the crisis management system, if necessary.

Corrective actions should be appropriate to the effects of the nonconformities encountered.

The organization should document information as evidence of

- the nature of the nonconformities and any subsequent actions taken, and
- the results of any corrective action.

The organization should establish, implement and maintain procedures for dealing with actual and potential shortfalls in the crisis management system and for taking improvement and corrective actions. The procedures should define criteria for the following:

- identifying the shortfalls of the crisis management system and taking actions to mitigate their impact and avoid their recurrence;
- evaluating the need for actions to improve the crisis management plan's shortfalls and implementing appropriate actions designed to avoid their occurrence to a specified timeline;
- recording the results of corrective actions and improvement actions taken;
- reviewing the effectiveness of the corrective and improvement actions taken.

Actions taken should be appropriate to the magnitude of the problems and the risk and their potential impacts. The organization should ensure that any necessary changes are made to crisis management system documentation within a specified timeline.

## **10.2 Continual improvement**

The organization should continually improve the suitability, adequacy and effectiveness of the crisis management system.

The outputs from management reviews should include any decisions and actions related to possible changes to the crisis management policy, objectives, targets and other elements of the crisis management system, consistent with the commitment to continual improvement.

## Bibliography

- [1] ISO Guide 73, *Risk management — Vocabulary*









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