
**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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation 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*.

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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*

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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

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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

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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.

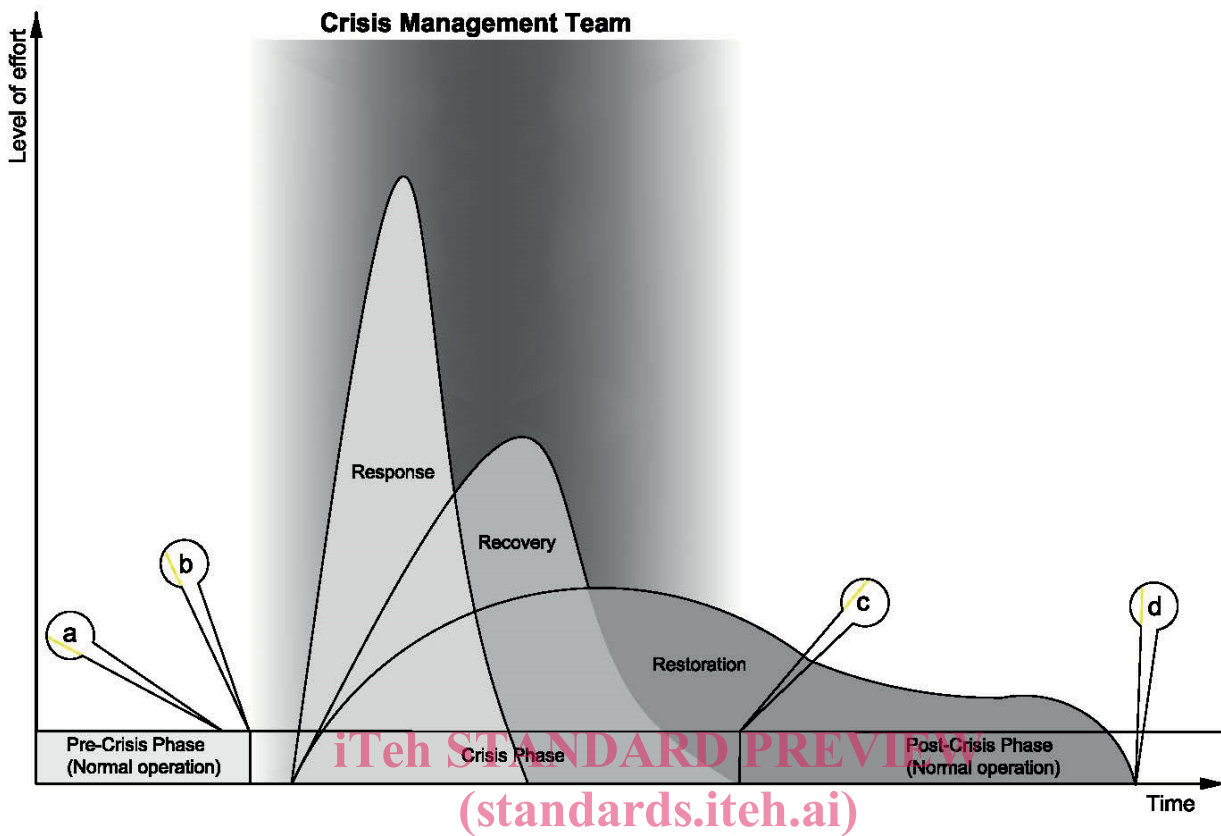
4.4.1 General

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.



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- 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,