



Security of drinking water supply – Guidelines for risk and crisis management EN 15975 – part 1 & 2

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Background

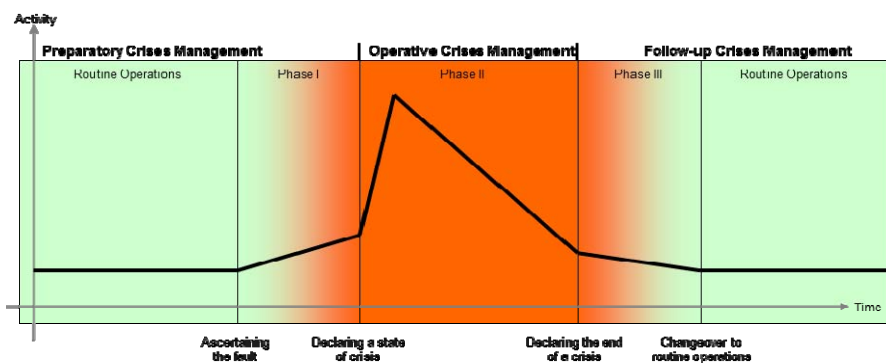
- EN 15 975 Part 1 & 2: developed by **CEN TC 164**
“Water supply” => addresses water utilities!
- **EN 15975 Part 1 Crisis management (06/2011):**
 - describes fundamentals of ***crisis management***, including relevant recommendations for drinking water suppliers, and offers examples drawn from disaster and crisis management
- **EN 15975 Part 2 Risk management (08/2013):**
 - incorporates fundamental elements of the ***WHO Water Safety Plan approach (2004)***
 - to support water suppliers to actively address safety issues in the context of ***routine water supply management and operations***

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Normal operations
(risk management)

EN 15 975 -2

Crisis management

EN 15 975 -1

Normal operations
(risk management)

EN 15 975 -2

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Important terms and definitions

- **Normal operation**: general term describing *all water supply-related operating conditions and processes including failures* which can be controlled by the *normal means of operation and/or organization structures* selected by the water supplier.
- **Crisis**: event or situation with the potential to seriously affect a drinking water supplier which may *require other organizational structures and possibly more than usual means of operation to respond to an emergency*.
- **Drinking water supply system integrity**: existence of drinking water supply *system suitable to meet specified quality, quantity, continuity and pressure targets* in accordance with legal/regulatory requirements and the drinking water supplier's objectives => overall objective!

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EN 15975-2: scope

- EN describes the **principles of a risk management** approach to **improve/support the integrity** of the drinking water supply system
 - EN **addresses all entities and stakeholders** sharing responsibility in the provision of safe drinking water throughout the **entire supply chain from the source to the point of use**
- = holistic approach



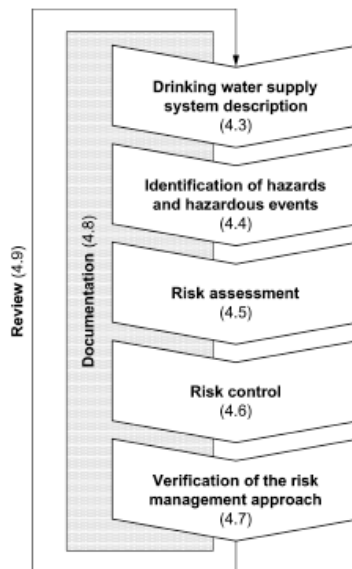
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EN 15975-2: risk management approach



- RM approach aims to **identify hazards/hazardous events** and **assess** and **control** **resulting risks** that may occur in the drinking water supply chain from catchment to consumer

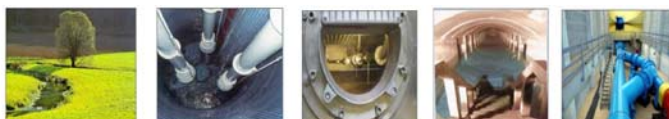


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EN 15975-2: Interdisciplinary group

- Risk management approach to be **developed & steered by drinking water supplier** – ideally interdisciplinary group whose members are adequately knowledgeable about the drinking water supply system concerned.
- **External experts** may be consulted for example to support the work, if necessary.



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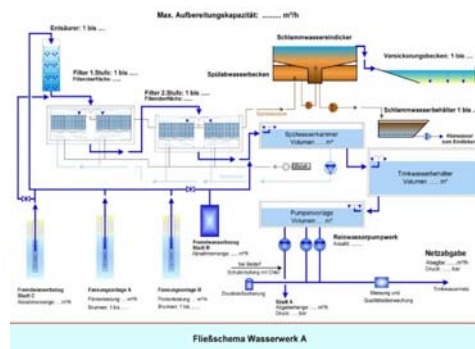
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EN 15975-2: Drinking water supply system



- RM to be based on a up-to-date **description of the drinking water supply system**

- Description to cover all elements **from the catchment area to the point of delivery to the customer** – flowchart



- **Responsibilities** of the **drinking water supplier & other relevant stakeholders** who share responsibility in the drinking water supply chain should be **unambiguously defined** together with the **interfaces between them** and their respective responsibilities at these interfaces.

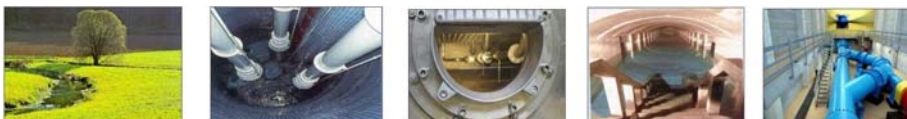
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EN 15975-2: Identification of hazards



- Hazards can occur at various points in the drinking water supply chain



- **Analysis** to be carried out for **each element of the drinking water supply chain** and be guided by the **questions**:

„What could go wrong?“

„Where?“

„How?“

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EN 15975-2: Risk assessment – General, risk analysis & evaluation



- Risk assessment: **risk analysis** and **risk evaluation**
- **Risk analysis** requires to work systematically through the list of identified hazards
- **Risk analyses**: to estimate the **likelihood** of each hazard occurring & **severity of consequences** of the hazard
- **Risk evaluation**: **compare & prioritise risks** regarding their estimated **effect on** the drinking water supply system's **integrity**

Table A.1 — Example of a 3x3 risk assessment matrix

		Severity of consequences		
		LOW	MEDIUM	HIGH
Likelihood of occurrence	LOW	Low risk	Low risk	High risk
	MEDIUM	Low risk	Medium risk	High risk
	HIGH	Medium risk	High risk	High risk

Table A.2 — Example of a 5x5 risk assessment matrix

		Severity of consequences					
		Rating	Insignificant	Minor	Moderate	Major	Very severe
Likelihood of occurrence	Most unlikely	1	1	2	3	4	5
	Unlikely	2	2	4	6	8	10
	Medium	3	3	6	9	12	15
	Probable	4	4	8	12	16	20
	Almost certain	5	5	10	15	20	25

EN 15975-2: Risk control – identification, validation, implementation, operational monitoring



- **Identification of risk control measures**
 - risk prioritisation to be reviewed to identify the now most significant risk exposures
- **Validation**: actively obtaining evidence that **existing or new measures are suitable to control** a specific risk & perform effectively under a range of conditions
- **Implementation of risk control measures**
 - identified and validated **risk control measures to be implemented**
- **Operational monitoring of risk control measures**
 - operational monitoring **requires selection of suitable procedures and/or meaningful indicators & include measurements (e.g. water analysis), visual inspection and/or organisational control**

EN 15975-2: Risk control - examples



Risk control = selection and implementation of risk treatment options

1. Example:

- Hazard: ongoing contamination of the **drinking water resource with non-polar pesticides**
- Risk: **impacts on human health**
- Risk control measure (**technical**): installation of activated carbon treatment in water works

2. Example

- Hazard: **Microbiological contamination in the distribution network after installation of new pipes**
- Risk: **impacts on human health**
- Risk control measure (**managerial**): detailed determination of the installation work via written work procedures plus surveillance of proper application of the work instructions.

EN 15975-2: Risk control - examples



Risk control = selection and implementation of risk treatments options

3. Example:

- Hazard: **employee X has the duty to supervise and control the functioning of a certain measuring device/equipment but doesn't react in the case of limit value(s)**
- Risk: **water supply's integrity is at risk**
- Risk control measure (**personal**): training of employee

EN 15975-2: Risk control – verification



- **Verification** serves to **prove** that the risk management **approach applied is working properly to ensure the drinking water supply system's integrity** & thus continuous delivery of safe drinking water.
 - Analysis of drinking water quality, evaluation of In-house records and customer complaints etc.



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EN 15975-2: Risk control – documentation



Outcomes of steps **supply description – verification** to be documented so that:

- **those conducting** the risk management approach **have access to suitable guidance**
- all **decisions and assumptions taken** in the risk management approach are **transparent, traceable and thus revisable**
- review of compliance with the risk management approach **is practicable**
- the risk management approach **can be developed, maintained and refined.**



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EN 15975-2: Review

Steps risk management approach to be reviewed:

- to **ensure their continuing validity**
- in response to **relevant changes** like
 - the drinking water supply system
 - legal and/or regulatory requirements
 - technical specifications/ procedures
 - the environment in which the drinking water supplier operates
- in **response to incidents or emergencies** (actual or narrowly avoided)
- after each **significant hazardous event**



Important terms and definitions

- **Normal operation**: general term describing **all water supply-related operating conditions and processes including failures** which can be controlled by the **normal means of operation and/or organization structures** selected by the water supplier.
- **Crisis**: event or situation with the potential to seriously affect a drinking water supplier which may **require other organizational structures and possibly more than usual means of operation to respond to an emergency**.
- Objective of **EN 15 975-1** is to enable drinking water supplier to take action in the event of a crisis in order to **ensure the continued supply of water to the greatest possible extent** and to **restore normal operating conditions as quickly as possible**.



EN 15975-1: Crisis management - content



1. Scope

2. Terms and definitions

3. Fundamentals of crisis management

3.1 Establishing the context

3.1.1 Legal basis in the event of crises

3.1.2 **Cooperation between water utilities & relevant authorities in the event of a crisis**

3.1.3 Regulatory, contractual and environmental aspects

3.1.4 Consideration of size and structure of a drinking water supplier

3.1.5 Link to risk assessment

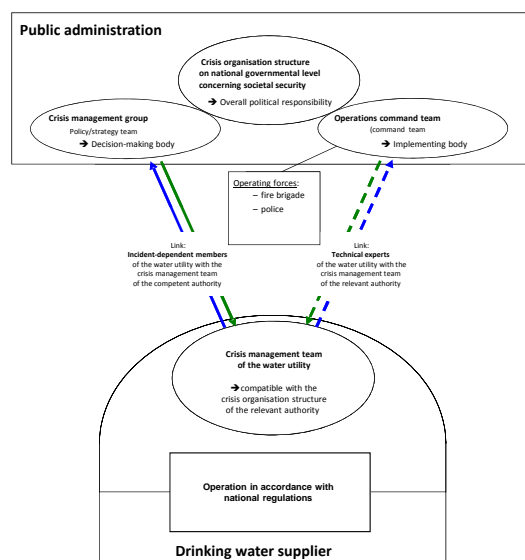
3.2 Definition of objectives

3.3 Phases and elements of crisis management

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EN 15975-1: Cooperation structure of the crisis organisations of water utilities & the competent authorities



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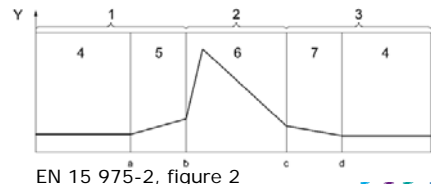
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EN 15975-1: Phases of crisis management



Preparatory crisis management:

- normal operations: incl. structural preparation & training
- Phase I: transition from incident management to crisis management and preparation for crisis operations



EN 15 975-2, figure 2

Operative crisis management:

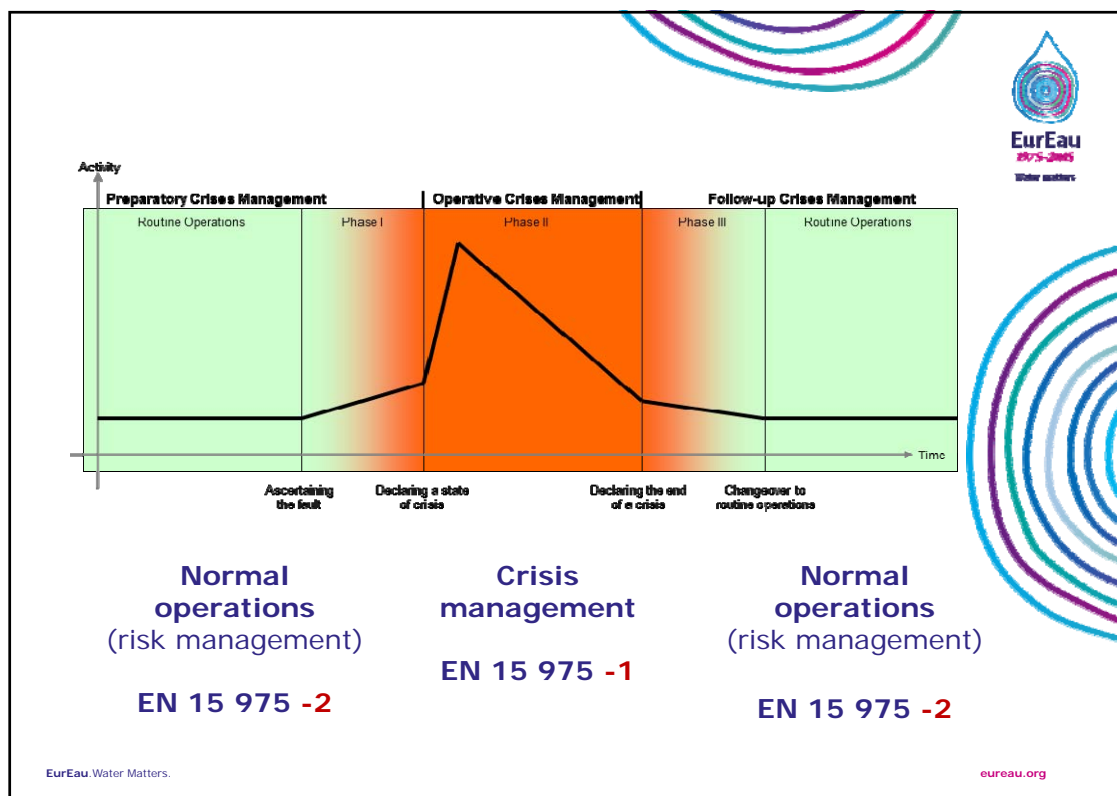
- Phase II: marked by declaring a state of crisis and covering the crisis management team; comprises intensely pursued crisis control activities. Phase terminates at end of crisis, crisis management team stands down

Follow-up crisis management:

- Phase III: resumption of normal operations takes place
- Normal operations: includes a de-briefing of & follow-up on what has been learned, preparation for future crises, additional training etc.

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COMMISSION DIRECTIVE (EU) 2015/1787

of 6 October 2015

amending Annexes II and III to Council Directive 98/83/EC on the quality of water intended for human consumption

Recitals:

(4)
Since 2004, the World Health Organisation has developed the water safety plan approach which is based on risk assessment and risk management principles, laid down in its Guidelines for Drinking Water Quality (2).

Those Guidelines, together with standard EN 15975-2 concerning security of drinking water supply, are internationally ***recognised principles on which the production, distribution, monitoring and analysis of parameters in drinking water is based.***

Annex II to Directive 98/83/EC should therefore be aligned to the latest updates of those principles.

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PART C

Risk assessment

1. Member States may provide for the possibility to derogate from the parameters and sampling frequencies in Part B, provided that a risk assessment is performed in accordance with this Part.

1. The risk assessment referred to in point 1 shall be based on the general principles of risk assessment set out in relation to international standards such as standard EN 15975-2 concerning "security of drinking water supply, guidelines for risk and crisis management".

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Thank you for your attention



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EN 15975-1: Content (2)

3.4 Structural organisation

- 3.4.1 General
- 3.4.2 Tasks and structure of the crisis management team

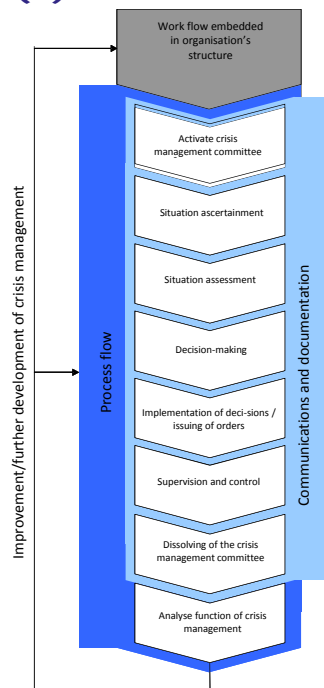
3.5 Process flow

- 3.5.1 General
- 3.5.2 Activating the crisis management team
- 3.5.3 Situation ascertainment
- 3.5.4 Situation assessment
- 3.5.5 Decision-making
- 3.5.6 Implementation of decisions and issuing instructions
- 3.5.7 Supervision and control
- 3.5.8 Termination of work of the crisis management team
- 3.5.9 Analysis of the course of crisis and further development of the crisis management system



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EN 15975-1: Content (3)



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EN 15975-1: Content (4)

4 Preparedness for crisis

- 4.1 Hazards triggering a drinking water crisis
- 4.2 Structural and process organisation
- 4.3 Crisis management control center configuration and equipment
- 4.4 Communications and information flows
 - 4.4.1 Internal communication
 - 4.4.2 External communication
- 4.5 Telecommunications equipment, granting of privilege
- 4.6 Databases
- 4.7 Qualification
- 4.8 Exercises
- 4.9 Documentation

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EN 15975-1: Content (5)



5 Coordinated response to crisis

6 Recovery from crisis

7 Lessons learned

Annex A

A.1 Room infrastructure

A.2 Technical infrastructure

A.3 Miscellaneous

Annex B Recommendation on qualification of personnel

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EN 15975-2: Definitions



- **Hazard:** biological, chemical, physical or radiological agent in, or condition of water, with the potential to cause harm to public health
- **Risk:** combination of the likelihood of a hazard and the severity of consequences
- **Corrective action:** action to eliminate the cause of a non-conformity (non-fulfilment of an operational target) and to prevent recurrence
- **Risk control measure:** any action and activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level

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