

ERNCIP's Webinar (TG Water Security)
***Drinking water monitoring from
source to consumer incl. the new
Drinking Water Directive (DWD)***

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science and knowledge service**
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PART 1: WATER SAFETY & SECURITY. EU LEGISLATION

WATER SAFETY & SECURITY: EU LEGISLATION

1. **SAFETY**: related with **Quality** and **Health** Aspects → **SANITARY** domain (Risks)

Directives **98/83/CE** and **1787/2015** (soon **new Directive**) *on the quality of water intended for human consumption*

2. **SECURITY**: related with the **integrity** of the Supply Systems and Infrastructures and its **vulnerability** to **intentional threats** → **RESILIENCE** domain (Threats).

Directive 2008/114/EC *on the identification and designation of European Critical Infrastructures and the assessment of the need to improve their protection*

SECURITY definition (Cambridge Dictionary):
Protection of a person, building, organization or country against threats such as crime or attacks by foreign countries

WATER SAFETY & SECURITY: EU LEGISLATION

Directive 2008/114/EC on the identification and designation of European Critical Infrastructures and the assessment of the need to improve their protection

- Each MS has to identify potential **European Critical Infrastructures (ECIs)**, according to the definitions set out in Article 2 and the following criteria: casualties, economic impact and public effects.
- But Article 2 establishes that *'the sectors to be used for the purposes of implementing this Directive shall be the energy and transport sectors'*:

List of ECI sectors

Sector	Subsector	
I Energy	1. Electricity	Infrastructures and facilities for generation and transmission of electricity in respect of supply electricity
	2. Oil	Oil production, refining, treatment, storage and transmission by pipelines
	3. Gas	Gas production, refining, treatment, storage and transmission by pipelines LNG terminals
II Transport	4. Road transport	
	5. Rail transport	
	6. Air transport	
	7. Inland waterways transport	
	8. Ocean and short-sea shipping and ports	



Water not specifically included.

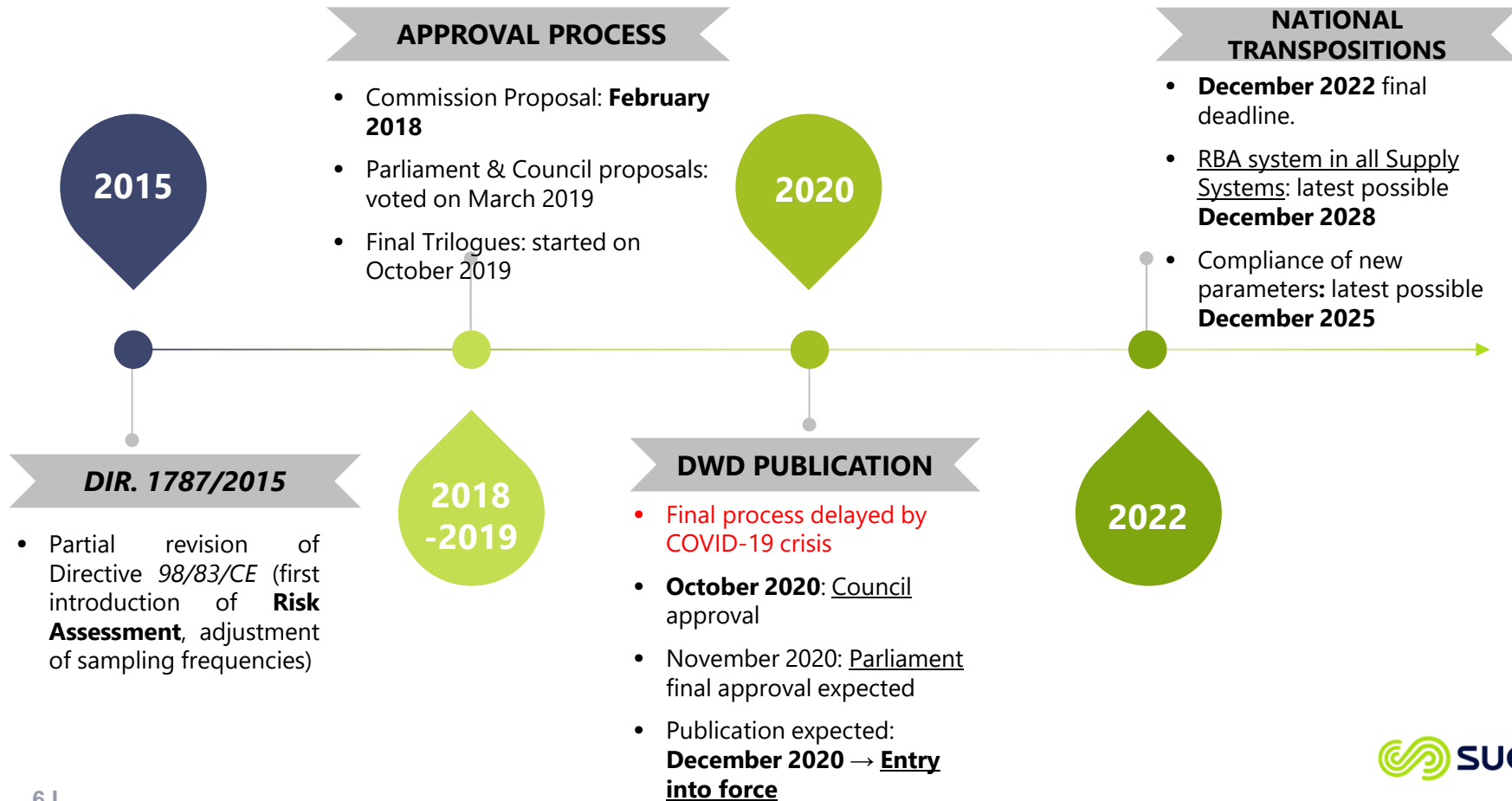
Different MS have considered Water in their National CIs

ERNICIP's Thematic Group Water initiatives try to fill this legal gap and offer tools to Water Suppliers & regulators willing to improve the Security and resilience of the water systems, adding or complementing the elements of their WSPs



**THE NEW DRINKING WATER DIRECTIVE: GENERAL
OBJECTIVES, MAIN CHANGES ON CONTROL & MONITORING
AND OPPORTUNITIES FOR LINKS WITH SECURITY PLANS**

BACKGROUND & APPROVAL PROCESS



MAIN OBJECTIVES OF THE NEW DWD

- Protection of consumers' **health** (water quality and safety improvement)
- Increase the **confidence** of citizens regarding drinking water: promoting consumption.
- **Risk Assessment** approach compulsory: preventive management of **sanitary risks** (integral vision, from resource to tap).
- Increase of **transparency**: information to costumers (and 'public' in general).
- **Access to water**.

MAIN THEMATIC AREAS (New or with changes)

The new DWD introduces new aspects on the following main thematic areas:

1. Risk Assessment & Risk Management Model (RA/RM, WSPs): integral vision
2. New parameters & *parametric values* (limits) + “*Watch List*”
3. New monitoring model: frequencies & parameters + operational monitoring
4. Domestic distribution systems (RA/RM)
5. *Access to water*
6. *Information to the public*
7. Materials & substances in contact with DW

WATER QUALITY CONTROL AND MONITORING

Article 13: MONITORING

The monitoring programmes shall be supply-specific, taking into account the outcomes of the risk assessment for the catchment area(s) of the abstraction point(s) and for the supply systems, and shall consist of the following elements:

- Monitoring of the parameters listed in Annex I, **parts A, B and C**.
- Monitoring of the parameters listed in Annex I, **part D**, for the purposes of the risk assessment for the domestic distribution systems.
- Monitoring of the substances and compounds included in the “**Watch List**”.
- Monitoring, for the purposes of the identification of **hazards** and **hazardous events**.
- **Operational monitoring** conducted in accordance with Annex II, part A, point 2a.

WATER QUALITY CONTROL AND MONITORING

Annex I, Part A: Microbiological parameters

The list of parameters has been reduced to the following:

Parameter	Parametric Value
Intestinal enterococci	0/100 ml
<i>Escherichia coli</i> (<i>E. coli</i>)	0/100 ml

NOTE:

- *C. perfringens* spores have been moved to part C of Annex I (*Indicator* parameters), because they are not of sanitary concern.

WATER QUALITY CONTROL AND MONITORING

Annex I, Part B: New Chemical Parameters

Parameter	Parametric value
PFASs (perfluoroalkyl substances)	0,1 µg/L (“Sum of PFASs”) 0,5 µg/L (“PFASs - Total”)
Haloacetic acids (HAAs)	60 µg/L (sum)
Bisphenol A	2,5 µg/L (to be amended by delegated act when EFSA opinion available)
Uranium	30 µg/L
Chlorite and Chlorate	0,25 mg/L (0,7 mg/l with disinfectants such as ClO ₂)
Microcistin L-R	1,0 µg/L

NOTES:

- For a transitional period of 3 years after the end-date for transposition, water suppliers shall not be obliged to monitor these new parameters.
- MS can extend the list of parameters included in Annex I according to local circumstances.
- **PFASs:** preliminary list detailed in Annex III for the “Sum of PFASs” (substances of concern for human health). *The Commission shall, no later than 3 years after entry into force of this Directive, establish **technical guidelines** regarding the analytical methods, including detection limits and parameter values and frequency of sampling for monitoring of ‘PFASs total’ and ‘Sum of PFASs’.*

WATER QUALITY CONTROL AND MONITORING

Current parameters with reduction of PVs:

Parameter	New PV	Former PV	Notes
Lead	5 µg/L	10 µg/L	Transitional period of 15 years after the entry into force. Compliance at least at the point of supply of the domestic DS.
Chromium	25 µg/L	50 µg/L	Transitional period of 15 years after the entry into force.
Chlorite & Chlorate*	0,25 / 0,7 mg/L	(0,7 mg/L)	Parametric value of 0,7 mg/l shall be applied when a disinfection method that generates chlorite is used.

NOTE:

*: not included in the previous Directive, but regulated in some countries, based on the WHO`s *Guideline values*.

WATER QUALITY CONTROL AND MONITORING

Annex I, Part C: Indicator Parameters

This part has been finally kept, with the same parameters as in Directives 98/83/CE and 1787/2015, plus the addition *C. perfringens* spores (formerly in Part A).

WATER QUALITY CONTROL AND MONITORING

Annex I, Part D (new): Parameters relevant for the Domestic Distribution RA

Parameter	Parametric value	Notes
Legionella	1000 CFU/L	<i>Actions could be considered even below the parametric value, e.g. in case of infections and outbreaks. In these cases, the source of infection should be confirmed and the species to which it belongs should be identified.</i>
Lead	10 µg/L	Member States should use their best endeavours to achieve a lower value of 5 µg/l by 15 years after the entry into force of this Directive.

WATER QUALITY CONTROL AND MONITORING

Annex II: MONITORING

Part A: General objectives and monitoring programmes

Monitoring programmes established pursuant to Article 11(2) for water intended for human consumption shall :

- *Verify that the measures in place to control risks to human health throughout the water supply chain from the abstraction area through treatment and storage to distribution are working effectively and that water at the point of compliance is wholesome and clean.*
- *Provide information on the quality of the water supplied for human consumption to demonstrate that the obligations set out in Article 4 and the parametric values set in accordance with Article 5 are being met.*
- *Identify the most appropriate means of mitigating the risk to human health.*

WATER QUALITY CONTROL AND MONITORING

Annex II: MONITORING

Part A: General objectives and monitoring programmes

Monitoring programmes established pursuant to Article 11(2) for water intended for human consumption shall include one or a combination of the following:

- *Collection and analysis of discrete water samples.*
- *Measurements recorded by a continuous monitoring process.*

WATER QUALITY CONTROL AND MONITORING

Annex II, Part A, point 2: Operational Monitoring

Monitoring programmes shall also include an **operational monitoring programme**, providing rapid insight in operational performance and water quality problems, and allowing rapid pre-planned remedial action. Such operational monitoring programmes shall be supply-specific, taking into account the outcomes of the identification of hazards and hazardous events and supply risk assessments, and intended to confirm the effectiveness of all control measures in abstraction, treatment, distribution and storage.

WATER QUALITY CONTROL AND MONITORING

Annex II, Part A, point 2: Operational Monitoring

The operational monitoring programme shall include the monitoring of the parameter **turbidity** at the water supply plant to regularly control the efficacy of physical removal by filtration processes, in accordance with the reference values and frequencies indicated in the following table:

<i>Operational parameter</i>	<i>Reference value</i>
Turbidity	0,3 NTU (95% of samples) and none to exceed 1 NTU

Volume (m³) of water distributed or produced each day within a supply zone	Minimum frequency
≤ 1000	Weekly
> 1000 to ≤ 10 000	Daily
>10 000	Online

“WATCH LIST” (Article 13, point 8)

*The Commission shall adopt implementing acts to establish and update a **Watch List** addressing substances or compounds of public or scientific concern to health, such as **pharmaceuticals**, **endocrine-disrupting** compounds and **microplastics**.*

Substances and compounds shall be added to the Watch List when they are likely to be present in water intended for human consumption and may pose a potential risk to human health. To that end, the Commission shall make use, in particular, of scientific research of the WHO.

***Beta-estradiol** and **Nonylphenol** shall be included in the first Watch List in view of their endocrine disrupting properties and risk they pose to human health.*

*The watch list shall indicate a **guidance value** for each substance or compound and where necessary a possible **method of analysis** not entailing excessive costs.*

The first watch list shall be adopted by 1 year after the entry into force of the Directive.

Member States shall put in place monitoring requirements with regard to the potential presence of the substances or compounds which are included in the watch list, at relevant points of the supply chain for water intended for human consumption.

***Microplastics**: a method will have to be established by the Commission by 3 years after the entry into force of the Directive and then they will have to be included in the *Watch List*.*

SUMMARY & SPACE FOR LINKS WITH WATER SECURITY PLANS

- The ‘regular’ monitoring set out in the DWD (Annex I) will have to be performed with the ‘traditional’ laboratory approach (complex parameters & specifications for the methods).
- But many the objectives set out in Article 13 and Annex II (Monitoring and monitoring programmes) can be better achieved by **on-line monitoring** and leave room for the introduction of **Security elements**.
- Any RA/RM system (WSPs, ISO 22000, etc.) also requires to:
 - Establish control parameters & limits to monitor each Critical Control Point (CCP) identified on the RA. These must be simple parameters, ideally monitored **on-line** (more preventive approach).
 - Take into account the likelihood of accidents, sabotages and intentional attacks over the infrastructures and water resources that could alter water quality, with undesirable effects over consumers. The new ISO 22000:2018 standard, for example, reinforces this under the “Food Defence” requirements. In this context, there’s a clear link between Safety and **Security** Plans.

Both the preventive approach that on-line monitoring offers to a RA/RM system and the need to keep any security threat under control allow to establish clear **links between Safety and Security**.

Work Program TG 2017-2019

Guidance on requirements for production of a **Water Security Plan** in drinking water supply

Review of **technologies** for the **rapid detection of chemical and biological contaminants** in drinking water

Practical guidelines on the requirements of a **continuous online water-quality monitoring system** in drinking-water-supply systems

Work Program TG 2017-2019



Guidance on the production of a water security plan for drinking water supply

*ERNICIP Chemical and
Biological (CB) Risks to
Drinking Water Thematic
Group*
Teixeira, R.
Carmi, O.
Raich, J.
Gattinesi, P.
Hohenblum, P.

Theocharidou, M. (Ed.)
Giannopoulos, G. (Ed.)
2019

https://publications.jrc.ec.europa.eu/repository/bitstream/JRC116548/2019.4805_en_jrc116548_corrected_graphs%283%29_1.pdf



Work Program TG 2017-2019



Practical guidelines on the requirements of a continuous online water-quality monitoring system in drinking-water-supply systems

https://publications.jrc.ec.europa.eu/repository/bitstream/JRC112776/jrc112776_on_line_monitoring_del_2.1_final.pdf

ERNICIP Chemical and Biological (CB) Risks to Drinking Water Thematic Group
Carmi, Ofer

Editor
Theocharidou, Marianthi
2019

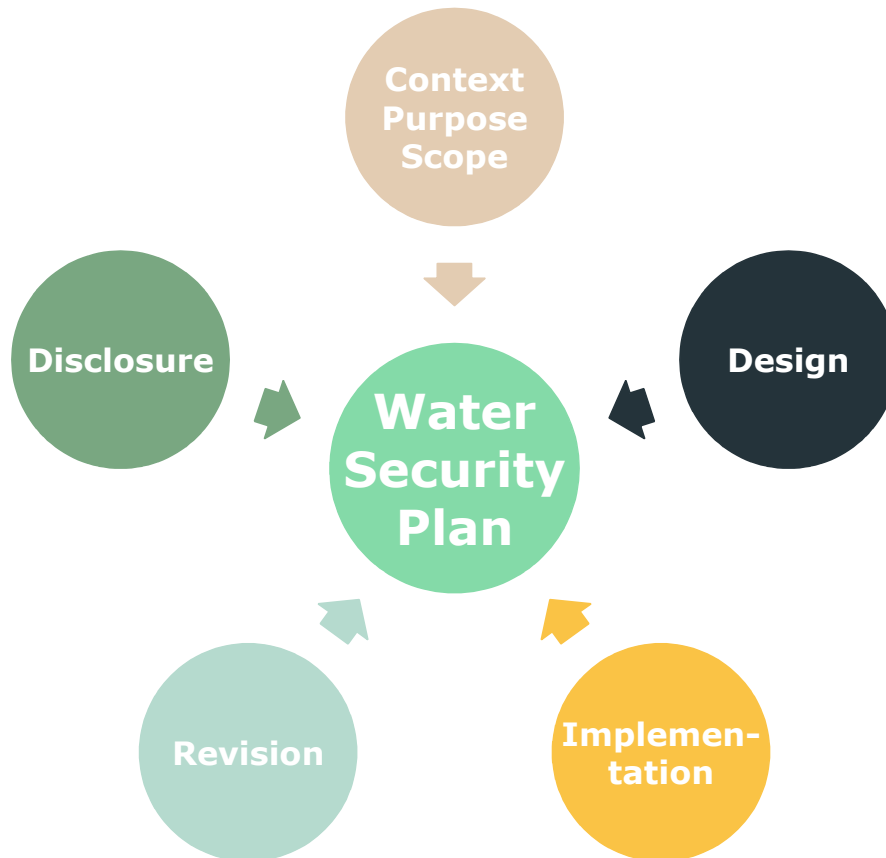


Work Program TG 2017-2019



https://publications.jrc.ec.europa.eu/repository/bitstream/JRC119994/2020.1117_en_jrc119994.pdf

Water Security Plan



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Guidance for production of a Water Security Plan in drinking water supply

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