

RTWQM
REAL TIME WATER
QUALITY MONITORING

EIP Water Conference
Leeuwarden (NL) –2016

11 February 2016 – Side meeting

***'Implications of the revised drinking water directive
for real-time water quality monitoring'***

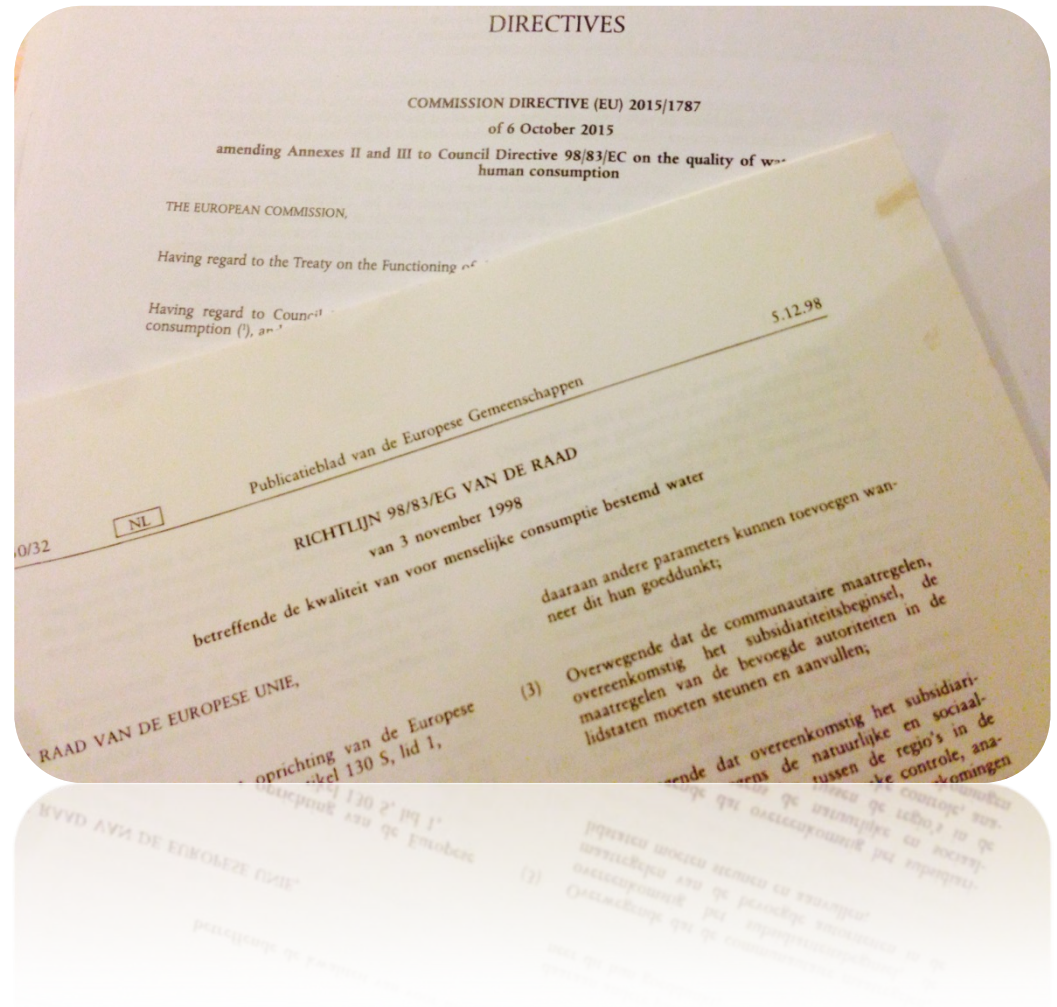
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Presentation outline

- DWD 98/83/EC where do we come from?
- DWD 98/83/EC what has changed?
- What are/what might be the implications?
- Where do we go from here?

98/83/EC Drinking Water Directive

- Directive on the quality of water intended for human consumption
- Protect human health from any adverse effects of any contamination of water by ensuring that it is wholesome and clean.



DWD 98/83/EC

- DWD Strict water quality standards for the quality of drinking water:
 - 2 microbiological parameters
 - 27 chemical parameters
 - 19 indicator parameters
- Member States are required to monitor drinking water quality and comply with limit values at the tap

Monitoring requirements (1)

Annex II

- The monitoring frequency depends on the volume of water supplied
- Two types of monitoring
- Check monitoring and audit monitoring

Volume of water distributed or produced each day within a supply zone (Notes 1 and 2) m ³	Check monitoring number of samples per year (Notes 3, 4 and 5)	Audit monitoring number of samples per year (Notes 3 and 5)
≤ 100	(Note 6)	(Note 6)
> 100 ≤ 1 000	4	1
> 1 000 ≤ 10 000	4 + 3 for each 1 000 m ³ /d and part thereof of the total volume	1 + 1 for each 3 300 m ³ /d and part thereof of the total volume
> 10 000 ≤ 100 000		3 + 1 for each 10 000 m ³ /d and part thereof of the total volume
> 100 000		10 + 1 for each 25 000 m ³ /d and part thereof of the total volume

Specifications for parameter analysis

Annex III

- Microbiological parameters analytical methods specified in the DWD (alternative methods subject to equivalence testing)



European Commission

2nd meeting of the European Microbiology Expert Group (EMEG)

DG ENV and DG Joint Research Centre



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Specifications for parameter analysis

Annex III

Chemical and most indicator parameters

Performance characteristics for analytical methods
as percentage of the parametric values

Trueness: measure of systematic error

Precision: measure of random error

Limit of detection:

3 product specified parameters:

Acrylamide, vinyl chloride, epichlorohydrin

No methods specified:

colour, odour, taste, TOC, turbidity

Revision of Annexes II and III

- Remove unnecessary burden and allow MS to take a more focused approach to monitoring
- Reduce unnecessary monitoring and analyses and concentrate on controls that really matter
- MS can derogate from the current monitoring frequency on the basis of a risk assessment

Annexes II and III revision

- Group A parameters: E.coli, coliform bacteria, CC22, colour, turbidity, taste, odour, pH, conductivity + additional parameters through risk assessment
 - NH₄, NO₂, Al, Fe (dependent on chloramination, treatment)
- Group B parameters (all other parameters DWD)
- Reduction on the basis of risk assessment only Group B parameters

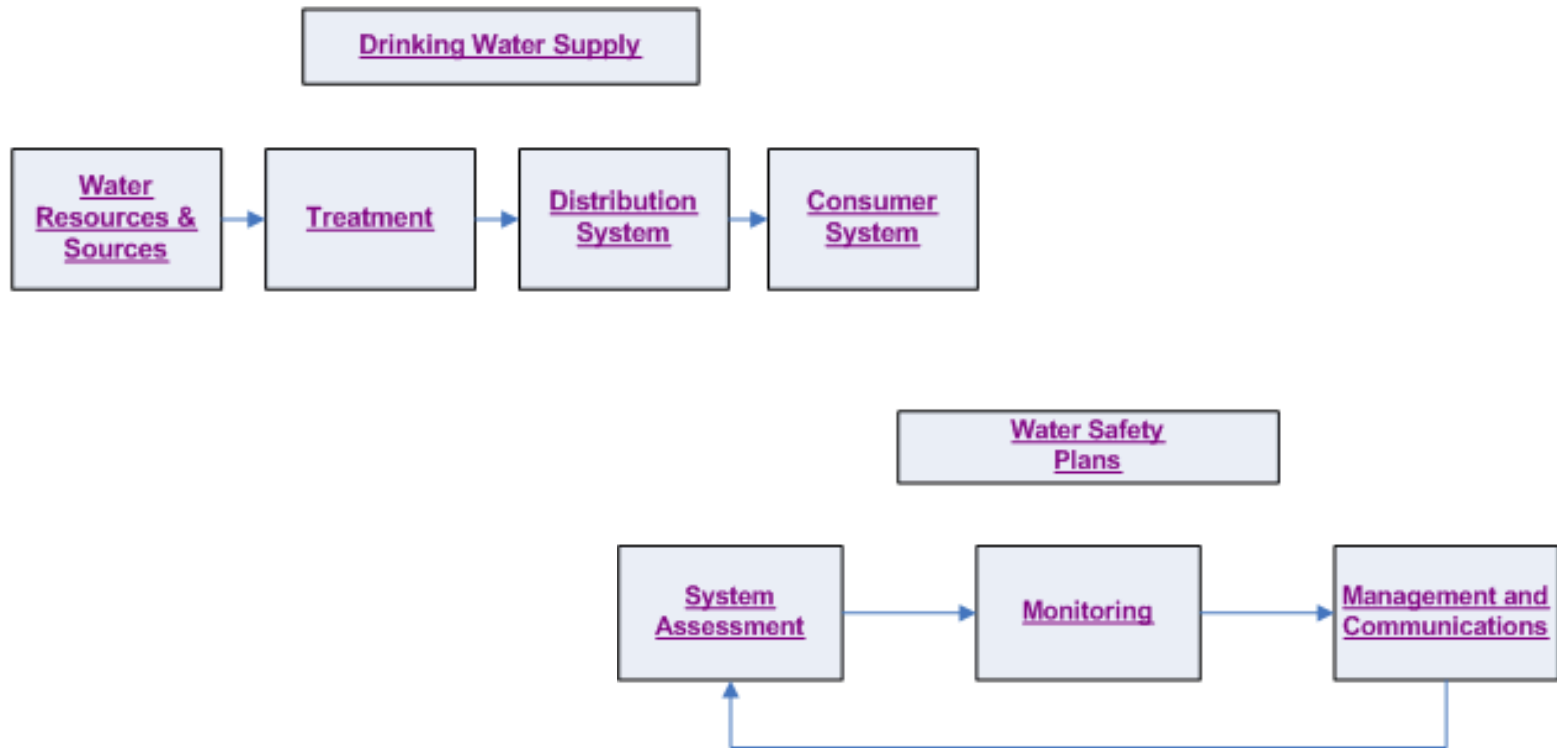
Analytical methods

- Microbiological parameters
 - ISO methods specified in the DWD
- Chemical and indicator parameters
 - minimum performance characteristics: uncertainty of measurement as % of parametric value

What is a risk assessment

- Risk based approach moves away from reliance upon end testing of drinking water to better understand and manage water quality and safety
- End-product control at the tap:
'too little too late'
- It allows water suppliers to identify hazards as they could occur through the various stages of abstraction, transport, treatment and distribution so that adequate measures can be implemented so contamination can be prevented.

Water safety plans (source WHO)



Water Safety Plans

Management of the whole water supply chain

1. Systematic description of the water supply chain from source to tap
2. Assessment of hazards from catchment to tap
3. Assessment of the risk posed by hazards
4. Risk reduction or elimination
5. Verification that risk has been fixed
6. Ensure it stays fixed
7. Monitor any changes in hazards and risks
8. Verification of the process (**compliance monitoring**)

operational

Parameters used in operational monitoring

For source waters

- Turbidity
- UV absorbency
- Algal growth
- Flow and retention time
- Colour, conductivity and local meteorological events

For treatment

- Disinfectant concentration and contact time
- UV intensity
- pH
- Light absorbency
- Membrane integrity
- Turbidity and Colour

In piped distribution systems

- Chlorine residual monitoring -- A sudden disappearance of an otherwise stable residual can indicate ingress of contamination.
- Faecal indicator bacteria
- Pressure measurement and turbidity are also useful in operational monitoring.

IMPLICATIONS (1)

- Member States have the obligation to monitor compliance with the requirements of the DWD at the tap
- DWD is a result driven directive
- MS can derogate from the monitoring programs provided credible risk assessments are performed
- MS shall ensure that the methods of analysis used for the purpose of **monitoring and demonstrating compliance** with the DWD and comply with international standards.

IMPLICATIONS (2)

The focus shifts from pure end product control to more operational control based on risk assessment and risk management

‘Systems to ensure drinking water quality should not be based solely on end-of-pipe verification (testing against predetermined standards). Rather, management control systems should be implemented to assess risks at all points throughout water supply systems and to manage such risks’.

The Bonn charter for safe drinking water

Where do we go from here

- The DWD: analytical requirements for compliance monitoring programs
- MS shall ensure risk assessments are approved by their relevant competent authorities and show that it has been carried out.
- Key question: How do MS decide on methods for RA/RM (operational monitoring)

Where do we go from here

- Most MS are not yet clear about their approach
- Benten lobby for centralised approval of new methods (at JRC Ispra and in Brussels)
- Major role for the European ETV programme

THANKS FOR YOUR ATTENTION