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Joint Research Centre

**Water Safety and Security**  
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European Reference Network for  
Critical Infrastructure Protection  
Thematic Group on Chemical and Biological  
Risks to Drinking Water

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Thematic Group Coordinator



## TG Water

- active since **April 2012**
- **Environment Agency Austria** (coordination)
- **CEA SBTN** Marcoule, Bagnols-sur-Cèze (**FR**)
- **University de Lorraine** - Nancy (**FR**)
- **Fraunhofer-IOSB and IGB** (**DE**)
- **Robert Koch Institute** (**DE**)
- **Water Research Centre plc** (**UK**)
- **Benten Water Ltd.** (**NL**)
- **ICRA Catalunya** (**ES**)
- **Austrian Agency for Health and Food Safety**
- **Lyonnaise des Eaux** (**FR**)
- **Aguas do Algarve** (**PT**)
- **CETAQUA** (**ES**)
- **Aigües de Barcelona** (**ES**)
- **S:CAN** (**AT, ES**)
- **ADASA Sistemas** (**ES**)
- **Voluntary membership with signed agreements**



## Incidents

### Baia Mare (Romania, 2000)

- Tons of cyanide spilled into Tisza River and Danube
- High and immediate impact
- Availability of huge amounts of toxic materials?

Extreme weather,  
Availability  
toxic material

### Hochsauerland (Germany, 2006)

- Contaminated agricultural area
- PFOS in drinking water

### Nokia (Finland, 2007)

- Accidental waste water discharge into drinking water network
- Stealth contamination
- Human factor? Recognition of problem?

Control  
?

Human  
factor



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## Purpose of TG Work



- Addressing **chemical and biological risks** rather than physical protection of the infrastructure
- Hazards of **low probability, but very high impact**
- devoted to **improving the control of water security**

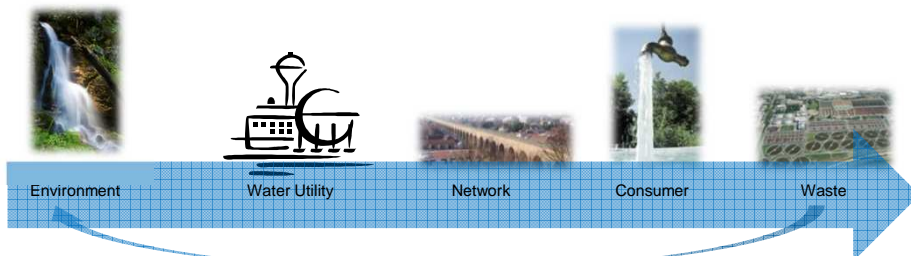


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## Line of Action

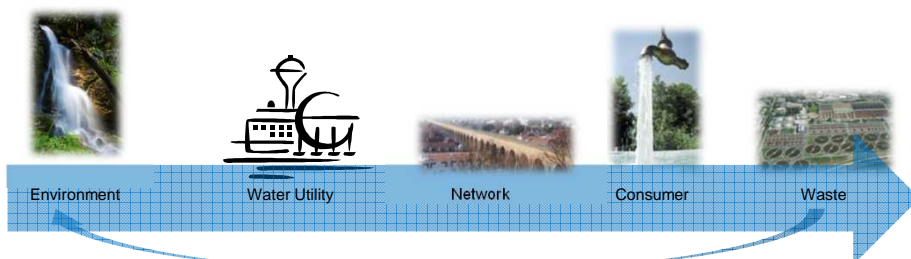


- **Legal frameworks (Drinking Water Directive, Water Framework Directive, Ground Water Directive ...)**
  - Different degrees of protection
- **Vulnerability of CI**
  - Environment – ground water, surface water, industry, infrastructure...
  - Distribution network
- **Recognition of a contamination?**
  - Methodologies
  - Guidelines - risk levels, scenarios

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## Safety and Security



- **SAFETY**
  - **Monitoring as requested by legislation**
    - Weak measure to quickly identify changing compositions or contamination with hazards not being monitored
- **SECURITY**
  - **Online monitoring**
    - Event detection
    - Early warning
    - Dual purpose use to also address quality control
  - **Rapid response analytical screening**
    - targeted/non targeted laboratory analysis

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## TG outputs - State of the art reports

<http://publications.jrc.ec.europa.eu>

**State-of-the-art of screening methods for the rapid identification of chemicals in drinking water** Deliverable D1 (Llorca, M., Rodriguez, S., JRC 83768)

**Review of sensors to monitor water quality.** ERNCIP thematic area Chemical & Biological Risks in the Water Sector. Deliverable 1 - Task 1 (Raich, J., JRC 85442)

**Review of methods for the rapid identification of pathogens in water samples** - ERNCIP thematic area Chemical & Biological Risks in the Water Sector - Task 7, deliverable 1 (Tanchou, V., JRC 92395)

**Review of monitoring techniques for biological contaminants.** ERNCIP thematic area Chemical & Biological Risks in the Water Sector Deliverable 2 – Task 2 (Hufnagl, P., JRC 88228)

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## TG outputs - State of the art reports

<http://publications.jrc.ec.europa.eu>

**Workshop on Early Warning Systems** - ERNCIP thematic area Chemical & Biological Risks in the Water Sector - Task 5, deliverable 1 (Hohenblum, P., JRC 94436)

**Proposal for a water security plan** to improve the detection of threats in the distribution network affecting drinking water quality (Raich, J., Weingartner, A., JRC 101135)

**Overview of standards/guidelines** and current practices for vulnerability assessment of Drinking Water Security in Europe (Pitchers, R., JRC 100531)

**Synthesis of existing legislation, guidelines, standards, organisations and projects** related to drinking water safety and monitoring (Tanchou, V., JRC 100533)

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## Water Security Plan

### Key recommendation

- **Development of guidance to prepare a Water Security Plan**
- **devoted to improving the control of water security**
- **responding to deliberate acts of contamination**
- **whilst helping to protect against the effects of natural disasters or accidents**
- **Integration into daily business**
- **Complementary approach to existing water safety plans**



Proposal for a water security plan to improve the detection of threats in the distribution network affecting drinking water quality

ERN/CIP Thematic Group  
Chemical and Biological  
Risks to Drinking Water  
Task 2, deliverable 2.2

Andreas Thengstetter and Justus Hahn-Moritz  
Water Management, Berlin, Austria

2019

The research leading to these results has received funding from the European Union as part of the European Reference Network for Critical Infrastructure Protection project.

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## TG approach

### Technical surveys addressing

- **Sensor manufacturers and water utilities**
- **Water quality monitoring strategy as part of a security plan**
  - Presentation by Bram van der GAAG
- **National authorities responsible for control of drinking water quality and critical infrastructure protection**
  - Presentation by Robert PITCHERS



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## TG approach

### Desk Studies

- **Overview of standards, guidelines and current practices for vulnerability assessment**
  - Presentation by Valérie TANCHOU
- **Recommendations regarding water security plans**
- **Water Security Plan**
  - Presentation by Andreas Weingartner
- **Recommendations**
  - Presentation by Philipp Hohenblum

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