ERNCIP THEMATIC GROUP CHEMICAL & BIOLOGICAL RISKS TO THE WATER SECTOR

ERNCIP conference

Brussels
April 16th, 2015
Your water consumption today?

- 31% toilette
- 35% shower, care
- 10% other uses
- 15% laundry
- 6% dish washing
- 3% DRINKING, COOKING

130 – 200 litre

Wasted Food???
Vulnerability

**Nokia** (Finland, 2007)
- Accidental waste water discharge into drinking water network
- Stealth contamination
- Human factor? Recognition of problem?

**Baia Mare** (Romania, 2000)
- Tons of cyanide spilled into Tisza River and Danube
- High and immediate impact
- Availability of huge amounts of toxic materials?

**Hochsauerland** (Germany, 2006)
- Contaminated agricultural area
- PFOS in drinking water

Is routine control sufficient?
Are early warning systems available and reliable?
Which means are available to recognize contamination quickly?
ERNCIP Thematic Group

Environment Agency Austria
Fraunhofer Institute, IGB, Germany
Robert Koch Institute, Germany
EC JRC Ispra, Water Unit, Italy
University of Lorraine, France
CETAQUA, Spain
ECOIND, Romania
Austrian Agency for Health and Food Safety, Austria
French Alternative Energies and Atomic Energy Commission CEA, France
Catalan Institute for Water Research ICRA, Spain
S:CAN, Austria
Line of Action

- Different legal frameworks (WFD, DWD, UWD,...)
- Different degrees of protection
- Guidelines - risk levels, scenarios
- Exchange with relevant expert groups
- Recognition of a contamination?
- Identification of (deliberate, accidental) contaminations?
  - examples
Safety and Security

- Environment
- Water Work
- Network
- Consumer
- Waste

- Early Warning Systems
- Screening Methods
- Innovation - Participation
State of the art reports

- **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)

- State of the art of biofilm detection (Trick, I., in press)

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

Identification of change of water quality “in the pipe” in real time
Tool for Alerting – Precaution
Several systems available and in place
  • cheap, reliable
  • software aided
Validation? Standardization? Guidelines? Best practices?
Certification in EU would facilitate placing on the EU market?
  • Acceptance by water operators?

Ref.: S:CAN
Early warning systems

Workshop on 26 June 2014

Aim:
- Present results of three reports and get feedback
- What are needs of operators in terms of security monitoring?
- What would facilitate applying early warning systems (EWS) in the future?
- How would a certain degree of standardization of EWS help?

22 participants
Early warning systems

Workshop supported by questionnaire
- Addressed to drinking water utilities

Driving questions
- To which extent are sensors/early warning systems established at water utilities?
- Which are the reasons for installing early warning systems?
- Which are the reasons for NOT installing early warning systems?
- Do installed systems fulfil expectations?
- To which extent are security aspects covered in water utilities management?

Provision of the questionnaire online in the following official languages:
- English, German, French, Spanish, Italian, Romanian
Early Warning Systems

Results of questionnaire (17 entries) and conference conclusion

- Sensors are a powerful tool
- Risk analysis of utility is necessary and widely applied
- 50% of responders apply any form of EWS
  - 2-100 sensors in the network
  - Voluntary measure most abundant motif
  - Effective and realible
  - „Costs“, „outcome of risk assessment“ and „no added value“ reasons for not installing EWS
Early Warning Systems

- Most sensors and EWS components have not been tested/verified by third party – utilities will require verification and demonstration studies to sort through manufacturer’s claims.
- Verification schemes do not sufficiently match utility practices.
- Poor links between available sensor technologies and water quality regulations.
Early Warning Systems

- **Event detection systems need to be easy to use**
  - software assistance – large data amounts

- **Low cost applications**
  - Costs are reported as major reason for not installing systems
  - Price vs. Market – size of utility

- **Benefit to the operator – powerful tool**
Screening Methods

identification of “unknown” substances and pathogens following an incident

• Addressed by water operators (e.g. AT)
• Immediate response for decision making
• Expert laboratories?
• Interaction with civil protection, crisis management
• Methodological issues – laboratory work, measurement
Screening Methods

- Detections of unknowns is relatively easy
- Identification needs sophisticated equipment and lots of experience
- Quantification depends on availability of many factors
- Standard approaches are needed (sampling, sample processing, analysis) → proficiency testing
- NORMAN initiative
- Water security initiative
- List of expert laboratories
- State-of-the-art report is available
Work Programme 2015+

Workshop 27/28 April 2015

- EU projects
- EU activities
- Experts

Transfer of knowledge

Collaboration – „fight fragmentation“
Work Programme 2015+

Focus on event detection systems
- Reliability
- Support decision making process
- Easy to use

Very different approaches for validation
- In real life testing, Artificial testing
- Description of detection system
- External validation – who?
- Workshop Agreement M487

Event detection requires further processes to identify the reason
Thank you!

ERNCIP
https://erncip-project.jrc.ec.europa.eu/

Philipp Hohenblum
Environment Agency Austria
Philipp.hohenblum@umweltbundesamt.at
http://www.umweltbundesamt.at/
Water Protection Zone!
Any Pollution Forbidden!

Wasserschutzgebiet!
Jede Verunreinigung verboten!