



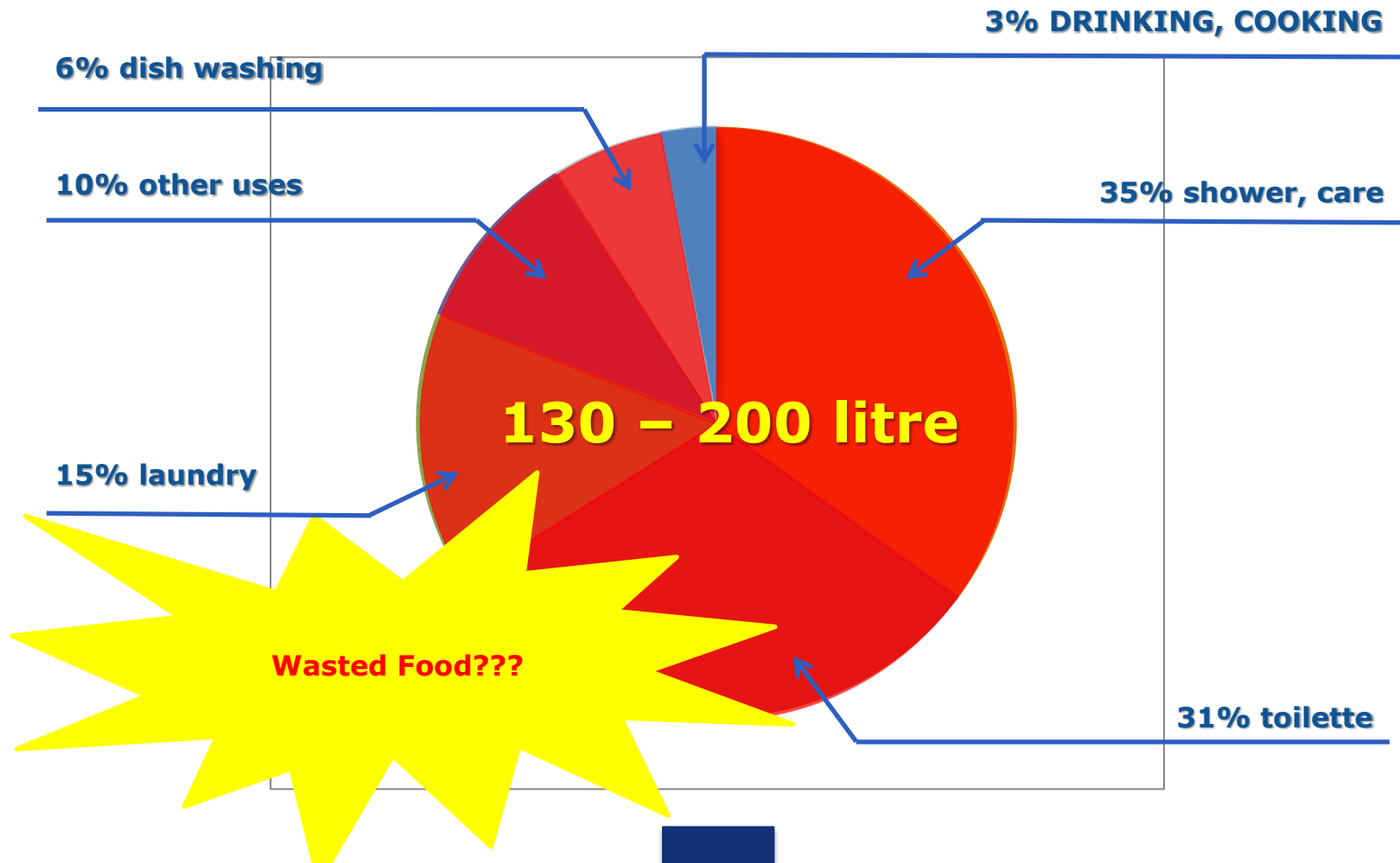
ERNCIP THEMATIC GROUP CHEMICAL & BIOLOGICAL RISKS TO THE WATER SECTOR

ERNCIP conference

Brussels

April 16th, 2015

Your water consumption today?



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?



**Human
factor**

**Availability
of toxic material
Dependency of
CI**

**Control
?**

ERNCIP Thematic Group

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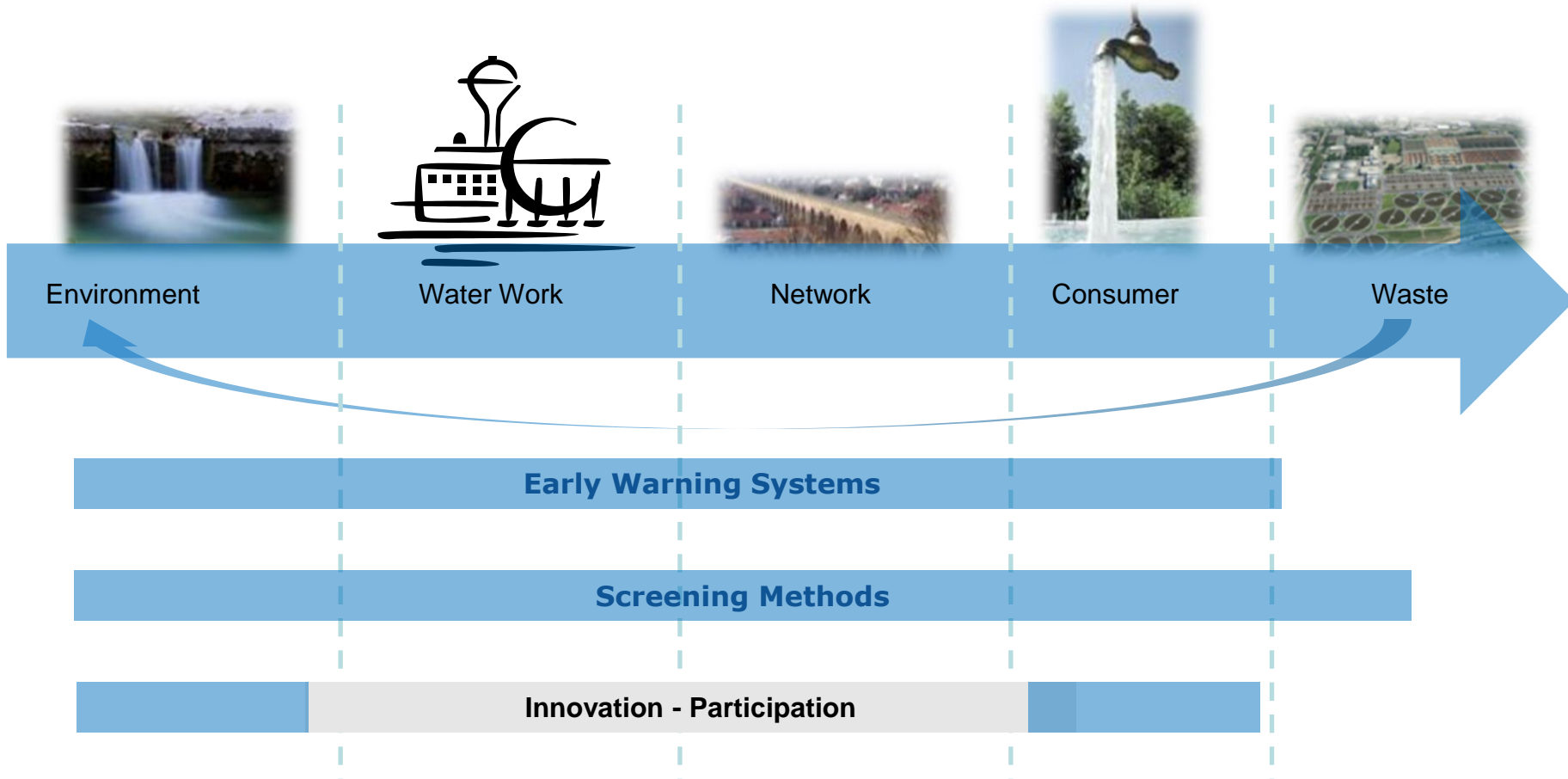


Line of Action



- *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



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/>

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