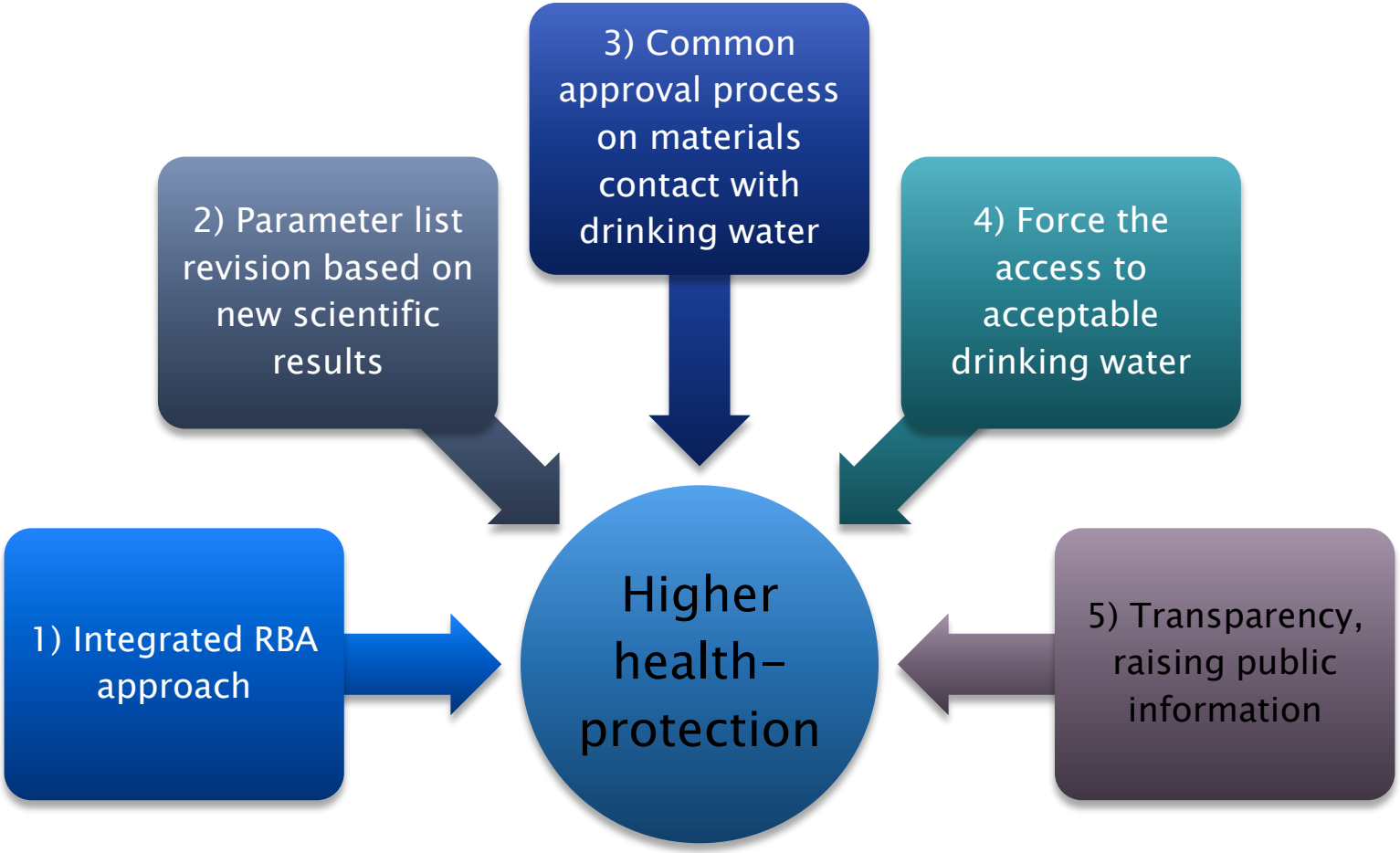
Experience on risk-based monitoring programs and preparation according to the revised Directive 98/83/EC

Zsuzsanna Bufa-Dőrr, Márta Vargha
National Public Health Centre
Hungary

17 – 18 June 2019, Bratislava

WATER RESOURCES PROTECTION 2019

Main areas of DWD revision



1) RBA – Regulatory background in Hungary

- Water safety planning (WSP) is a legal requirement for large supplies (serving over 5000 people) since 2009

  (Gov. Decree 65/2009 (III. 21.) 4. §)
- Obligation is extended to all supplies (serving over 50 people) since December 2013

  (Gov. Decree 430/2013 (XI.15))

Supplied population	Deadline
>100000	July 1st 2012
50000–100000	July 1st 2013
5000–50000	July 1st 2014
50–5000	November 30th 2017

Process of WSP approval

Operators	National level: National Public Health Centre (NPHC)	Local level: local public health authorithies
Develop WSP	Expert opinion	Approval
Submit the WSP for approval	Expertise (technology, risk assessment, etc.) Less information on local aspects More flexible – assistance to the suppliers, personal interviews	Varying level of technical expertise Knowledge of the water supply, personal contact Site visit More formal process (legal deadlines, etc.)
Internal revision: every year, report the changes		External audit every 5 years

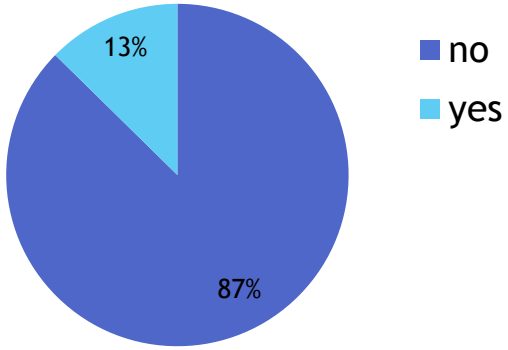
- ~1500 WSPs approved – practically all public utilities
- ~ 1250 are small (serving <5000 people)
- ~100 individual supplies (institutional, commercial or community supply

Experiences on WSP approval -NPHC

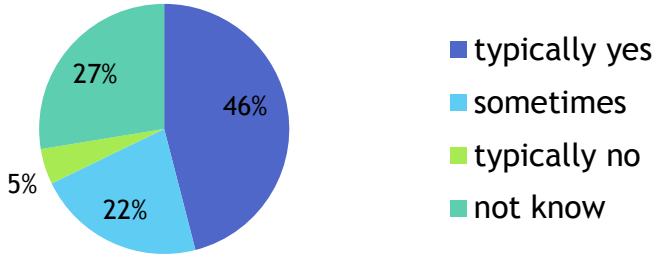
- Huge administrative burden
- Operators need help on implementation
  - *Guidance document for preparing WSPs (prepared in cooperation with the Hungarian Waterworks Association)*
  - *Training seminar for operators*
  - *Training seminar for public health authorities*
  - *Online „WSP-builder" tool*
  - *Offline template (including risk assessment spreadsheet)*
- Small attention on risks of the catcment area and risks of supply system in the biulding
- In preparation:
  - *Guidance on auditing (as part of a WHO BCA)*
  - *Revised guidance for operators*
  - *Template for very small (single-household) supplies*

Experiences on WSP approval –public helath authorities (questionare)

Improvement of water quality since RBA approach?



Do the operators introduce new preventive measures based on the risk analysis?



- Due to Drinking Water Quality Improvement Program
- Due to mixing wells
- Because of radiological parameters
- Improvement of microbiological parameters
- Due to adjusting and tracking operating parameters properly

Further monitoring beyond legal requirements:

- Increase frequency
- On-site inspections (pH, chlorine)
- Forced monitoring on microbiological or microscopic biological parameters
- Monitoring wells
- Technology operation parameters, parameters which can change in the distribution system

Experiences on WSP –operators

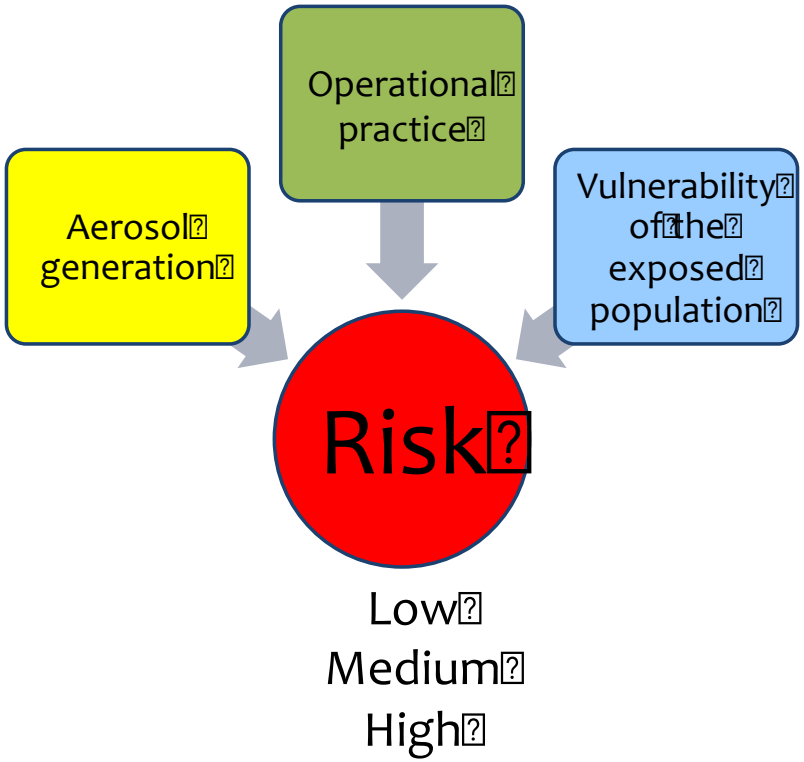
Operators need to realize that it is a rolling process Continuous self-improvement needed	Better knowledge and understanding of the system
Need more assistance (technical and financial), external expert is often involved, especially in SWSZ	Improved data handling and procedures Targeted investments
For most SWS it is still an early phase of implementation	Improved water quality
“another documentation task”	Improved continuity
	Possibility to reduce monitoring frequency (now in early phase)

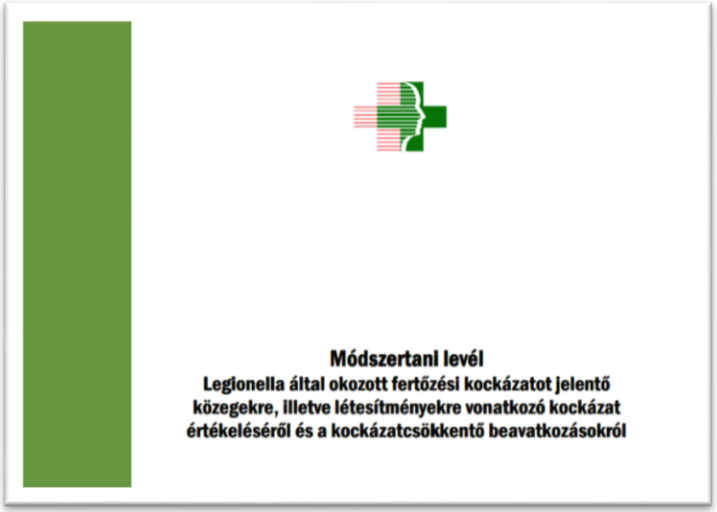
Risk assessment in domestic distribution system – *Legionella*

- Requirement under Ministerial Decree 49/2015 (XI.4.) of the Minister of Human Capacities for all risk environments
- Risk environments: all water systems, where 20–50 °C water is present, stagnation is possible and aerosol is generated
- Risk facilities of *Legionella* exposure: public premises containing at least one risk environment
- Priority risk facilities:
  - hot water system of healthcare facilities and hotels
  - cooling towers
  - aerosol generating warm pools and spas (e.g. whirlpools)

Risk assessment

- Obligatory for all risk facilities
- Responsibility of the operator/owner
- Methodology is published as a guidance document by NPHC
- Key elements
  - System description (all risk environments of the facility)
  - Assessment of *Legionella* proliferation potential
  - Exposure assessment
  - Risk management interventions



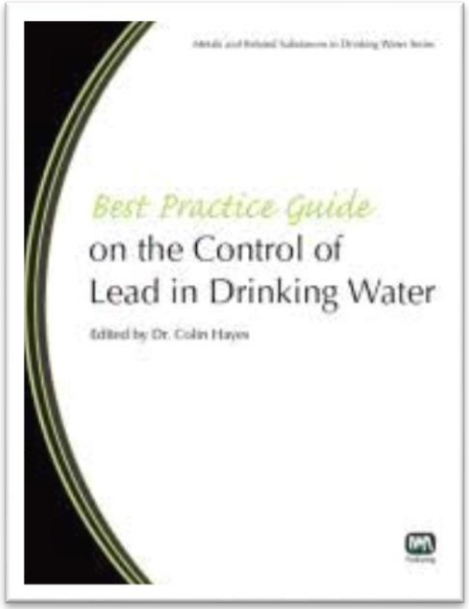


Legionella monitoring

- Obligatory in priority risk facilities
  - Hot water system of hotels and healthcare facilities: yearly
  - Cooling towers: monthly, reduced to once in every 3 months after 3 good results
  - Aerosol generating pools: monthly, reduced to once in every 3 months after 3 good results
- If risk assessment indicates high risk
  - Frequency depends on the type of facility
- Different intervention levels

Risk assessment in domestic distribution system – lead

- Existing problem in Hungary
  - Mainly premise plumbing systems
- Compliance monitoring is not suitable for the assessment of lead exposure
  - Designated monitoring points
  - National non-compliance is generally between 1.5-3 %
  - Need was recognised to assess lead in drinking water using standardised methods of „investigative monitoring”

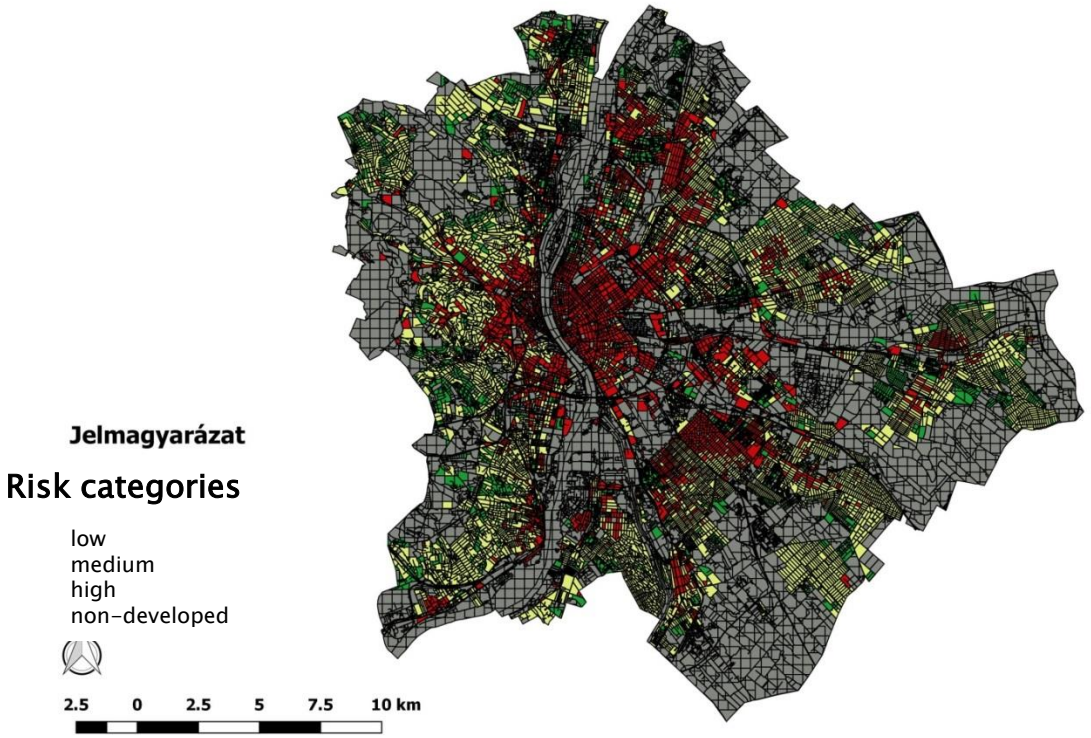


Project-based assessment of lead in drinking water

- EFOP-1.8.0.-VEKOP-17-2017-00001 C.I. subproject in
- National investigative monitoring (6 month long)
- 60 selected areas
  - Urban/rural
  - Water quality (plumbosolvency)
  - Average building age (>1975, 1945-1975, <1945)
- Sample number is based on the size of the water supply
- Additional research
  - Effect of water quality on lead leaching (model system)
  - Efficiency of home water treatment units in lead removal
  - „Open laboratory" public campaign of free water testing

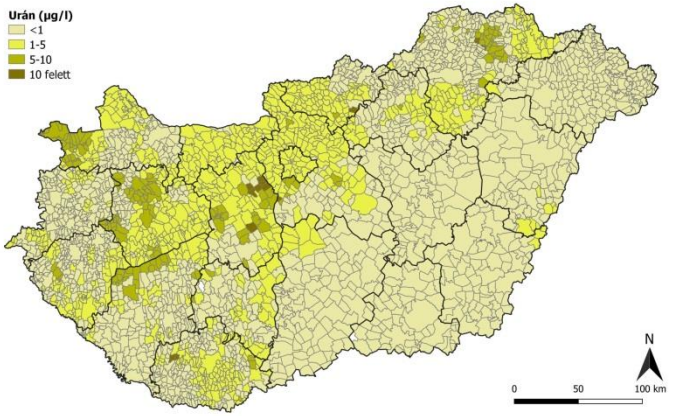
Expected outcomes

- National searchable lead risk map
- Guidance on lead risk assessment in buildings
- Guidance on risk mitigation

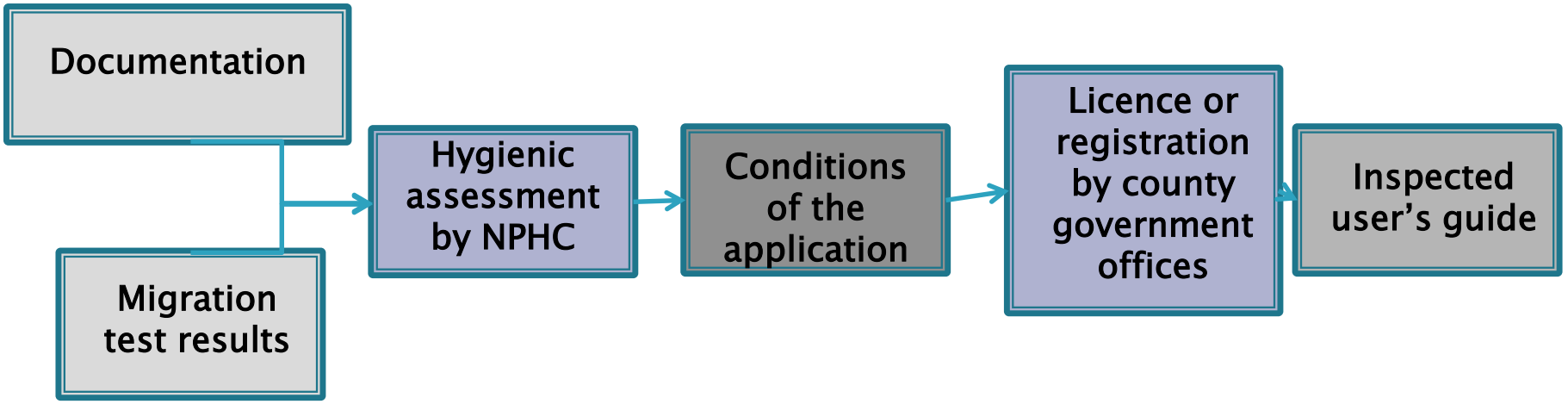


2) New parameters and limit values in the DWD recast

- Disinfection by-products
  - Chlorite, chlorate: chlorite is already regulated (0.2 mg/l)
  - Halo-acetic acids: preliminary results (especially where break-point chlorination is used)
- Uranium
  - Investigative monitoring in all water supplies
  - Limited number of affected WSZ
- Microcystin, PFAs, endocrine disruptors
  - No data is available yet in drinking w
- Hardness
  - Already regulated (minimum 50 mg/l CaO)



3) Official licencing of materials contact with drinking water



Legal requirement

- Government Decree 201/2001 (X.25) (Drinking Water Act)
- Covers:
materials contact with drinking water, domestic water/hot water, and bathing (pool) water
- Before the first Hungarian distribution
- Expert opinion by National Public Health Center (NPHC) and licencing/registration by the County Government Offices (19)
- Licence for 5 years, or sometimes (based on the NPHC expert opinion) for shorter time period
- Typically finished products (marketable status), occasionally raw (starting) materials
- Lists of the approved products is available on the websites of the county government offices (merging to a national list is in progress)

NPHC hygienic assessment

- Focuses on the **public health aspects**
- Based on documentation and migration tests
- Requirements cover: all of the materals contact with water for human consuption

  pipes, fittings, tanks, coatings, taps, adsorbent materials, (ion-exchange) resins, chemicals without EN standard, water-meters, pumps, POU and POE home water treatment systems, water-treatment technologies
- Scope of use can be limited based on the assessment to certain use, temperature and sometimes water quality.
  - *drinking water only (<30°C) or hot water(65°C or 85 °C),*
  - *not for drinking water with hardness below 100 mg CaO/l,*
  - *not for drinking water with low pH etc.*

4) Acces to water in Hungary

- 2% of the population is without public water supply
- Legal requirement:
  - Government Decree 147/2010. (IV. 29.)
  - licence and mandatory monitoring (~ 95% without permission)
  - parameters:

colour, smell, taste, turbidity, temperature, *Escherichia coli*, Coliform bacteria, Colony count 22 °C, *Enterococci*
pH, conductivity, ammonium, nitrite, nitrate, hardness, chlorid, organic matter (KOIps), iron, manganese, alkalinity, disinfection residuals

Risks of private supply

Non-protected water source

Operation without risk analysis

Without (effective) treatment technology

Thank you for your attention!