



# WATER & RISK

Dear Reader,

I hope the New Year started well for all of you. With this issue of our newsletter, we continue the overview of the WHO Collaborating Centres in the European Region working in the field of water and health. Additionally, we want to share with you information about challenges and priorities implementing water and sanitation safety planning.

In our work to reduce risks and improve access to water, one of the key challenges we still face is the access to and the spread of information about water and sanitation systems, their sources of pollution and potential hazards. Also quality control standards and regulations, and overall management are key elements that need to be addressed in capacity building activities.

I regularly wonder why we still have this huge demand for more information. Nowadays, many of us have internet access and there is plenty of information material available. But having the infrastructure in place does not necessarily come with access to it. And the same applies to information. You need to know how to search for information, where to search to find the type of information you require and then also be able to select from the overwhelming options.

Depending on the topic, the terminology becomes specialized and, even if you know what you are looking for, you might not know the specific words that an engineer uses, because you are a biologist. Language barriers are hindering and making our communication sometimes demanding. We also have to consider that communication is a highly social process. Maybe not while you are doing an internet search, but if you have an exchange with other colleagues from a different background, it happens sometimes that we have devastating misunderstandings just because we perceive the communication from the other side in a different way than it was intended.

When I talk straight with my European colleagues, this works. If I am using the same style with colleagues with a different cultural background, then I might be perceived to be very rude. To exchange the same piece of information, I need to use a different communication style.

My style will have to adapt when I exchange with laypersons; it will be different for children than for adults and official representatives; chiefs and elders demand again for different ways of communication. I try to talk in the right way and I learn from listening to others.

We write this newsletter trying to bring different cultures, places and expertise together in a language that we hope is understood by all our readers. We are happy if you have feedback for us and we would like to encourage our readers to share what they are doing in the field of water and risks. I hope this newsletter is well received and we will continue to share knowledge with everyone in order to reduce risks and make water safer.

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The Department of Drinking Water and Bathing Water Hygiene of the German Environment Agency (Umweltbundesamt, UBA) is a WHO collaborating center (CC) for Research on Drinking Water Hygiene since 1987.

Located in Bad Elster, Germany, the CC offers a variety of expertise and multifaceted projects that deal with diverse aspects of water quality, including process management to ensure quality. Work chiefly targets policy makers and / or practitioners, particularly in the WHO European Region. In particular, the main areas of work are:

- Water Safety Plan (WSP) promotion
- Management and surveillance of small-scale water supply systems
- Microbial and chemical hazards in water
- Natural and technical barriers in retaining or eliminating hazards

Besides the main partners within the WHO, the CC counts on the joint work with other relevant partners in the water field:

- Drinking Water Inspectorate (DWI), UK
- Dutch National Institute for Public Health and the Environment (RIVM), the Netherlands
- University of Bonn, Germany

### What does a CC in practice?

The CCs support WHO in creating and collecting scientific evidence as well as in disseminating it. The team of the CC for Research on Drinking Water Hygiene, for example, has recently developed tools and conducted workshops to improve small scale water supplies and capacity building activities for Water Safety Planning in Central Asia.

### Small-scale water supplies and sanitation in the pan-European Region

Germany, together with Serbia, co-leads the activity on small-scale water supplies and sanitation under the Protocol on Water and Health. Under the lead of the WHO CC at UBA, a comprehensive collection of data on small-scale water supplies was collected for the first time in the European Region. The results were published in a status report “Status of small-scale water supplies in the WHO European Region: Results of a survey conducted under the Protocol on Water and Health”. The CC also contributed to the recent guidance document “Taking policy action to improve small-scale water supply and sanitation systems. Tools and good practices from the pan-European Region”, a collection of recommendations for improvement. In order to support policy makers in taking action and



Figure 1: Office building „Haus 2019“ of the German Federal Environment Agency in Berlin-Marienfelde  
Source: UBA



facilitate improvements for small systems and their safe management, the CC contributed to the technical preparation and implementation of workshops organized by WHO in Kyrgyzstan (Bulan Sogottu, 21-22 September 2015), Albania (Tirana, 28-29 September 2016), Uzbekistan (Tashkent, 7-8 September 2017) and Serbia (Belgrade, 10-12 October 2017).

### Capacity building for Water Safety Planning in Central Asia

The project “Small and safe: scaling-up water safety planning and effective water quality monitoring in rural Tajikistan”, supported by the WHO Regional Office for Europe (WHO/Europe), aims at scaling-up water safety planning in rural Tajikistan through building capacity of national WSP facilitators, implementing WSPs in five districts, and developing a national WSP roadmap and a national guideline supporting long-term policy uptake. The CC contributed by supporting the preparation and implementation of a training workshop on WSP (25-26 October 2016) and a training of WSP facilitators (12-16 December 2016) in Dushanbe, Tajikistan, in order to enable participants to support practical WSP implementation in rural areas and to extend the application of this approach. The project builds up on the CC’s experience gathered in previous WSP projects in Tajikistan and Kyrgyzstan and on the tools developed within this context, including a Field guide for improving drinking-water safety in small communities.

Apart from this, the CC has been working further on follow-up and new projects towards the universal accessibility to safe water and its adequate management. Here are the next major activities in plan.

### Workshop on small scale water supplies in EU Member States

The CC is preparing a workshop which targets national decision makers in health, water and rural development sectors from Member States of the European Union in June 2018. The workshop aims at facilitating the sub-regional exchange of experiences related to safe and sustainable small-scale water supply services in rural areas and promoting internationally recognized good practices for improvement.

### Training materials for capacity building on Water Safety Plan

To support WSP implementation, the CC will develop global, regional and national tools. They include the update of the existing guidance on WSP in small-scale water supplies, and developing national as well as of regional training materials for WSP in small-scale water supplies. In order to reach as many recipients as possible, it is planned to apply the regional training materials in an online course for stakeholders within the European Region.



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The Institute for Hygiene and Public Health at the University of Bonn is a WHO collaborating center (CC) for Health Promoting Water Management and Risk Communication since 2001. Located in Bonn, Germany, the CC offers a variety of expertise and projects that deal with diverse aspects related to water, sanitation and hygiene (WASH), targeted at policy makers or practitioners in the WHO European Region. The main areas of work are:

- WASH in institutional settings
- Water-related disease surveillance
- Waterborne outbreak and emergency response

Besides the WHO, the CC counts on the joint work with other relevant partners in the water field:

- German Environmental Agency (UBA), Germany
- National Institute for Public Health and the Environment (RIVM), the Netherlands
- Robert-Koch-Institute (RKI), Germany

### What does a CC in practice?

The CCs support WHO in creating and collecting scientific evidence as well as disseminating it.



Figure 2: University Hospital of the University of Bonn from above, base of the IHPH  
Source: University Hospital of Bonn

The team of the CC at the University of Bonn, for example, has recently worked on a situation report on WASH in schools and supported the reporting system of Member States under the Protocol on Water and Health, among other activities.

### Prioritizing water, sanitation and hygiene in schools

The work of the CC has a strong focus on WASH, a priority area under the 2017-2019 programme of work of the Protocol on Water and Health. In this context, the CC contributed to the publication of two publications of the WHO Regional Office for Europe (WHO/Europe):

- an advocacy document “Prioritizing pupil’s education, health and well-being” and
- a landscape report “The situation of water, sanitation and hygiene in schools in the pan-European region”.

The landscape report is the first collection of data on WASH in schools in the European Region and entails the progress made and the current challenges, summarizing policies and national regulations; the results of international surveys and case studies; the available data about accessibility and functionality of WASH in the school setting; and the eventual effects of inadequate WASH on pupils’ health and school performance as described in the scientific literature. The CC contributed to the dissemination of the publications and to awareness raising activities by supporting WHO/Europe at various workshops and conferences. The CC also supported WHO/Europe in the planning phase for updating the 2009 UNICEF/WHO “Standards on water, sanitation and hygiene in schools in low-cost settings”. The work contributed to the conduction of an expert survey and the preparation of a concept note summarising the needs for update of the standards.

### The reporting system of Member States under the Protocol on Water and Health

Lead Parties to the Protocol on Water and Health are called to set national targets based on realistic assessments and priorities in the country, as for the core provision of the Protocol under article 6 and 7. One of the bodies to the Protocol on Water and Health is the Task Force on Target Setting and Reporting, which is in charge of reinforcing the implementation of target setting and reporting under the Protocol, eventually aiming at improving governance for water and health in the participating countries. As member of the informal review group, the CC supported the revision of the reporting template for Member States under the Protocol with the aim, among others, to align the template to regional and global goals and indicators. The CC also supported the Joint Secretariat to the Protocol in the preparation of the “Regional Implementation Report 2016”.

Apart from this, the CC has been working further on follow-up and new projects towards the universal accessibility to safe water and its adequate management. Here are the next major activities in plan.

### Water, sanitation and hygiene in health care facilities

Adequate and sufficient WASH services in health care facilities are critical preconditions to prevent WASH-related health problems, improve quality of health services and patient recovery, reduce the risk of health-care associated infections and the spread of antibiotic-resistant bacteria among patients, the general community and the environment. Data for WASH in health care facilities are still poor for the WHO European Region and the available records show a significant need for improvement of these services at different levels.



Based on the questions and indicators developed for monitoring the progress towards targets 6.1 and 6.2 of the Sustainable Development Goals and other tools, the CC will support the development of an assessment methodology and collect information on the situation of WASH in health care facilities at the regional and sub-regional level. The work of the CC will also include a compilation of the available scientific evidence on WASH and antibiotic-resistant bacteria in health care facilities as well as technical assistance for the assessment of WASH conditions in health care facilities, including assessing antibiotic resistance, provided in response to requests from WHO or member states.

### Strengthening water-related disease surveillance and safe water management

A recent analysis of the situation of water-related diseases (WRDs) in the WHO European Region revealed that although progress has been made, there is a need to prioritize and undertake systematic actions to

strengthen and maintain national surveillance and epidemiological investigation capacities, in order to meet the requirements of International Health Regulations and Article 8 of the Protocol on Water and Health.

In the prevention of water-related disease safe and efficient water management plays a key role.

The WHO Guidelines for Drinking-water Quality promote the concept of Water Safety Plans (WSPs) and recommend that large public buildings, including health care facilities, schools and day care centres, implement WSPs to ensure the provision of safe water.

The WHO CC will support WHO to deliver capacity building activities in Member States for establishing and/or strengthening WRD surveillance, outbreak detection and response systems. Technical assistance will be provided in emergencies related to waterborne outbreaks and for capacity development on WSPs focusing on buildings. Concomitantly, data on the situation of legionella in health-care facilities will be collected and an advocacy document on legionella prevention will be prepared.

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The Water Environment and Health Engineering Group at the University of Surrey, comprising the Centre for Environmental Health and Engineering (CEHE) and the Robens Centre for Public and Environmental Health (RCPEH), is a WHO collaborating center (CC) for Protection of Water Quality and Human Health since 1988.

Located in Guildford, Surrey, United Kingdom, the CC offers a variety of expertise and multifaceted projects that deal with diverse aspects of water availability, quality, and management targeting policy-makers and/or practitioners, with a special focus on the WHO European Region. In particular, the main areas of work are:

- Water quality monitoring and surveillance
- Management and surveillance of small-scale water supply and sanitation systems
- Emergency response

Besides the main partners within the WHO, the CC counts on the joint work with other relevant partners

in the water field:

- Drinking Water Inspectorate (DWI), UK
- British Geological Survey, UK
- Water utilities in the UK

### What does a CC in practice?

The CCs support WHO in creating and collecting scientific evidence as well as disseminating it. The team of the CC for Protection of Water Quality and Human Health, for example, has recently contributed to a publication for small-scale water supply and is working on approaches and methodology for risk-based surveillance and assessment of drinking-water, among others.

### Advocacy on small-scale water supply and sanitation systems

The CC has provided technical input and contributed editorial and technical assistance to develop and final-





Figure 3: University Campus of the University of Surrey, base of the Water Environment and Health Engineering Group  
Source: University of Surrey

ise the publication “Small-scale water supply and sanitation systems in the WHO European Region: Good practices for policy-makers” which is being mandated under the Protocol on Water and Health. Small-scale water and sanitation systems are common within the WHO European Region. Individuals running small-scale systems often lack specific knowledge and awareness of health issues related to water and sanitation services. Respectively, the document aims to give advice and provide assistance in dealing with the challenges faced by small-scale systems. Actions suggested by the authors include the development of targeted legislation and regulations, sustainable financing, awareness raising, training and qualification of personnel, cooperative partnership arrangements, and effective water protection and proper sanitation planning. For this purposes, a number of approaches are promoted, such as the Water Safety Planning approach together with other tools targeted at the other possible actions.

### Risk-based approaches in drinking-water quality surveillance

The framework for safe drinking-water recommended by the WHO Guidelines for Drinking Water Quality (GDWQ) promotes a risk-based preventive management approach to ensure the safety of drinking-water. Drinking-water quality surveillance is one of the core components of this framework and is an essential public health function. To be effective, drinking-water quality surveillance needs to be aligned with risk-based principles, including prioritization of monitoring parameters and surveillance efforts based on water safety plan outcomes. The CC is developing a risk surveillance document for WHO which details the principles that underlie the concept of risk-based approaches in drinking-water quality surveillance. The purpose of each principle is explained to provide the context and its role in risk-based drinking-water quality surveillance. The practical application of each principle is then illustrated by appropriate case studies. The document aims to support decision-makers, regulators and national and sub-national public health officials, to better understand

and appreciate the added value of risk-based water-quality surveillance and thereby strengthen surveillance systems for better protection of public health. The document will provide a strong rationale for the application of risk-based surveillance approaches, and the prioritization of surveillance efforts considering local hazards and available resources

### Revision of the WHO sanitary risk assessment forms

This year, the main focus of work of the CC has been looking at revising the WHO sanitary risk assessment forms, linked to the WHO Guidelines for Drinking-water Quality (GDWQ) and the WHO approach to Water Safety Plans (WSP) ([http://www.who.int/water\\_sanitation\\_health/dwq/wsp170805AppC.pdf](http://www.who.int/water_sanitation_health/dwq/wsp170805AppC.pdf)). These standardised forms are used to identify risks and possible hazardous events within the catchment area, the infrastructure of the source headworks, and the distribution system of the water supply, which could lead to direct or indirect contamination. The CC Team at the University of Surrey has been assisting in the revision of the sanitary inspection forms for small water supplies. This is incorporating literature reviews of the evidence base for the questions that are included in the forms as well as revising and piloting the forms. The CC is planning to conduct a field project in Uganda to investigate various aspects of the sanitary inspection methodology developed in the revision of the WHO sanitary risk assessment forms for drinking-water quality. In this project, possible critical aspects of the inspection forms will be assessed, such as inspectors’ individual interpretation of ‘risk’, to improve the robustness of the methodology.



## Leaving no one behind: Water and Sanitation Safety Planning (WSSP) in rural areas of Eastern Europe

### Introduction

In small communities in Eastern Europe, many people feel that their daily water supply and sanitation systems are neither safe nor reliable. Utilities operated by rural communities and municipalities themselves often lack adequate water protection, properly-maintained drinking water systems and sustainable wastewater management.

Thanks to the 2015 European Citizens' Initiative Right2Water, the European Commission has again focused attention on water. New rules in the Annex to the EU Drinking Water Directive allow the Member States more flexibility in drinking water management. By the end of 2017, each EU Member States will incorporate stronger risk-based monitoring into their national laws. The new rules follow the principle of 'hazard analysis and critical control point' (HACCP) already used in food hygiene legislation and the Water Safety Plan (WSP) laid down in the World Health Organisation's (WHO) Guidelines for Drinking Water Quality<sup>1</sup>. WSP is a risk-based management approach that monitors water from the catchment to the consumer<sup>2</sup> and applies to large and small-scale water supplies. For wastewater management, WHO has introduced a similar approach: Sanitation Safety Planning (SSP)<sup>3</sup>.

The EU Directive, however, does not ensure coverage of all systems because member States may exempt small-scale water systems serving 50 or less ( $\leq$ ) persons or producing  $\leq 10$  cubic meter drinking water per day.

Following the Agenda2030 principle of leaving no one behind, a more holistic approach to water and sanitation is needed to address the new Sustainable Development Goal No 6, especially targets 6.1, 6.2 and 6.3.

### Introduction WECEF approach for developing WSSP for small-scale facilities

In order to implement a WSP or SSP, actors need more thorough information about water and sanitation systems, sources of pollution and potential hazards within facilities, quality control standards and regulations, and overall management. According to a survey conducted within the framework of the Protocol on Water and Health, no minimum qualifications or competence requirements are established for operators of small public water supplies serving  $\leq 5000$  persons in half of the countries of the pan-European region<sup>4</sup>. WECEF has also observed this widespread lack of know-how in many rural communities of the region and therefore has adapted the WHO approach to

implement WSP and SSP on a local level. WECEF provides guidance on safety plan implementation and basic knowledge on the management of small-scale drinking water and sanitation facilities. WECEF explains, for example, the significance of different quality-control measures for drinking water and their relation to the environment and health, as well as the various European and International regulations related to drinking water and sanitation.

The WSP and SSP approaches and principles developed by WECEF are targeting small communities and schools, NGOs and youth groups with participatory approaches.

### Built on 10 years of experiences

In small municipalities, water pollution is often anthropogenic and can be remedied locally. There are sustainable and hygienic alternatives to the water-polluting pit-latrines that are widespread in Eastern Europe. The lack of knowledge and information about such conditions and the alternatives, however, puts the rural population, especially children, at risk of diarrheal diseases and helminth infections<sup>5</sup>.

In order to raise awareness and to mobilise rural communities and schools to increase the safety of their water supplies, WECEF developed an appropriate WSP methodology based on the WHO assessment tool<sup>6</sup>. Since 2008, schools and communities in eight countries of the pan-European region have used it to raise awareness about the quality of the local water supplies, to identify sources of pollution and to develop measures to minimise the pollution. These experiences showed that intensive communication with the local authorities and water operators was imperative to get them on board for WSP activities and to meet their need for more professional background information. This motivated WECEF and partners to expand the WSP manual into a WSSP compendium for small-scale facilities and finally into the Water and Sanitation Safety Planning (WSSP) Compendium<sup>7</sup>.

### The WSSP Compendium

Citizens' participation, which is still an innovative approach in many regions, plays an important role. The participatory approach corresponds to the idea of the EU Water Framework Directive with the aim of informing all stakeholders and young people about the importance of water in the context of the participation of citizens by actively and action-oriented learning about water cycles, the protection of water resources as well as sustainable water consumption and hygiene. For schools, special attention is given to the topics



around Water, Sanitation and Hygiene (WASH) such as school toilets and personal hygiene. In order to strengthen the awareness of interrelations and risks, interactive education is necessary.



Figure 4: f.l.t.r. Mihaela Vasilescu, Natasa Dokovska, Bistra Mihaylova, and Claudia Wendland with the WSSP Compendium  
Source: WECF

Authorities and water operators need to focus additional attention on how the risks of climate change, flooding and water quality affect one another.

The WSSP Compendium is divided into three parts: Part A - "How to accomplish a Water and Sanitation Safety Plan (WSSP)?" - consists of eight modules. While this section is of interest to all groups, it provides special guidance to local authorities and operators on how a WSSP is developed and implemented in 10 steps. All necessary information is supplemented with form sheets for conducting risk assessment and with guidelines for interviewing key stakeholders. The nine modules of Part B - "Background information for developing WSSP" - address all target audiences. Since local persons in charge and rural leaders, teachers and NGOs are often non-specialists, the compendium uses understandable language to explain the technical background as well as the connections between health, environmental hazards and water and sanitation supply in rural areas. Part C - "How to involve schools" - has seven modules that enable schools and teachers to integrate a WSSP program with educational programmes. This section proposes concrete teaching modules and activities. It recommends that each school creates a "toolkit" with essential materials for school activities, such as posters, nitrate tests and simple rainwater measuring devices.

The WSSP compendium helps users to evaluate, identify risks, and minimize potential hazards of small-scale systems such as wells, public drinking water supply points, and schoolyard sanitary facilities. Furthermore, topics such as the human right to water and basic sanitation can be addressed within the WSP and SSP.

The development and implementation of an adequate water and sanitation plan, which is independent of the size of the facility, calls for the involvement of a broad variety of stakeholders. For the implementation of WSSP, the authorities and persons responsible for water, sewage and hygiene (WASH) essentially need parts A and B. When the compendium is used in

education, the teachers need all three parts. However, the modules in each of the three parts can also be used individually.

### Results using the WSSP compendium in Romania and FYR Macedonia

In Romania and Macedonia, the WSSP Compendium was tested as part of a 6-month project<sup>8</sup>. The WSSP Compendium is an instrument that provides the methodology to raise awareness of water pollution, unsafe sanitation and the impact on health at various levels. It strengthens local people's and stakeholders' ability to take own action, as in citizen science.

Water quality was assessed in detail by monitoring the nitrate content of groundwater using simple test methods to record seasonal variations. The total coliforms and Escherichia coli contamination tests were carried out with the support of certified laboratories. Potential contamination sources of drinking and groundwater and health hazards were identified and assessed. Experts and authorities were involved as key stakeholders in identifying risks in public drinking water systems as well as in sanitary and sewage systems. Furthermore, the testing promoted dialogue between the public and the decision-makers to improve the situation and support the necessary implementation of an adequate water protection policy at local, regional, national and international levels.

Planned activities will improve water/groundwater protection, enhance local sanitary conditions and minimize health risks, e.g. fencing sanitary protection zones or improving management of school toilets. The dialogue between the public and the decision-makers was promoted to improve the situation and support the necessary implementation of an adequate water protection policy at local, regional, national and international level.



Figure 5: Bistra Mihaylova in one of the project sites  
Source: WECF

In Romania, the WSSP Compendium will help policy-makers develop a national guideline for risk management in small drinking water supplies. This is required for implementation of the Annex of the EU Drinking Water Directive. In addition, education authorities in both Macedonia and Romania have included the methodology of the WSSP Compendium in teacher training materials.





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## Events on Water, Health and Risk Communication

### February

#### Global workshop - Moving forward transboundary water cooperation: Building on its benefits

6 - 7 February

Geneva, Switzerland

<https://www.unece.org/index.php?id=46345>

#### Twenty-sixth meeting of the Bureau of the Water Convention

8 - 9 February

Geneva, Switzerland

<https://www.unece.org/index.php?id=47395>

#### AWA/IWA Young Water Professionals Conference 2018

22 - 24 February

Melbourne, Australia

[www.awa.asn.au](http://www.awa.asn.au)

### March

#### Water Resource Recovery Modelling 2018

10 - 14 March

Lac Beauport, Quebec City Region, Canada

[www.wrrmod2018.org](http://www.wrrmod2018.org)

### April

#### Tenth meeting of the Task Force on Target Setting and Reporting

24 - 25 April

Geneva, Switzerland

<https://www.unece.org/index.php?id=46361>

#### Twentieth meeting of the Bureau of the Protocol on Water and Health

26 April

Geneva, Switzerland

<https://www.unece.org/index.php?id=46367>

### May

#### Tenth Eastern European IWA YWP Conference

7 - 12 May

Zagreb, Croatia

[www.iwa-network.org](http://www.iwa-network.org)

#### Water Loss 2018

7 - 9 May

Cape Town, South Africa

[www.waterloss2018.com](http://www.waterloss2018.com)

#### Thirteenth meeting of the Working Group on IWRM

29 - 30 May

Geneva, Switzerland

<https://www.unece.org/index.php?id=46374>

#### Twenty-seventh meeting of the Bureau of the Water Convention

31 May - 1 June

Geneva, Switzerland

<https://www.unece.org/index.php?id=46377>

### June

#### Regional Workshop on Equitable Access to Water and Sanitation

25 - 26 June

Geneva, Switzerland

<https://www.unece.org/index.php?id=46379>

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