H2OforAll

Summary Report

2nd H_2OforAll Workshop (online stakeholder engagement)

"Prevention measures and management of DBPs

in drinking water (Disinfection by products)"

10th December 2024

Summary report

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Introduction

The H_2OforAll consortium is conducting a stakeholder engagement activity to address the management of disinfection byproducts (DBPs). The consortium group has opted to host multiple workshops on-line, involving stakeholders in the drinking water sector. These workshops aim to understand current and future concerns regarding DBP formation and gather recommendations on prevention measures for inclusion in the final public report due in November 2025. Afterwards, these recommendations will be delivered upon by industry experts, policymakers, and other pertinent stakeholders.

This report covers the second workshop in this series, which was held online on 10th December 2024 from 10:00 AM to 1:00 PM CET.

Participants

In contrast to the first workshop, which aimed to attract stakeholders from across the globe, we targeted the EMEA region for this workshop. We are pleased to say that we had over 67 registrants from: Spain, Italy, The Netherlands, Germany, France, Greece, Israel, United Kingdom, Colombia, Ireland, Turkey, Belgium, Norway, Ghana, Bulgaria, Liberia. As in the first workshop, the participants encompassed diverse roles within the drinking water supply and treatment domain. These included representatives from regulatory bodies such as the Israeli Ministry of Health and utility organizations such as Aigües de Barcelona, Spain.

Structure of the Workshop

The workshop was organized as an online meeting on the Zoom platform, with each participant displaying their first name, organization, and country. It started with an introduction covering the agenda, the WPs of the project, and the main findings so far, followed by a plenary talk about chlorination, each part including a round of questions and answers. Subsequently, the participants engaged in three breakout sessions. Each of these sessions covered the same questions, which had been provided to the participants beforehand: 1) Which DBPs are of concern in your country? 2) Which preventive and corrective measures are currently taken? 3) Which are the plans for future development in your country? 4) What is the common practice in your country of monitoring DBPs? Following the breakout sessions and the presentation of their summaries to the plenum, we had a panel discussion, featuring three experts - Maria José Farré from Catalan Institute for Water Research, Spain, Luis Simas from ERSAR, Portugal, and Frances Pick from the University of Sheffield,

UK, moderated by Miller Alonso Camargo-Valero from the University of Leeds, UK. The goal of the panel session was to summarize the given presentations and to expand their findings by answering some questions that have arisen from the workshop so far.

Main Points of Discussion

The meeting discussed the H2OForAll project, which aims to understand the origin and behavior of disinfection byproducts (DBPs) in water to propose protective measures and improvements in water treatment processes.

The introductory talks covered the main results of research done at Ulm University, Germany, regarding optical chemical sensors for water quality monitoring, including the use of mid-infrared technology to detect DBPs in real-time and their first field deployment studies as well as the DBP removal technologies that have been implemented in WP4. The project aims to validate the performance of these sensors in various drinking water pilot sites and deploy the sensing prototype for long-term testing in drinking water systems.

In her plenary talk, Frances Pick (University of Sheffield) provided an overview of her project about the chlorination of drinking water. The goal of the project is to develop a risk assessment tool for the impact of chlorine within distribution systems. The study found that higher chlorine concentrations limited microbial cell growth but also increased the risk of discoloration due to the release of iron and manganese from the biofilm. The study also showed that chlorine did not neutralize environmental contaminants and that coliforms were only detected in the low-chlorine loop. The findings suggest that there is a need for a holistic risk assessment that balances the protection of public health and the risk of disinfection byproduct formation. The study is ongoing and will continue until 2026.

The discussions in the breakout rooms focused mainly on preventive measures and best practices to mitigate and manage the formation and spread of DBPs in drinking water. Given the diversity of the participants, it became clear that the awareness of different DBPs varies considerably between different countries. Some current practices were reported to reduce DBPs prevalence in drinking water, like reducing DOC levels by oxidation, reducing the level of residual Cl, maintaining high water flow and reducing residence times in water networks, or preventing the degradation of sodium hypochlorite by cool storage. A water supplier from Spain reported successful reduction of DBP levels after introducing chlorine dioxide treatment during Summer and ozone treatment throughout the

year. Online monitoring of DBPs was reported not to be a common practice in the countries of the participants; it is only done sporadically and mostly for research purposes. Recommendations included increased monitoring, also of others than the "standard" DBPs, with required assistance from researchers, and regulating the amount of organic matter and halogens used for disinfection.

The panel discussion provided an opportunity to clarify remaining questions about the presentations given and to work towards conclusions to be drawn from all of them. The chlorination project presented by Frances Pick highlights the need to assess the risks and benefits of chlorination individually for each water system, because they depend on many factors that are site-specific. In most cases, and particularly with old water infrastructure and in warm countries, chemical disinfection with a residual disinfectant will be necessary to keep pathogen levels within acceptable limits. Water suppliers will have to improve their monitoring and modeling in order to be able to respond quickly to challenges posed by climate change impacts. Technological progress should be used beneficially, e.g. improved filtration as part of a multibarrier approach to eliminate pathogens and lower the need for chemical disinfection.

Conclusions and Outlook

From the wide range of countries and work experiences of the participants, it became clear that there is also a wide range of preventive measures that have been applied or will be applied to prevent or manage the risks associated with DBPs in drinking water. Some of these measures are associated with profound changes in the management of drinking water, such as the replacement of chlorination, others are more focused on details of disinfection practices, such as cool storage of chemicals. In each case, the local situation needs to be taken into account to identify the appropriate measures to be taken, which can best be done by risk assessment.

The participants noted that monitoring of DBPs / precursors in water is an important part of preventive measures which still requires improvement in all of the participating countries.

The next workshop is planned to take place in London on 27th March 2025. Participation will be possible in person in the morning and online in the afternoon with stakeholders from the USA and Canada. Registration opens in January 25.

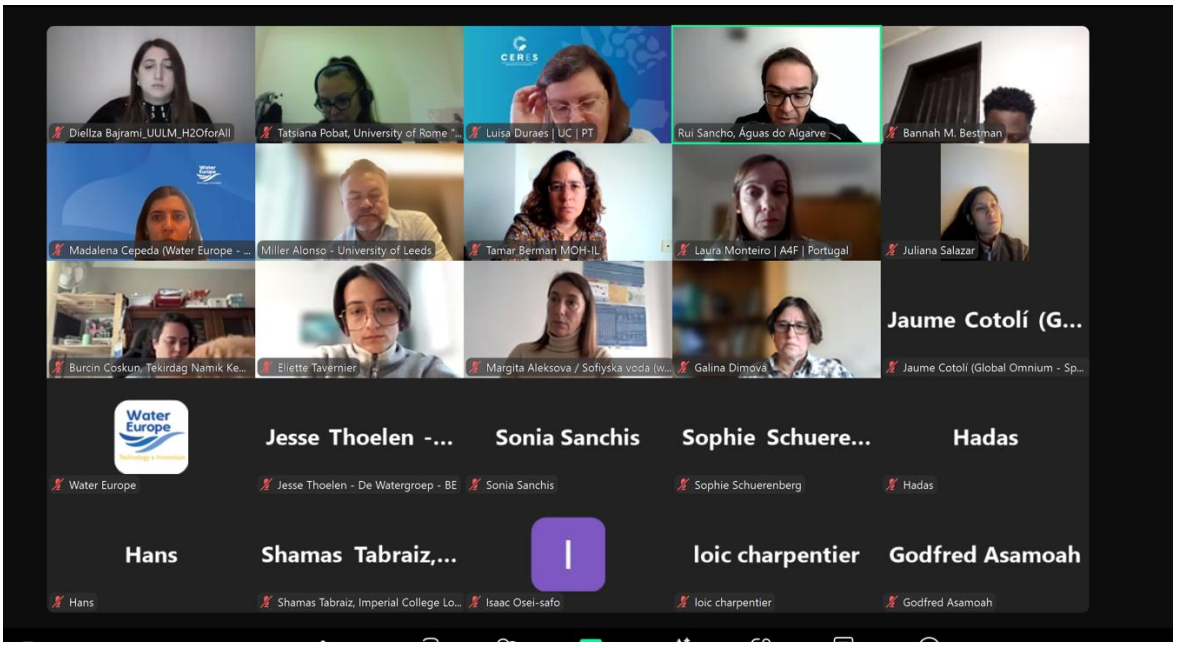
Another workshop is planned to take place in Brussels targeting policy makers.

Based on the outcomes of the workshops, a policy brief and a technical report will be prepared, to be published in November 2025.

Participants comments and feedback (on-line survey)

"It was a very well-organized online workshop. Thank you for all."

"Thank you for the workshop! It was inspiring to see the combination and real links between research and field work (water utilities)".



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