



CONCLUSIONS

EU Umbrella Study@ UN World Water Quality Alliance SARS-CoV-2 Monitoring employing Sewers

2nd Town Hall Meeting

22 July 2020



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SARS-CoV-2 Monitoring employing Sewers

2nd TOWN HALL Meeting

Context of the Event

The EU Umbrella Study

The European Commission has created a pan-European Umbrella Study to better understand the limitations and challenges of this approach. This includes the development of a roadmap for a systemic rollout of complementing ongoing national and regional surveillances in a unique approach. Upon suggestion from the Dutch Water Research Institute (KWR) and the Rheinisch-Westfälische Technische Hochschule (RWTH) and supported by EurEau and Water Europe, the European Commission's Joint Research Centre and the Directorate-General Environment with involvement of the Directorate-General Health and Food Safety set up a spontaneous research alliance and organised a study engaging directly with some 90 waste water treatment plants in Europe. The umbrella currently spreads out to 20 countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Estonia, Finland, Germany, Greece, Ireland, Italy, Latvia, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia, Spain and Sweden), which decided to create an overlap with the EU study. Another 7 countries (Czech Republic, Denmark, France, Hungary, Israel, Slovenia and the UK) consider to join the second round of the Umbrella Study, scheduled for August 2020. While first results indicate the viability of the approach, they are currently being critically reviewed to develop a consensus on the use of generated datasets. In an inclusive and open approach critical topics and limitations are reviewed jointly with private and public entities which joined the initiative: CEDEX- Centro de Estudios y Experimentación de Obras Públicas (CEDEX), Eurecat – Technology Centre of Catalonia (Spain), the Helmholtz Centre for Environmental Research, NIREAS – The International Water Research Center, NORMAN Network, SUEZ, University of Thessaly and National Technical University of Athens (Greece) and the University of Exeter (UK) to name, but a few.

UN World Water Quality Alliance: Sharing findings to assist hotspot areas, linking the environmental dimension

World Water Quality Alliance a global Community of Practice across all societal actors convened by UNEP as well as the World Health Organization have offered their convening power to assist, in the forthcoming weeks and months, by supporting knowledge transfer to the international community with a special aim to provide assistance to the current hotspot areas. This includes for example to expand the continuous information update to regions and partners.

Event Summary

On July 22nd, 2020 this virtual event took place on the WEBEX Site of the European Commission. It was co-organized between the European Commission (the Directorate-Generals JRC and ENV)

managing the first part of the meeting with a focus on the European Umbrella Initiative and UNEP and the UN World Water Quality Alliance, presiding the second part.

Following a successful first event, this second Virtual Town Hall Event aimed at informing the Community of Practice as well as to organize an initial step to explore also global rollout options along a new understanding between health and environment. Corner stone in here is to collectively define the criteria for “use cases” in different regions and settings.

The meeting was accessible to the connected community without registration. It started at 10:30 with Part I focusing on the EU Dimension and continued with Part II to until 14:30. A total of 224 attendees joined the gathering, which was recorded.

At the opening of the meeting, which O. Schmoll from the WHO Regional Office for Europe, informed the participants about the interest of the WHO in the approach. During part I of the meeting (chaired by the EC) progress since the first event were presented including the findings and outcomes of a micro-event dedicated to analytical methodologies and needs. Specific insights into the reference studies being run by Italy, Portugal, the UK, Turkey and France were provided, too.

Part II of the meeting, which was chaired by UNEP, focused on the renaissance of interest in relationship between health and the environment and provided an insight into the wider picture of the COVID-19 crisis and its relationship with water quality and availability. The recording of the meeting as well as the chat registration and presentation were shared and can be accessed following this link: <https://jrcbox.jrc.ec.europa.eu/index.php/s/OnqTQOXZiMxbKNr> (password: SARS-CoV-2)

The material is made available for download until the 30th of September, 2020, data after which this link will expire and download is no longer possible. The material is owned by the respective institutions and explicit consent has to be asked for in case of further use.

Conclusions

EU Umbrella Study and State of Play

Organised in three pillars (Measurement & Testing, Knowledge Brokerage and Transfer, Decision Support), the umbrella at the time of the meeting spreads out to 20 countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Estonia, Finland, Germany, Greece, Ireland, Italy, Latvia, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia, Spain and Sweden), which have already created or decided to create an overlap with the EU study. Another 7 countries (Czech Republic, Denmark, France, Hungary, Israel, Slovenia, United Kingdom) expressed their interest to be associated, too. The first results showed positive cases of identification in ca. 50% of the 55 Waste Water Treatment Plants, with elevated observations in samples from 2 countries, in line with the epidemiological developments. The logistic viability of the centralized approach could be proven and data are currently being reported back to the individual operators. A second round is being prepared and will take place End of August/Beginning of September. The initial focus will be mainly on major urban agglomerates.

Several MS took the initiative to monitor for the presence of COVID-19 residues in their wastewaters, e.g. the Netherlands, thus complementing swab test, serology and molecular epidemiology. Other countries pursue the investigation at a feasibility level. In its recent Communication on Preparedness, the European Commission has also included Sewer Surveillance as tool to be explored further and refers

to this Umbrella Initiative. The Communication can be accessed here: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1595246927659&uri=CELEX:52020DC0318>

The findings, which are being produced in this exercise, will directly feed into the policy process coordinated by the European Commission Clearinghouse on COVID19 measures. A final Science-to-Policy report is envisaged for publication by October 2020 and the recommendations and observations of this event and the related Town Halls Meetings will feed into the document.

In order to ensure also the best synergy with the international community, activities under this umbrella are now also coordinated with the WHO (HQ and Regional Office for Europe, <https://www.euro.who.int/en/home>) and UNEP, the UN Environment Program, which convenes the World Water Quality Alliance (WWQA, <https://communities.unep.org/display/WWQA>) with 50+ partners across major groups and stakeholders and with a view on the developing world and the environment/health feedback dynamics.

Observations on analytical methodologies

A great deal of information regarding analytical methodologies is being generated and the number of publications regarding the successful use of sewer surveillance for SARS-CoV-2 monitoring in wastewater and sewers system is growing steadily. Reports in the press are also increasingly appearing thus creating a growing media attention and public awareness of the approach.

The growing attention is certainly positive, however, the translation of research findings into an upscaled and systemic use of sewer surveillance in this context still has to tackle some major challenges, e.g. with regard to the comparability of observed findings and results, many of which stemming from monitoring campaigns addressing different questions or being conducted in different settings, all of which rendering direct comparability of data challenging.

While there is a consensus that untreated wastewater is NOT infectious and contributing to the propagation of COVID-19, it has to be stressed that sewer surveillance is an ADDITIONAL and COMPLEMENTARY source of information useful to understand epidemiological dynamics and processes. The approach CANNOT replace the ongoing surveillance programs and activities targeting directly individuals.

There is consensus that there is a need for establishing a proper framework of documenting the methods as well as guidance on how to compare and integrate data. In this context, inter-laboratory comparisons and related measures are needed urgently. While the development of certified reference material is highly desirable, the organization of intermittent proficiency testing and ring trials are of pivotal importance. To this end, a comparative compilation of data points from the wastewater treatment plants assessed in the second round of umbrella study will be organised considered.

Likewise, a joint exercise should be used to create a common framework to be able to evaluate and combine/integrate the data from different Member States. Rather in focusing on one standardized method, a collectively drafted "Good SARS-CoV-2 sewage surveillance practice" was recommended.

Evidence presented from independent case studies

While sewer assessments certainly are reflecting the presence of the virus in the connected community, evidence was presented that sewage samples also allow a retro-perspective evaluation as shown by ISS during the gathering.

The Portuguese experience again underpinned the viability of the approach but pin-pointed also the aforementioned need for QA/QC Framework, as well as the need to provide a minimum of additional resources to implement and operate a sewer surveillance system. In order to clarify the entailed costs, a cost evaluation should be undertaken more systematically.

The need to better engage into a dialogue with health authorities is emerging from all experiences reported.

The Turkish experience can be seen as one of the major rollouts in the Macro-Region Region. It also shows the benefits of international exchange and collaboration across traditional geographical and disciplinary borders.

The findings of the Belgium case study highlighted some valid observation: Sewer surveillance if run properly can deliver as early-warning system and ensure results less than 12 hours after sample delivery. A major public effort would still be significantly cheaper than for instance the development of tracing apps. Indeed most of the findings presented so far resulted from already allocated funds. Yet, attention must be paid to focus on delivery and to deviate into scientific research and test optimization.

As shown by the French experience there are strong expectation in particular in the metropolitan areas in Europe as well as in countries where individual testing may be lacking. On a long-term basis once established, a sewer-based sentinel system could reveal extremely beneficial for all kind of epidemics, from influenza to future emerging disease, since the untreated sewer contains valuable information on the general health status of the connected population.

From an international perspective, the Australian approach shown in the ColoSSoS Project is of lighthouse character. Since June 10th, indeed, Australia has integrated sewer surveillance for SARS-CoV-2 into its national response actions, thus complimenting the information obtained by swab tests, molecular epidemiology and serology. The country also explores application of the approach in more confined spaces such as cruise ships or aircrafts.

The US State Utah is following the approach of a Sewer Sentinel Sentinel, too and provided a first insight into costs entailed by developing and deploying such a system reaching prices in the range of 220-550 USD per sample, prices mainly depending on distance from the testing lab. This results into cost per inhabitant ranging from 0.005 USD per person in an urban settlement to 0.10 USD per person in a rural situation, clearly underpinning also the economic viability of the approach.

Looking beyond SARS-CoV-2

The possibility of SARS-CoV-2 assessments using wastewater is a new aspect in the nexus between water and health. Evidence showed that the COVID19 crisis puts additional pressure on water resources, e.g. by an increased water consumption for hygiene, an effect particularly visible in situation of water scarcity. Thus, the simple recommendation of handwashing with soap led to a 5%

increase of water demand for households in the Arab region. The crisis further aggravates the already precarious situation with regard to WASH in particular in conditions of extreme poverty or conflicts. Thus, it is estimated that 26 million refugees and internally displaced persons in the Arab region are affected by this.

The Global Waste Water Initiative as part of UNEP Global Programme of Measures tries to address and mitigate these effects, but it is clear that while awareness is raising, the necessary actions and measures are not sufficient to meet the demand.

While much effort is put into the fight against the SARS-CoV-2 pandemic, the COVID19 crisis' aftermath will have an even stronger impact on access to clean water as well as the preservation of water quality of inland water bodies. The already now visible increase in plastic pollution from the disposal of masks and other personal protection devices will further contribute to aggravate the picture.

Sewer Surveillance of SARS-CoV-2 is an important and viable approach to face the challenge. The virus connection to water, however, also reminds us that only in a concerted approach across boundaries of geography, scientific disciplines or political interest, we can manage to overcome what can be called the biggest challenge we have had to face so far in the 21st century.

Next action steps

- Third Town Hall Meeting envisaged for Late September/October
- Further coordination with WHO on Knowledge Transfer
- Set-up of a drafting group on “Best Practice Guidance”
- Envisage strengthening of inter-comparison aspects in Round II of the EU Umbrella Study and seek to organize PT Schemes
- Perform Cost-evaluation for rollouts (NB: an EU Survey has been set-up at this link: https://ec.europa.eu/eusurvey/runner/SARS-CoV-2-SewersSentinels_Cost)
- Create comparative overview on findings obtained on EU Umbrella Study Sites with connected national, regional and local initiatives.
- Pursue discussions with public health experts to understand their data needs (e.g. type, frequency, format) to ensure datasets are developed in a format that is useful and useable to public health teams charged with the rapid identification of local COVID19 outbreaks
- Finalization of feasibility assessment of SARS-CoV-2 Sentinel Systems employing Sewers and presentation of results

Agenda of the Meeting

Part I (CEST Time Zone)

10.30 – 12.10 EU Umbrella Study (Chaired Session by EC)

- 10.30-10:40 **Setting the Scene**
*Trudy HIGGINS (EC) Bernd Manfred GAWLIK (EC),
Oliver Schmoll (WHO)*
- 10:40-10:50 **EU Umbrella Study – Status report and first insights**
Gertjan MEDEMA (KWR), Bernd Manfred GAWLIK (EC)
- 10:50-11:05 **Environmental SARS-COV-2 surveillance in Italy: experience, findings and ongoing national project**
Giuseppina La Rosa, Istituto Superiore di Sanità (ISS)
- 11:05-11:20 **Detection, quantification and modeling of SARS-CoV-2 in wastewater in Portugal - a tool for an early-warning for the dissemination of virus in the community**
Silvia Monteiro, University of Lisbon
- 11:20-11:35 **SARS-CoV-2 in wastewater in England and Wales – data reliability and implications for nationwide surveillance**
Kata Farkas, Luke Hillary, Davey Jones, Bangor University
- 11:35-11:50 **SARS-CoV-2 Surveillance Study for Wastewater and Sludges in all of the 81 cities in Turkey**
Bilge Alpaslan Kocamemi, Marmara University
- 11:45-11:55 **Sewers4Covid – Digital Health Observatory**
Lydia Vamvakieridou-Lyroudia, KWR
- 11:55-12:00 **The Belgium experience – Views from a laboratory**
Jonathan Marescaux, e-biom
- 12:00-12:10 **OBEPINE, an epidemiological observatory in sewer water in France**
Mickaël Boni, Jean-Luc Bailly, Christophe Gantzer, Soisick Le Guyader, Yvon Maday, Vincent Maréchal, Jean-Marie Mouchel, Laurent Moulin, Sorbonne University

Part II (CEST Time Zone)

12:30 – 14.30 UN World Water Quality Alliance (shared session by UNEP/WWQA)

- 12.30-12:35 **The Global Dimension**
Introduction
*Hartwig KREMER (UNEP)
Bernd Gawlik (Chair of the World Water Quality Alliance Strategic Advisory Committee) (5 Min)*
- 12:35-12:45 **Health and Environment**
UNEP perspective of health
Maria Cristina Zucca (UNEP) (10 Mins)
- 12.45-13:25 **Use Cases: Hands-on experiences**

An update from the Water Research Australia National ColoSSoS project: best practice principles for communication and data integration

Kelly Hill (20 min)

Use of Wastewater Surveillance in the Coordinated Response to COVID-19 in Utah, USA

Erica Brown Gaddis, UDEQ (15 min)

The EU Umbrella Study exploring a sewer sentinel system for SARS-CoV-2 (Summary from morning session)

Bernd Manfred Gawlik, European Commission (5 min)

13:25-14:10

Looking beyond

View of the GPA with regards to wastewater management

Birguy Lamizana (UNEP, 10 min)

Nexus between water, human and environmental health: Making case for a Pan-Africa Water and Waste Water Management Policy

Moshood Tijani, AMCOW (10 min)

Challenges and Opportunities to Aquifer Development and Management in the Time of Covid-19: A Case Study of the South African Cape Flats Aquifer and its Location in a Rapidly Expanding Coastal Informal Urban Area.

Rowena Hay, UMVOTO Cape Town (10 min)

UNESCWA's member states: Sanitation sector in the Arab region: challenges and opportunities

Ziad Khayat, UNESCWA (10 Mins)

14:10 – 14:30

Next actions

(ALL)