



CONCLUSIONS

SARS-CoV-2 Monitoring employing Sewers

A Virtual Town Hall Gathering

08 June 2020



Joint
Research
Centre

SARS-CoV-2 Monitoring employing Sewers

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Event Summary

On June 8th, 2020 the virtual event took place on the WEBEX Site of the European Commission. It was co-organized between the Directorate-Generals JRC and ENV. Water Europe, EurEau, SUEZ as well as individual researchers from CEDEX, KWR, NIREAS and UfZ participated in its organization actively and supported the event. It started at 10:30 and lasted 3h. A total of 175 attendees participated in the event, which was recorded. The presentations and videos shown as well as the recorded Town Hall can be accessed following this link:

<https://jrcbox.jrc.ec.europa.eu/index.php/s/fgg5hNziYER1Tgv> (password SARS-CoV-2)

The material is made available until the 3rd of July, 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

The event allowed for an animated discussion using the WEBEX chat function. A series of topics requiring a priority follow up emerged and are summarized hereafter.

Inclusiveness and Openness

Numerous international, national, regional and local activities are happening in parallel and the EU Umbrella Initiative relies on their inclusion and collaboration in the exploring the feasibility of an Early Warning or Monitoring System for SARS-CoV-2 employing sewers. Each of the study pursuits specific questions and follows different designs and approaches, all of which are per se equal and should be part of this initiative. While this requires a great deal of proactive openness, data confidentiality but also personal data rights are to be ensured and protected.

Analytical Methodologies including sampling

Sampling

While the protocol developed and deployed by KWR (Medema *et al.*) emerges as de facto reference, great differences in sampling time, selection of sampling points and time-integration exist. Also intermediate storage conditions such as temperatures are a source of difference. While 24 composite samples emerge as frequently used approach, more targeted sampling considering the morning routines which in return are reflected in higher concentrations of genetic material from SARS-CoV-2 could greatly enhance detection limits. Similar consideration is to be given with regard to the frequency of sampling (daily, weekly or anything in between). The typology of sewer systems (combined or separated systems for rainwater), make a given approach also more vulnerable with regard to rain or other meteorological conditions.

Analytical Methodology

The time allocated for this topic was not sufficient, but the need to exchange and compare critically methodologies, use of additives, influence of coagulants or protocols used to concentrate the genetic material emerged as issues of priority and concern. The need to quickly exchange methods, e.g. using a platform such as <https://www.protocols.io> was seen as paramount. Other platforms exist, too, but were not discussed explicitly.

QA/QC

The recently launched Reference Material for positive control of SARS-CoV-2 /COVID-19 (EURM-019 - <https://crm.jrc.ec.europa.eu/s/20/Weblog/b/389/The-JRC-released-EURM-019-a-universal-control-material-for-coronavirus-SARS-CoV-2-testing>) is used by many laboratories.

The same applies for deactivated virus material, e.g. from NIB (https://www.nibsc.org/products/brm_product_catalogue/detail_page.aspx?catid=19/304), also shortly mentioned in the meeting.

Many participants asked for the organization of targeted laboratory intercomparison exercises. The opportunity to collaborative field trials was also mentioned by some and the EU Umbrella Initiative will investigate to organize these. Other measures such as sequencing, were mentioned briefly in the chat.

Surrogates and additional parameters

The COVID-19 disease goes along with an increased use of certain pharmaceuticals for its treatment. At this stage, it remains unclear if and to which extend residues of such pharmaceuticals' active ingredients can be used as additional tracer, but few groups reported about ongoing investigations.

It appears also that the proper interpretation of the RNA material would be facilitated by the collection of additional information such as generic parameters characterizing the influent as well as further microbiological indicators. This needs to be documented better. Data reporting templates are currently being developed by some groups and further harmonization of them is seen as beneficial.

Interaction with health services and e pidemiologists

This is certainly of pivotal importance, both, for the critical review of observed findings, but also for the use of such information. The correlation and significance of correlation between the current epidemiological situation in a population and the concentration of RNA Material in sewage is likely to exist, but need to be understood better. This requires an unprecedented dialogue between water utilities, investigating laboratories and local/national health services. Here the Commission can be an important facilitator.

Data hosting and Decision support

The so-called Pillar III of the EU Umbrella Initiative seeks to transform collect data into knowledge and subsequently, recommendations for actions. The EU Hackathoners from SEWERS4Covid gave an impressive presentation of the possibilities stemming from data sharing and use of machine-learning features. It is clear that this process needs to be speeded up and embedded into existing structures such as the European Centre for Disease Control or the Urban Data Platform.

Knowledge Transfer and International exchange

Presentations from UNEP's World Water Quality Alliance, as well as from the Union for the Mediterranean highlighted the URGENT need to share and transfer the collect know-how and knowledge as quickly as possible to realities outside the EU. Whereas in the EU such a sewer-based monitoring system can be seen only as "additional" information, it may be the only information system in other realities. This needs to be developed further.

Next steps and meetings

Following the expressed need of further in-depth exchanges and knowledge brokerage a series of further events are proposed. Interested party, who would like to co-organise these events are kindly asked to express their interested using this functional mailbox: JRC-WATERLAB@ec.europa.eu.

Here the list of envisaged events and tentative dates:

- *SARS-CoV-2 in Sewers - WARP Event I: Sampling and Measurement Protocols* (tentatively June 2020, to be confirmed)
- *SARS-CoV-2 in Sewers - WARP Event II: Engagement with health services and epidemiologists* (tentatively June 2020, to be confirmed)
- *SARS-CoV-2 in Sewers - WARP Event III: From Data to Knowledge and Action* (tentatively June 2020, to be confirmed).
- *SARS-CoV-2 in Sewers – 2nd Town Hall Meeting: Data, Facts and Results* (Tentative date Jul 6 in function of WARP 1-3)

In parallel joint events on knowledge transfer are being prepared:

- under the umbrella of the World Water Quality Alliance with UNEP/WHO (date to be communicated) and
- the Union for the Mediterranean, jointly with the Institut Méditerranéen d'Eau (IME) (date to be communicated).