



COVID-19 SUPPORT

COVID-19 Wastewater Detection and Surveillance

KEEPING CITIES AND FACILITIES SAFE DURING THIS PANDEMIC
Wastewater surveillance can protect your community or facility from potentially emergent Coronavirus outbreaks.

As COVID-19 infections persist, communities, businesses and institutions are increasingly turning to wastewater sampling and surveillance as a proven technique for getting ahead of outbreaks.

GET AHEAD OF OUTBREAKS

Sampling and analyzing wastewater directly from sewers provides an early warning detection system for SARS-CoV-2 infections within a workforce or population. Assessing the virus' presence in wastewater can identify whether asymptomatic or presymptomatic individuals are transmitting infections within a facility, city or region before a COVID-19 outbreak is discovered. Using wastewater to determine the virus' presence has been proven to assess infection levels within a community well before cases are reported. Our data typically warns of the virus' presence 6 to 14 days in advance.

Having advance notice of the virus' presence, and prevalence, in a given community or site allows stakeholders to act early and proactively put into place the appropriate precautions needed to prevent any further spread or infection. Depending on the data, it can also help inform reopening plans.

BLENDING ENGINEERING AND EPIDEMIOLOGY

Wastewater sampling may sound straightforward, but detecting virus levels in wastewater is a multi-faceted process that requires deep asset knowledge, technical expertise and

detailed safety precautions, as well as a network of partners who can accelerate and validate analysis.

Our engineers and scientists use their knowledge of wastewater collection systems, local challenges and water flows, storm events, access points and more to determine the best, and most representative locations in a system to collect samples. They then work closely with analytical and epidemiological experts to ensure the samples are processed quickly and interpreted accurately.

PROTECTING COMMUNITIES

Equipped with information about virus presence in a neighborhood, region, campus or specific facility, decision-makers can act quickly to protect human health and safety. Because the virus sheds in wastewater before people are symptomatic, wastewater detection and surveillance can identify and monitor hotspots. What's more, this high-level approach provides detail about community spread, while respecting individual's anonymity and without relying on limited testing resources.

GLOBAL EXPERTISE AND WORLD-CLASS TECHNICAL PARTNERS

Arcadis' engineers and scientists around the world are using their understanding of this technology, including ever-evolving best practices and real-world experience to continue delivering this essential service to communities.

OUR EXPERTISE

Wastewater surveillance involves complex technical knowledge and expertise.

- **Planning and Meta Data Consideration**
Selecting the right sampling locations and complementary meta data based on population, collection system configuration, and the activities in the collection area.
- **Sampling**
Following procedures that assure the right environmental conditions and timing, using the right data management.
- **Quality Assurance**
Careful consideration of the analytical methods, important given the lack of standardization.
- **Analytical Insights**
Epidemiological expertise to properly normalize, interpret, and evaluate the results and resolve them into trends and indicators. This includes the use of intelligent dashboards.
- **End to End Program Management**
The ability to manage the entire program or train our client's staff to take on parts of the work – we can tailor to the need.

We have real experience at meaningful scale:

- [Arcadis New York State Pilot Announcement](#)
- [Arcadis and partners Syracuse project](#)
- [ASCE Interview: Detecting evidence of COVID in wastewater](#)
- [Global expertise - Arcadis UK](#)

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SAMPLING PLANS AND SAMPLING

Arcadis develops detailed sampling plans that consider health and safety, quality control, sampling locations and frequencies, collection techniques, implementation of composite sampling equipment, techniques for manually compositing samples, protocols for sample preservation, chain of custody completion, and transportation requirements. Sampling plans include guidance on the use of complementary analytical data that supports refinement of the analytical techniques developed, including but not limited to wastewater flow, temperature, pH, and publicly available meteorological data. Sampling plans are developed for each community or site and provide frequency detail as well.

After preparing a detailed sampling plan, Arcadis is also fully equipped to collect wastewater surveillance samples in accordance with the approved plans.

QUALITY ASSURANCE AND CONTROL

Arcadis develops Quality Assurance Project Plans (QAPP) prior to initiating sampling efforts. These include information on project organization, sampling plan protocols, guidelines for QA/QC, requisite documentation, data management, and data validation. As part of QA/QC, the team will perform testing meant to evaluate various sampling techniques and the reproducibility, accuracy, and precision of the analytical method. This information is critical to gauge the utility of the method and to develop robust procedures for future widespread deployment.

DATA COLLECTION

In addition to the physical sampling, Arcadis will also work with all pertinent local organizations and stakeholders to collect necessary reference data. This can include, but is not limited to: available collection system GIS files, GIS parcel map data, and other available metadata to assist in the development of an effective sampling plan; existing hydraulic/flow models; flow measurement devices; sample results for other SARS-CoV-2 monitoring efforts, and; other pertinent information to conduct virus monitoring.

LABORATORY ANALYSIS AND EPIDEMIOLOGICAL MODELING

COVID-19 wastewater surveillance and detection is a detailed process, requiring not just engineering expertise, but also highly-qualified epidemiological experts and fully-equipped laboratories. Arcadis has proven experience working closely with our network of partners to bring the best, brightest and fastest subcontractors into the mix.

CONSULTING

With global resources and local knowledge, Arcadis works closely with our client to deconstruct their challenges and then build innovative, resilient solutions for the long-term. Our consultants and experts are familiar with the latest and greatest techniques and technologies, as well as problem-solving methodologies, to create wastewater monitoring and testing solutions that fit your specific needs.

PROJECT/PROGRAM MANAGEMENT

Arcadis is a full-service project management consultant with end-to-end capabilities in task, project, program, and construction management. Our resources, located throughout the world, are well-qualified in all facets of design and construction and are ready to begin supporting your health and safety protection efforts immediately. Our team can manage site data, be an owner rep, control site-adapted standard design implementation, track costs and schedules, coordinate contractors and equipment procurement, supervise on-site work (and/or act as a general contractor as appropriate), and communicate clearly with all stakeholders.

Globally
27,000+
Employees

World Leader

in consulting and business continuity efforts

7 days

Advanced notice of case increases

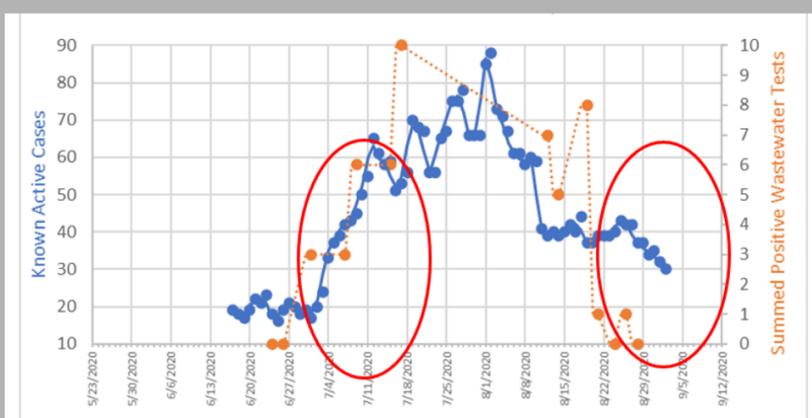


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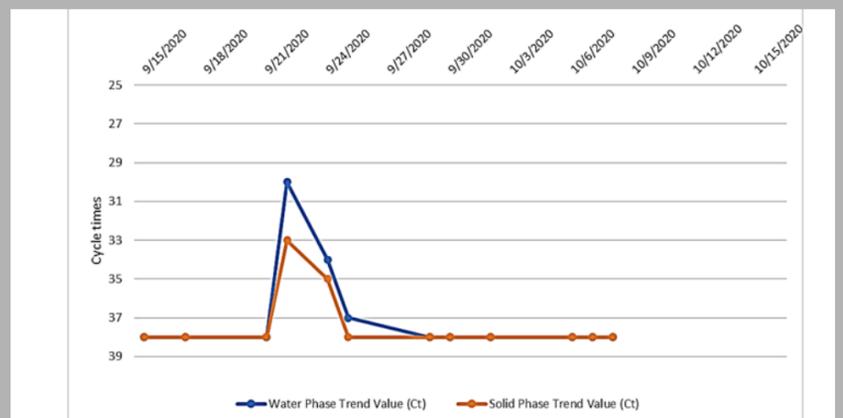
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Municipal Effluent Monitoring Data



Private Sector Effluent Monitoring Data



Summed positive WW tests for SARS-CoV-2



Known active cases