WASTEWATER SURVEILLANCE OF SARS-COV-2: RESOURCE LIST

Factsheets, websites, Slack, and listserv
The following resources include factsheets on the presence of SARS-CoV-2 in water and wastewater and on wastewater surveillance. The list also includes an active Slack channel discussing various topics related to SARS-CoV-2, and a listserv of relevant information on SARS-CoV-2 in wastewater.

- University of Arizona: Gerrity et al., 2020 – Updated April 6, 2020
- NYS WRI: Sayess et al., 2020 – Updated October 3, 2020
- NYS WRI: Hychka et al., 2020 – September 25, 2020
- Slack Channel: 2019-n covwbe.slack.com
- University of Rochester listserv: https://lists.rochester.edu/scripts/wa.exe?OK=9A0130D1&L=UNIV-WWS-COVID

SARS-CoV-2 testing
The following resources are technical protocols on the materials and methods (i.e., methodology) to detect and measure SARS-CoV-2 in water and wastewater samples. Most of these resources are articles that have been published in peer-reviewed journals, with some that are still in pre-print (i.e., they have not been peer-reviewed yet).

1) In sewage:
   - Ahmed et al., 2020 (similarly, Sherchan et al., 2020)
   - La Rosa et al., 2020
   - Randazzo et al., 2020
   - Rimoldi et al., 2020
   - Wu et al., 2020
   - Medema et al., 2020
   - Nemudryi et al., 2020
   - Kumar et al., 2020
   - Haramoto et al., 2020

2) In river water:
   - Rimoldi et al., 2020
   - Guerrero-Latorre et al., 2020 (river impacted by sewage)
   - Haramoto et al., 2020

3) In primary sludge and solids:
   - Peccia et al., 2020
     - Sampling: Research Protocol: SARS-CoV-2 RNA wastewater sampling: primary sludge
     - RNA Extraction: Research Protocol: SARS-CoV-2 RNA extraction from sewage sludge
     - qRT-PCR: Research Protocol: SARS-COV-2 qRT-PCR
   - D’Aoust et al., 2020 (preprint)

* Noteworthy: Designing and utilizing homemade wastewater samplers: Syracuse University and Arcadis: Kilaru et al., 2020 (preprint)
Webinars
The following is a select list of prior and upcoming webinars on the topics of SARS-CoV-2 in water and wastewater and on wastewater surveillance.

- National Institute of Standards and Technology: Measuring SARS-CoV-2 in Wastewater and Fecal Material: A Call for Standards - June 16, 2020
- Syracuse University-EFC, NYWEA, Cornell University, SUNY ESF, NYS WRI:
  - Wastewater Coronavirus Surveillance Systems: Advancing Research and Municipal Coordination Part I - June 23, 2020
  - Wastewater Coronavirus Surveillance Systems: Advancing Research and Municipal Coordination Part II – Upcoming October 28, 2020
- Genome webinar: COVID-19 Wastewater-Based Epidemiology: Methods and Insights for SARS-CoV-2 Community Surveillance – August 18, 2020
- California Water Environment Association (CWEA) - COVID-19 Wastewater Surveillance – August 27, 2020
- Center for Disease Control and Prevention (CDC) and American College Health Association (ACHA): ACHA COVID-19 “Ask the Expert” Series: Wastewater Surveillance – September 25, 2020
- Sea Grant: Potential Presence of and Risks from COVID-19 in Water – September 29, 2020

Funding Opportunities
The following resources are federal and NYS-specific programs that may be available (or have been available) for different state, local, tribal, and other entities to apply to for various aspects of wastewater surveillance.

- **CARES Act**
  - Provides for payments to State, Local, and Tribal governments navigating the impact of the COVID-19 outbreak

- **Paycheck Protection Program and Health Care Enhancement Act:**
  - This law included $11 billion in resources specifically for States and Localities for testing activities that include surveillance.

- **National Wastewater Surveillance System (NWSS)**
  Each entity receiving funds must submit a plan to HHS for COVID-19 testing for the remainder of calendar year 2020. According to the CDC release, these plans should include:
    - Number of tests needed, month-by-month to include diagnostic, serological, and other tests, as appropriate
    - Month-by-month estimates of laboratory and testing capacity, including related to workforce, equipment and supplies, and available tests
    - Description of how the resources will be used for testing, including easing any COVID-19 community mitigation policies

- Wastewater surveillance pilot program: [NYS announces $500,000 for pilot program to test for the virus in wastewater systems as “early warning indicators” to detect COVID-19 spread](#)
  - Expand initial wastewater sampling undertaken in Onondaga County
  - Start sample collection in Albany, Newburgh, and Buffalo
Decision-Making Diagram

The following decision-making diagram is designed to highlight the different elements and the extent of a successful wastewater surveillance program. The diagram can be used as a planning tool to stakeholders involved in wastewater surveillance efforts.
COVID-19 Tracking Websites
The following websites include notable dashboards on SARS-CoV-2 infections (current and previous) from across the world and from NYS. A comprehensive COVID-19 dashboard on wastewater monitoring in Ohio is also attached at the bottom.

Global dashboards:
- WHO: https://covid19.who.int/
- Johns Hopkins: https://coronavirus.jhu.edu/map.html

New York State dashboards:
- Regional Dashboard: https://forward.ny.gov/covid-19-regional-metrics-dashboard
- Association of Counties: https://www.nysac.org/covidmap
- SUNY Schools: https://www.suny.edu/covid19-tracker/
- Cornell University: https://covid.cornell.edu/testing/dashboard/
- Syracuse University: https://www.syracuse.edu/covid-dashboard/

*Noteworthy: Ohio Coronavirus Wastewater Monitoring Network – Updated almost daily

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