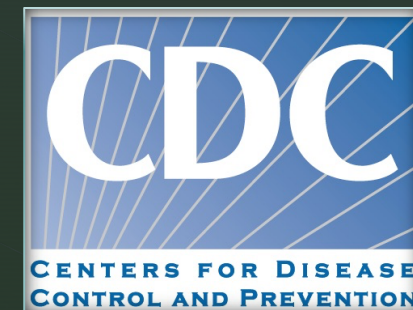


ARWSWG

Alaska Rural Water and Sanitation Working Group



Introductory Remarks: Dr. Cheryl Rosa, USARC

***Tracing the Pandemic
Through Wastewater:
Using Sewage Monitoring
to Investigate Infectious
Disease***



Welcome!



Housekeeping

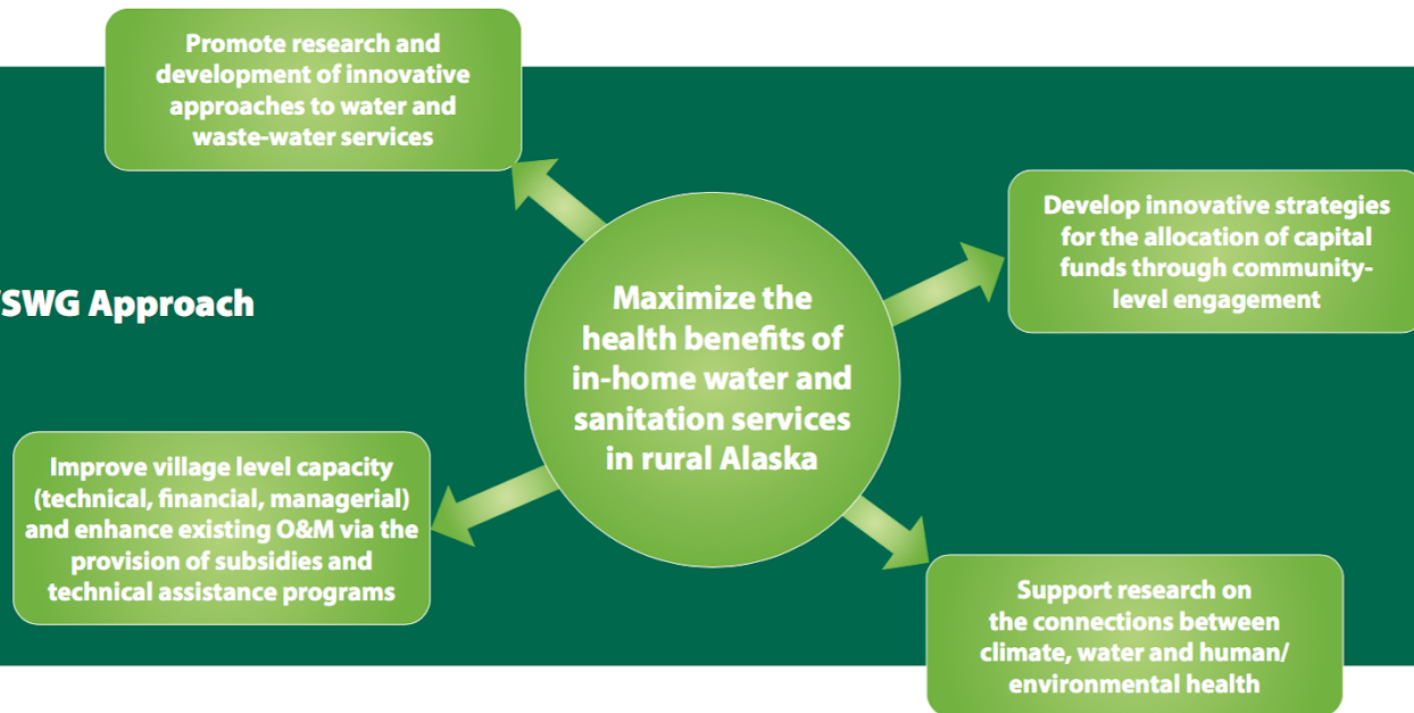
- The conference is being recorded and will be accessible via the workshop website ~1-2 days after we adjourn on Wednesday.
- This workshop consists of two days of content, each from 8:30am-noon AK time. The first day will focus broadly, with the second more Alaska/Arctic-specific.
 - Today's speaker sessions will have 30-minute discussions **after** the presentations. Questions will be held until the end of the session.
- Chat/raised hands. If you have a question, please ask it in the Q&A box whenever you like. We will be moderating questions so they can be asked during the Q&A.
- There will be a survey that will ask you for input on water and sanitation research at the end of tomorrow's sessions. Please answer it! It helps us 😊
- Any issues? Please contact rescoord@arctic.gov and we will get them taken care of!

ARWSWG

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2016–2017 ARWSWG Approach



Sewage testing shows a country flush with coronavirus cases



By Maggie Fox, CNN

Updated 11:11 PM ET, Wed October 28, 2020



An aerial view of the East Bay Municipal Utility District Wastewater Treatment Plant on coronavirus surveillance efforts once the EPA completes its new research pilot project

Photographer: Justin Sullivan/Getty Images

Sewage Could Become Next Virus Surveillance Method, EPA Says

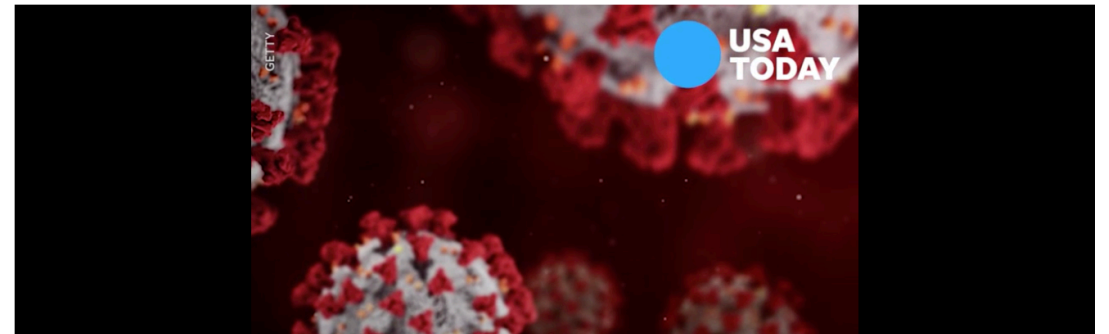
May 27, 2020, 11:46 AM

NEWS

Sewage testing for COVID-19 to expand statewide as mutant variants emerge

Tracy Loew Salem Statesman Journal

Published 4:18 p.m. PT Jan. 29, 2021



Definitions

- **Wastewater**, also referred to as **sewage**, includes water from household/building use (such as toilets, showers, and sinks) that can contain human fecal waste, as well as water from non-household sources (including rainwater runoff and industrial use).
- **Wastewater surveillance** is the strategic sampling and testing of wastewater and analysis and interpretation of the collected data (such as presence or concentration of pathogens, physical-chemical measures) to better understand disease within a community.
- **Centralized** (or sewer) **wastewater systems** transport wastewater through a piped network to a central waste treatment facility and often serve urban communities.
- **Decentralized** **wastewater systems**, like pit latrines or septic tanks, collect, treat, and/or dispose of wastewater close to the point of generation and often serve smaller communities or individual households.

- **Low-resource waste systems** are ineffective centralized systems (e.g., systems with substantially decaying infrastructure) or wastewater-impacted environmental waters. These systems have unknown fecal inputs and losses and are open to environmental processes that unpredictably impact the persistence of SARS-CoV-2 RNA throughout the system, including sunlight, predation from other microorganisms, and variable pH and temperature.

Why do wastewater surveillance?

- Wastewater surveillance for SARS-CoV-2 is a useful supplement to case surveillance because it provides data on COVID-19 presence within a community that is independent of healthcare-seeking behavior or access and potentially **in advance** of clinically reported cases. For these reasons, wastewater surveillance for SARS-CoV-2 in low-resource waste systems could provide a critical supplementary data source, particularly in communities without clinical surveillance resources.

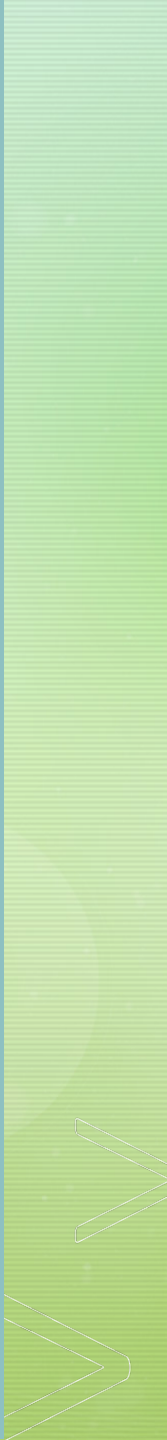


Alaskan disparity: disproportionate impact in AI/AN communities

- COVID-19 incidence is higher among American Indians/Alaska Natives (AI/ANs) than among non-Hispanic Whites. In 2009, AI/ANs experienced disproportionately high pandemic influenza A(H1N1)–associated mortality.
- COVID-19–associated mortality among AI/ANs was 1.8 times that among non-Hispanic Whites. Among AI/ANs, mortality was higher among men than among women, and the disparity in mortality compared with non-Hispanic Whites was highest among persons aged 20–49 years.



A multi-stage effort

- Characterize and sample a given place/community (Alaska has many dissimilar options!)
 - Develop and apply an analytical approach
 - Connect the dots: determine what data is possible to interpret for each given community/wastewater system
 - Translate this information into public health information and decisions that help people live healthier lives
- 



Public health possibilities?

- Alaska and other Arctic regions present unique challenges with respect to wastewater epidemiology, many of which will be discussed over the next two days.
- It is unlikely that the array of uses expected in a high-resource waste system will be possible for rural villages, but there is still utility.
- There are also many sociocultural aspects to testing and public health messaging that must be considered.
- Ultimately, we plan to discuss the range of possibilities over the next two days in hopes of encouraging progress in this area of research.

Workshop Objectives



Provide an overview of the current state of the science of Wastewater Epidemiology, both globally and nationally



Determine the need for and current/potential uses of Wastewater Epidemiology in Alaska, with special focus on rural, cold climate communities



Discuss testing goals and potential sampling approaches for Alaska's unique and varied remote communities



Examine the ethics and public engagement sensitivities related to these activities