Centers for Disease Control and Prevention

Respiratory Viruses

Using Wastewater Data to Inform Public Health Action

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CDC is posting updates on respiratory viruses every week; for the latest information, please visit CDC Respiratory Virus Updates.

Wastewater: A Viral Detective

Wastewater monitoring is like having a viral detective in your community, looking for some viruses (like SARS-CoV-2, the virus that causes COVID-19) that are spreading among people. Are sneaky infections spreading throughout your community? Wastewater monitoring may be able to detect them. Unlike other types of public health reporting, wastewater monitoring does not depend on people having access to healthcare, visiting a doctor when sick, or availability of testing for people who are sick.

What's New with Wastewater Data?

CDC launched a new data dashboard that makes it easier to interpret and use wastewater data from CDC's National Wastewater Surveillance System (NWSS). It's now possible to see COVID-19 trends through wastewater (and see where virus levels in wastewater are now compared to where they've been). You can also see what's going on now in your area compared to the rest of the United States. If you spot increased levels of the virus that causes COVID-19 in wastewater in your area, it indicates that people may be more likely to get an infection.

Map of Current Viral Activity Levels of SARS-COV-2 in Wastewater
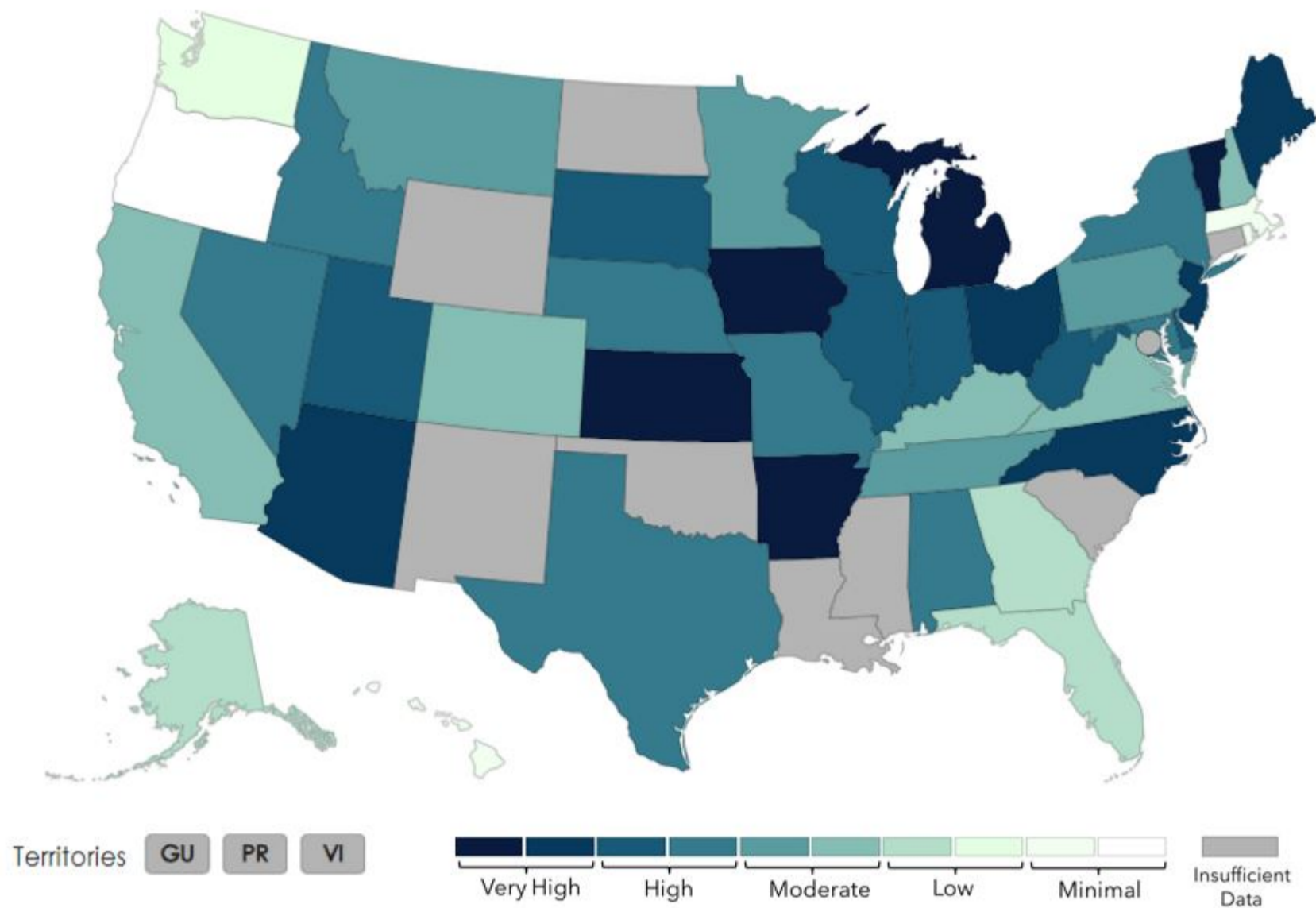
The Science Behind Wastewater Monitoring

Wastewater monitoring works by looking for viral markers in sewage, which includes human waste flushed down the toilet and anything that goes down your sink or shower drain. This involves collecting samples from wastewater treatment plants and testing them for genetic material that can identify the virus (pieces of viral RNA). Wastewater testing data from a single treatment plant can provide information on community-level disease trends for hundreds, thousands, even millions of people, making wastewater monitoring very efficient!

Why Wastewater is Not Just a Drop in the Ocean

The significance of wastewater monitoring lies in its ability to provide an early warning of increased levels of COVID-19 in a community. This makes it a valuable tool for public health officials in making informed and timely decisions about COVID-19 disease prevention and control measures.

A report released last week showed how four National Wastewater Surveillance System (NWSS) Centers of Excellence used wastewater monitoring data to advance public health and response in their communities for multiple respiratory illnesses, including COVID-19, flu, respiratory syncytial virus (RSV), and enterovirus.

For example, in Wisconsin, wastewater monitoring data detected increases in flu and RSV weeks before increases in related emergency department visits were observed. This type of early detection information from wastewater is very valuable, and the NWSS Centers of Excellence used these data to guide local public health decisions. These decisions included better deployment of vaccination clinics, sending respiratory disease notifications and alerts, and supporting public health recommendations (for example, vaccines and masking) to protect community health.

Additionally, wastewater monitoring can provide information on the variants of the virus that causes COVID-19 that are present in a community. When new variants arise, wastewater monitoring can provide an early warning that these variants may be spreading in communities.

Beyond COVID-19

Wastewater monitoring is an important tool for early detection of increased virus spread in a community, and together with clinical data, can provide a more complete picture of infectious disease spread in your community. As CDC keeps upgrading and expanding wastewater monitoring, it's not stopping at COVID-19. NWSS is displaying data on mpox and will soon display data for other pathogens. Wastewater monitoring may also be adaptable to detect the next emerging public health threat. You'll likely be hearing a lot more about wastewater data, as it is playing a crucial role in understanding the spread of some infectious diseases like COVID-19 and mpox and may play a role as we prepare for future public health threats.

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