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**Last update:** 6/10/24

## **Frequently Asked Questions (FAQs): Wastewater Surveillance for Influenza A Viruses**

These FAQs address the evolving situation around wastewater surveillance for influenza A specifically. For general information about wastewater surveillance and the role it plays in infectious disease surveillance in California, please see the [CDPH Wastewater Surveillance Toolkit](#), which includes FAQs and additional resources.

### **What is Wastewater Surveillance?**

Wastewater surveillance, also known as Wastewater-Based Epidemiology (WBE), is a public health tool that can test for fragments (e.g., RNA, DNA) of infectious pathogens (e.g., viruses, bacteria, etc.) in untreated wastewater samples. Samples for wastewater surveillance are generally collected as the wastewater enters a wastewater treatment plant (WWTP) before it begins the treatment process in which microbes, contaminants, and debris are removed from the wastewater. Testing these samples can provide additional understanding about the presence of viruses and other infectious diseases within a community to supplement other sources of public health surveillance.

As an example, people infected with SARS-CoV-2, the virus that causes Coronavirus disease 2019 (COVID-19), can shed the virus in feces for several days. Those viral fragments get flushed down the toilet and mix with sewage from the entire community. By taking a single small sample of wastewater at the WWTP and looking for how much viral material is in it, wastewater surveillance can quickly provide information about how much SARS-CoV-2 is impacting the entire community. This type of surveillance tool can provide useful information even as people change their testing habits over time and can sometimes provide early warning of increased disease activity.

### **Is California conducting wastewater surveillance for influenza?**

Yes. Wastewater surveillance for select infectious pathogens (including influenza A and influenza B) is currently being conducted in California through a network of several programs and partners, including the California Department of Public Health (CDPH) state testing lab (the Drinking Water and Radiation Laboratory (DWRL), and partners in the California Surveillance of Wastewaters (CalSuWers) Network, which include WastewaterSCAN (an academic program led by researchers from Stanford University and Emory University), and sites enrolled in a Centers for Disease Control and



Prevention (CDC) National Wastewater Surveillance System contract (using Verily Life Sciences laboratory as contractor).

For more information about CalSuWers, please see [California Wastewater Surveillance Network FAQs](#).

For more information about WastewaterSCAN, please see [WastewaterSCAN's FAQs](#) and [About Us webpage](#).

### **How long has influenza been monitored via wastewater surveillance in California?**

Wastewater surveillance for influenza in California began in January 2022 through the WastewaterSCAN program to supplement other public health surveillance systems for human influenza. Following the successful use of wastewater for the surveillance of SARS-CoV-2 during the COVID-19 pandemic, wastewater surveillance was expanded to include other infectious pathogens (including influenza, mpox, and norovirus) of public health importance in California. The WastewaterSCAN program currently tests wastewater for Influenza A and B at 190 sites across the U.S., including 59 sites in California. Together with wastewater testing performed by CDPH DWRL and CDC NWSS, influenza monitoring now occurs at over 100 sites in California.

Wastewater influenza A data from all sites participating in CDPH's Cal-SuWers program, including WastewaterSCAN, are available through the [CDC NWSS program influenza A dashboard](#). WWSKAN program data are also available through the WastewaterScan [dashboard](#). CDPH also maintains an internal dashboard including influenza A data that is available to all participating sites; please email [wws@cdph.ca.gov](mailto:wws@cdph.ca.gov) for access if needed.

### **What does influenza monitoring in Wastewater in California tell us about this current flu season?**

While seasonal influenza viruses are detected year-round in the United States, they are detected in greater numbers and concentration during the influenza season, which generally occurs during fall and winter. The exact timing and duration of influenza seasons varies, but activity often begins to increase in October and peaks between December and February.

The most recent influenza respiratory season (winter 2023/2024) demonstrated a typical seasonal pattern, peaking in early January 2024. Influenza activity has decreased since then, though there remains continued influenza activity, which can be a normal and expected pattern.

As of mid-March/April 2024, there have been increases in influenza A concentrations in wastewater at some sites across the country, including a few sites in California. Thus far, in California, most of these increases have been relatively small and/or short-lived.

Two recent studies indicated that at least some sewersheds with increases in influenza A concentrations in the spring of 2024 had detectable concentrations of H5 in the wastewater. One published study detected H5 in 5 of 6 monitored sites (Wolfe et al., 2024; <https://doi.org/10.1021/acs.estlett.4c00331>). The other study detected H5 in 19 of 23 monitored sites (Tisza et al., 2024; preprint: <https://doi.org/10.1101/2024.05.10.24307179>). Neither of these studies were able to differentiate between animal or human sources of H5 in the wastewater.

### **What is the reason for the increases in influenza A concentrations in wastewater at several national sites and in some California sites since March 2024?**

This is an area of active investigation, and the reasons may vary at different sites due to different localized reasons.

Localized patterns of fluctuating human seasonal influenza activity (influenza H3 and H1 viruses) may be contributing to increased wastewater concentrations of influenza A. However, H5N1 influenza A viruses may also contribute to increased wastewater concentrations of influenza A. H5 testing in wastewater cannot differentiate whether the source is animal or human at this time. Potential animal sources include:

- Animal products from infected animals (e.g., dairy cattle), entering the wastewater stream via dairy processing plants or other industrial, commercial, retail handlers (or less likely, residential consumers)
- Waste from infected wild birds or other animals, especially if sewage systems are 'combined' (see below)

Most wastewater sewage systems in California are considered 'closed,' meaning they do not allow significant intrusion of rainfall into the wastewater stream. However, some systems are considered 'combined,' meaning they can allow rainfall (and other surface contaminants including animal waste) to mix in with normal wastewater streams.

CDC advises that jurisdictions with high levels of influenza A virus to continue to review wastewater data in combination with other human influenza surveillance system data (e.g., influenza-like illness, or ILI, or the National Respiratory and Enteric Virus Surveillance System, or NREVSS) and collaborate with partners to better understand factors contributing to increases such as animal sources located in individual sewer systems (e.g., livestock, wild birds, or waste from a milk processing).

### **What do human influenza surveillance data show in California?**

Human laboratory surveillance data do not indicate a significant or unexpected increase in human influenza activity (including since March 2024). Similar to wastewater surveillance data, human laboratory surveillance data show that the most recent influenza respiratory season (winter 2023/2024) demonstrated a typical seasonal pattern and peaked in early January 2024. Influenza activity has decreased since then, though there remains continued influenza activity, which can be a normal and expected

pattern. There have not been any human influenza A (H5N1) infections in California to date.

For more information concerning human influenza surveillance in California, please see [CDPH Influenza Surveillance Program Historic Influenza and Other Respiratory Disease Surveillance Reports](#).

### **Is influenza A (H5N1) virus currently being monitored via wastewater surveillance in California?**

CDPH is working with WastewaterSCAN as well as directly with Verily Life Sciences laboratory on testing for H5 (an indicator of influenza A (H5N1)).

WastewaterSCAN began prospective testing with their H5 specific influenza assay at all WastewaterSCAN sites across the country, including in 58 sites across California, in mid-May 2024. CDPH has also contracted with Verily Life Sciences to conduct H5 testing at 7 sites in California in late May 2024.

The first positive H5 wastewater detection for any site will be communicated by the CDPH wastewater surveillance team directly to the involved local health department and wastewater utility. CDPH will be available for support and is developing recommendations for local health departments if there are positive H5 detections in wastewater. CDC is working on a checklist document for health jurisdiction to follow up increases in influenza A wastewater concentrations or H5 detections.

All wastewater influenza A and H5 data from sites participating in the WWSCAN program are available through the WastewaterScan [dashboard](#); please see the WastewaterSCAN dashboard directly for a list of participating sites as this will change over time. Currently CDPH H5 data from contracted sites are only available via a summary report that is routinely sent out to all participating stakeholders. H5 specific data will be included on an internal dashboard in the future. Please email [Wastewatersurveillance@cdph.ca.gov](mailto:Wastewatersurveillance@cdph.ca.gov) to receive summary reports or for access to the internal dashboard if needed.

### **If wastewater testing detects influenza A H5 at one or more sites in California, does that mean there are human influenza (H5N1) infections of in California?**

This is an area of active investigation, and the reasons for a positive H5 detection may vary at different sites due to different reasons.

While it is possible that a wastewater influenza A H5 detection is due to human influenza A (H5N1) infections, there are other potential, more likely causes for positive detections in wastewater. These include detections of H5N1 viral fragments contained in animal products and wastes that enter the sewage system. Wastewater collected and

tested at a treatment plant comes from a variety of sources, including sewage from industries such as dairy processing plants, commercial and retail businesses, as well as from residential housing. In addition, some sewer systems are combined systems, receiving runoff diverted from rainfall and city streets as well, so animal waste from streets could be washed into the wastewater stream.

The convergence of sewage from multiple sources at wastewater treatment plants means that material tested for wastewater surveillance may include animal sources. If influenza A H5 is detected via wastewater surveillance in California, additional investigation may be warranted.

### **How will wastewater surveillance help CDPH monitor or better understand potential human influenza A (H5N1) infections in California?**

To date, there have been no reported human cases or human detections of influenza A (H5N1) in California. The main goal of wastewater surveillance for influenza is to detect and monitor for human influenza A as well as influenza B trends and activity in California communities. Data collected from wastewater surveillance can help detect early signals of disease transmission in certain areas and help inform public health actions.