

Chicago Department of Public Health establishes a wastewater surveillance program

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CATEGORY: Epidemiology and Laboratory Capacity (ELC)

The Chicago Department of Public Health established a wastewater surveillance program for SARS-CoV-2 and other infectious diseases to bolster surveillance activities and better inform disease prevention activities.



The “What”

Epidemiology and Laboratory Capacity for the Prevention and Control of Emerging Infectious Diseases (ELC) funding has helped build the staff and laboratory capacity to be able to conduct wastewater surveillance through partnerships with the Centers for Disease Control and Prevention (CDC), Illinois Department of Public Health, Cook County Department of Public Health, Discovery Partners Institute, Argonne National Laboratory, and the Municipal Water Reclamation District of Greater Chicago.

CDPH collects, tests, and sequences wastewater samples from three treatment plants that cover the City of Chicago and surrounding Cook County suburbs, as well as eight sewersheds and three pumping stations covering specific community areas within the city. Additionally, specific facilities have partnered with CDPH for facility-specific surveillance including the local jail, O'Hare International Airport, and a behavioral health facility. Samples are collected from sites twice a week using grab samples or Moore swabs. Initially, wastewater testing focused on SARS-CoV-2. It has since expanded to other communicable diseases.



As more pathogens of public health consequence are monitored, these surveillance mechanisms become critically important to identify **where transmission is occurring and how circulating viruses fluctuate over time.**



The “So What”

Having an established wastewater surveillance program helped CDPH respond to new pathogens during 2022 and 2023 including leveraging existing partnerships and laboratory capacity to test for influenza, respiratory syncytial virus, mpox, and poliovirus.

Over 711 wastewater samples were collected and tested across 12 sites in 2022. Starting in August 2022, wastewater samples began to be tested for mpox. Catchment areas in the northern parts of the city with large populations of men who have sex with men reside identified mpox virus in wastewater. This information informed CDPH’s mpox prevention efforts. Beginning in October 2022, wastewater samples began to be tested for Influenza A and B. Most samples throughout the flu season identified detectable levels of Influenza B across the city mirroring syndromic surveillance metrics from local hospital systems.

The “Now What”

CDPH’s wastewater surveillance program has informed readiness and response to communicable disease transmission across the City of Chicago. ELC funding has allowed CDPH to build the local laboratory capacity to rapidly collect wastewater samples across various neighborhoods and treatment plants to identify circulating pathogens. In the coming months CDPH aims to expand the number of pathogens tested in wastewater samples to help support surveillance structures for SARS-CoV-2 and other infectious diseases.

Key contributors to this project include Alyse Kittner and other members of Lab-based Surveillance program at Chicago Department of Public Health, and members of the Discovery Partners Institute.