

Checklist for jurisdictional response to elevated levels of influenza virus and H5 detections in wastewater

Background: Wastewater surveillance for influenza A viruses, including influenza A(H5) viruses, is being used to better understand the current [highly pathogenic avian influenza \(HPAI\) A \(H5N1\) outbreak](#). Influenza A virus wastewater testing detects seasonal influenza A virus subtypes (H3N2 and H1N1) and HPAI H5N1 but does not distinguish among them nor determine if the virus was shed from a human or animal. H5-specific wastewater testing has been deployed in some sites (e.g., <https://data.wastewaterscan.org/>) and may expand before the start of the 2024–25 respiratory virus season. During periods of lower seasonal influenza activity, seeing increased influenza A signals in wastewater serves as a signal for additional investigation to understand the possible causes of these increases. In addition, the detection of H5 virus in a wastewater site also warrants additional investigation into possible causes. This checklist provides some context for these follow-up investigations to understand what might be causing increased influenza detections or the detection of H5 virus in wastewater and was based on early investigations for high influenza A virus levels and H5 virus wastewater signals and in collaboration with the Council for State and Territorial Epidemiologists (CSTE). To effectively review this information, it might be useful to discuss with epidemiologists and laboratorians from state and local public health, influenza program and/or HPAI team, wastewater surveillance program, and the wastewater utility.

- ☐ Check data in DCIPHER to ensure there are no reporting or analytical errors in the wastewater data
- Note any mitigating circumstances, such as delays in testing or data that could impact interpretation
 - Note where in the process the wastewater was sampled (e.g., after grit removal; after primary clarifiers are added etc.)

Note any recent changes in test methods ☐ Review wastewater data in combination with available human influenza surveillance system data to determine if any of these systems suggest a possible increase in influenza in humans near the wastewater facility/within the sewershed. This review, which would be useful during periods of lower and higher seasonal influenza, can be coordinated between CDC and the jurisdiction and should include local influenza surveillance systems that the jurisdiction deems robust. These [influenza data sources](#) to review can include:

- National Respiratory and Enteric Virus Surveillance System and any other available clinical lab data
- Emergency Department surveillance data such as that from the National Syndromic [Surveillance](#) Program
 - Include typical influenza discharge diagnoses, respiratory symptoms and more unusual presentations, such as conjunctivitis
- Outpatient Influenza-like Illness Surveillance Network (ILINet) data
- National Healthcare Safety Network (NHSN) hospitalization data (if hospitals have maintained consistent reporting)
- Data from public health laboratories that are able to detect both seasonal influenza viruses and novel influenza A viruses, including influenza A(H5N1) virus. Consider enhancing surveillance for

novel influenza A detections in the community by maintaining submissions of influenza positive specimens to public health laboratories and subtyping of all influenza A positive specimens.

- Other robust local data sources (e.g., local hospital systems, local influenza surveillance systems)

☐ Characterize the inputs into the sewershed. This includes data already known about the system and those gathered from a conversation with the wastewater utility to understand what inputs the sewershed contains. Some jurisdictions might have access to additional information based on permits that have been issued for each wastewater facility. These questions can guide a discussion with the wastewater utility

- Where is the sampling occurring within the plant (e.g., at the influent after grit removal)?
- Is it a combined (open) or sanitary (closed) sewer system?
- Is there potential for contamination from peri-domestic animals (e.g., rats, cats) or wildlife including wild birds and mammals?
- What dairy or milk processing facilities are in the sewershed or permitted to discharge to the wastewater utility?
- What meat processing facilities (e.g., poultry, beef, pork, wild game) are in the sewershed or permitted to discharge to the wastewater utility?
- What farms (e.g., poultry, cattle, swine) or live poultry markets are in the sewershed or permitted to discharge to the wastewater utility?
- Are there livestock truck washing facilities that discharge into the sewershed?
- Is sewage from septic systems/septic trucks discharged into the wastewater facility routinely or periodically?
- Do other geographic locations discharge their waste into the wastewater system either routinely or periodically?
- Do any of these facilities have data on their discharges to the sewer system that indicate increased or unusual flows that might indicate dumping of contaminated agricultural products?
- Are any unusual inputs or events during this time period noted by the utility (e.g., unusual volumes of discharge/inputs, etc.)?
- Address any questions by wastewater utility about wastewater findings and offer further assistance. If there are technical questions that the health department cannot answer NWSS is able to connect the wastewater utility to partners from the Water Environment Federation (WEF). Contact NWSS@cdc.gov for assistance.

☐ Considerations for additional testing.

☐ If H5 virus subtype testing has not already been conducted at the site, the wastewater surveillance coordinator, in collaboration with state influenza and/or HPAI team, local health jurisdiction, wastewater utility, and CDC, should consider whether additional testing of wastewater samples (retrospective or prospectively) specifically for H5 virus is available and helpful for public health decision making.

- ☐ To evaluate hypotheses about potential sources of influenza A virus and subtypes among inputs to a sewershed, upstream testing (e.g., testing from some of the major geographic sectors contributing to the wastewater facility) might help confirm or refute some hypotheses. If done, careful consideration should be given to any ethical considerations (e.g., identifying individuals or specific businesses) before testing from smaller units.

- ☐ Review information on recent (e.g., in the last month) H5 viruses detections locally in livestock, poultry, cats, wildlife, or other animals
 - Is there current testing of wildlife, livestock, companion animals, or animal products?
 - Have there been recent H5N1 virus positive detections in animals or animal products and what is their relationship temporally and spatially with the wastewater data?

- ☐ Develop communication plan, including any reactive talking points. CDC has included talking points in the H5N1 Weekly Key Points and can assist with additional communication needs.

Next steps:

After gathering these additional data, please respond to CDC to either schedule a follow up call or share brief information by email. CDC would greatly appreciate receiving follow up information promptly whenever feasible.

- ☐ Call or email follow up to CDC within 24 hours of a new H5 virus detection in wastewater (e.g., for first detection in a facility or when an H5 virus detection occurs after >4 weeks of non-detection at that facility)

- ☐ Call or email follow up to CDC within 2 business days of a 'high' influenza A virus level in wastewater listed on [CDC's NWSS Influenza A](#) site or through local surveillance analysis

Collaborative calls between the jurisdiction and CDC can be used to develop hypotheses about what might be responsible for this signal and to potentially plan for further investigation if warranted. This could include sub-sewershed testing to further isolate the source of the signal, addition of more specific wastewater testing assays, or additional field investigations.

CDC can provide technical assistance and either remote or field support when requested.

NWSS@cdc.gov