

# Wastewater Surveillance News



**Giving Water Another Chance**

MAY 2024

**Your Guide to  
VSD & Pathogens**

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## Program Highlights

Valley Sanitary District (VSD) participates in 4 Wastewater Surveillance Programs:

- WastewaterScan
- Biobot Analytics – Pathogens
- National Institute on Drug Abuse (NIDA) Program
- CDC – National Wastewater Surveillance System (NWSS)

Wastewater surveillance is utilized to monitor the presence of pathogens and elements of concern within VSD's service community by monitoring trends in data.

Public health officials can utilize the data to prevent and control contaminants & pathogens of concern within our service area.

**Websites** VSD Program data shared with:

- [WastewaterScan](#)
- [CDC Covid Tracker](#)
- [Biobot Covid Tracker](#)

**PodCast:** [WEF "Sewer Signals"](#)

**June 5<sup>th</sup>** – VSD will be a panelist speaker at the NWSS CoE/WEF Workshop at Stanford University

# Program Information

## National Institute for Drug Abuse (NIDA)

VSD is a participant in the Biobot Analytics Phase III contract from the National Institute on Drug Abuse (NIDA) of the National Institutes of Health (NIH). The NIDA funded wastewater-based monitoring program is a collective effort to address substance use, misuse, and related impacts on public health and safety. More information can be found [here](#).

The 12-month NIDA grant funds the collection and analysis of population level substance data by providing wastewater analysis of substances and their metabolites to help inform future research endeavors, improve public health responses, and allow policymakers to make data-driven decisions.



National Institute  
on Drug Abuse



NATIONAL™  
WASTEWATER  
SURVEILLANCE  
SYSTEM



WASTEWATER  
SCAN  
Collect. Detect. Inform.

## CDC - NWSS

CDC executed a Wastewater-based epidemiology (WBE) contract with Verily Life Sciences for pathogens of concern.

## Biobot

The Biobot Analytics program is pathogen surveillance for one (1) Influent composite sample weekly for 12-month duration. Data includes Flu & RSV in addition to the Covid-19 data. More information can be found [here](#).

## WastewaterScan

The WastewaterScan program monitors a suite of Respiratory, Gastrointestinal and Outbreak Pathogens of Concern. More information can be found [here](#).

# Pathogen Information

Click on the Pathogen name for more information on the CDC website.

## Respiratory Pathogens

<a href="#">SARS-CoV-2 +Variants</a>	Severe Acute Respiratory Syndrome; spread through droplets from coughs, sneezes, or talking.
<a href="#">Influenza A &amp; B</a>	Seasonal respiratory viruses can cause flu pandemics.
<a href="#">Respiratory Syncytial Virus (RSV)</a>	Common respiratory virus causing mild, cold-like symptoms. RSV can be serious for infants and older adults. Cause Bronchiolitis (infection of small airways) and pneumonia (infection of lungs).
<a href="#">Metapneumovirus (hMPV)</a>	Seasonal respiratory virus related to RSV.
<a href="#">Parainfluenza</a>	Cause different types of upper and lower respiratory illnesses most common in infants and young children, and in adults.
<a href="#">Enterovirus (EVD68)</a>	Causes common cold, asthma-like symptoms, wheezing, difficulty breathing and in rare cases the polio-like disorder, acute flaccid myelitis (AFM).

## Gastrointestinal Pathogens

<a href="#">Adenovirus Group</a>	Targets the GI tract to cause gastroenteritis with symptoms like rotavirus and norovirus. Identified mostly in small children with hepatitis symptoms.
<a href="#">Rotavirus</a>	Major cause of GI illness (diarrheal disease) among infants and young children, vaccine preventable.
<a href="#">Human Norovirus GI1</a>	Leading cause of GI illness

## Other Pathogens of Concern

<a href="#">Candida auris</a>	Global health threat, emerging fungus resistant to all 3 major antifungal medicines. Infection can vary from superficial (skin) infections to more severe, life-threatening infections.
<a href="#">Hepatitis A</a>	Contaminated food or water or contact with infected; symptoms include fatigue, nausea, abdominal pain, loss of appetite and low-grade fever. Inflames the liver to cause mild to severe illness. Vaccine preventable.
<a href="#">Mpox</a>	Symptoms like smallpox but milder, rarely fatal.

# Substance Information

*\*Substances are measured as the amount of the metabolite detected in the wastewater. The metabolite is the body's main metabolic product of the parent substance. The parent substance is the amount of unmetabolized portions, which may not fully reflect the actual consumption of the drug.*

## Substance & Metabolite

Cocaine	White crystalline powder derived from coca leaves. It is an intense, euphoria-producing stimulant drug with strong addictive potential.
Benzoylcegonine	Body's main metabolic product ("metabolite") of cocaine ("parent" substance).
Fentanyl	Potent synthetic opioid drug approved for use as an analgesic and anesthetic. It is approximately 100 times more potent than morphine and 50 times more potent than heroin as an analgesic and is often illegally manufactured.
Norfentanyl	Body's main metabolic product ("metabolite") of fentanyl ("parent" substance).
Methamphetamine	Stimulant that speeds up the body's system. It comes in a pill, powder or crystal form made illegally in meth labs.
Amphetamine	Body's main metabolic product ("metabolite") of methamphetamine ("parent" substance).
Naloxone	Medication approved by the FDA is designed to rapidly reverse and treat narcotic overdose from opioids in emergency situations.
6a-Naloxol	Body's main metabolic product ("metabolite") of methamphetamine ("parent" substance).
Xylazine	Also known as "tranq", is a non-opioid sedative or tranquilizer used by veterinarians and is an emerging threat. Other illegal drugs can be mixed with xylazine, to enhance drug effects or increase its street use. DEA reports that approx. 23% of fentanyl powder and 7% of fentanyl pills seized by the DEA in 2022 contained xylazine. Usage may cause skin infections and tissue death.
4-hydroxy xylazine	Body's main metabolic product ("metabolite") of methamphetamine ("parent" substance).

# Data Trends

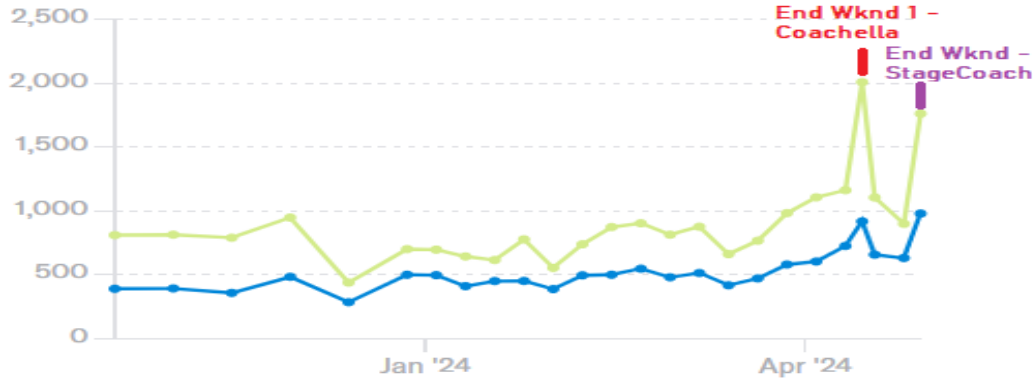
## NIDA Substances

Select Date Range

Start date → End date

- Cocaine  Benzoylecgonine

Valley Sanitary District INF-001\_Influent

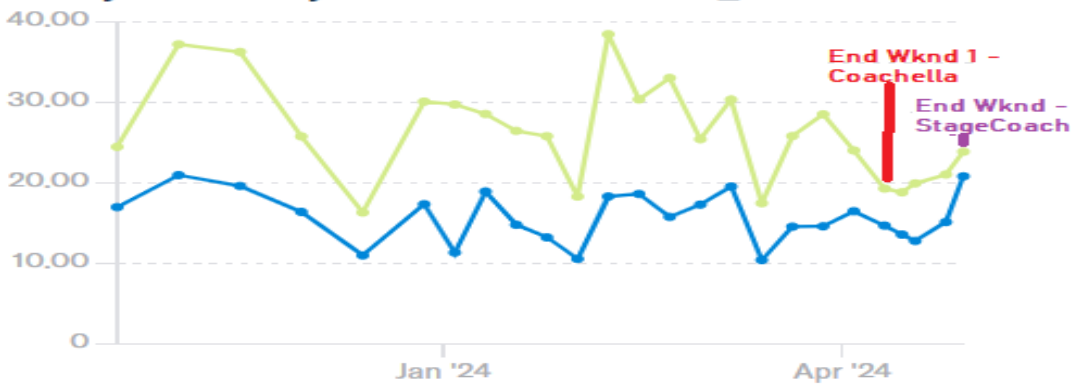


Select Date Range

Start date → End date

- Fentanyl  Norfentanyl

Valley Sanitary District INF-001\_Influent



Select Date Range

Start date → End date

- Methamphetamine  Amphetamine

Valley Sanitary District INF-001\_Influent

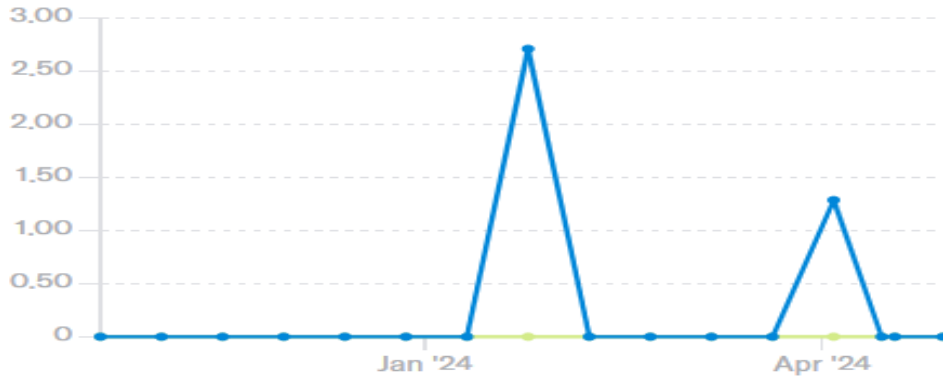


### Select Date Range

Start date → End date

Naloxone  6α-Naloxol

### Valley Sanitary District INF-001\_Influent

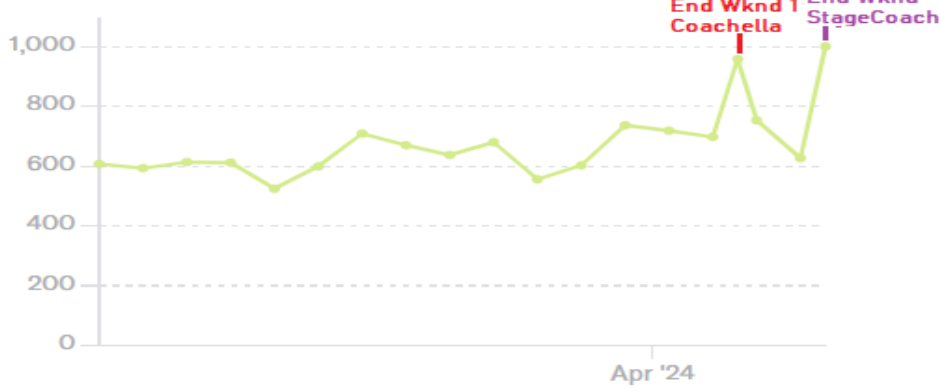


### Select Date Range

Start date → End date

Nicotine  trans-3'-Hydroxycotinine

### Valley Sanitary District INF-001\_Influent



## BioBot Pathogens

### SARS-CoV-2 (COVID-19)

Wastewater Effective Concentration (copies/L)



## RSV

Wastewater Effective Concentration (copies/L)



## Influenza A

Wastewater Effective Concentration (copies/L)



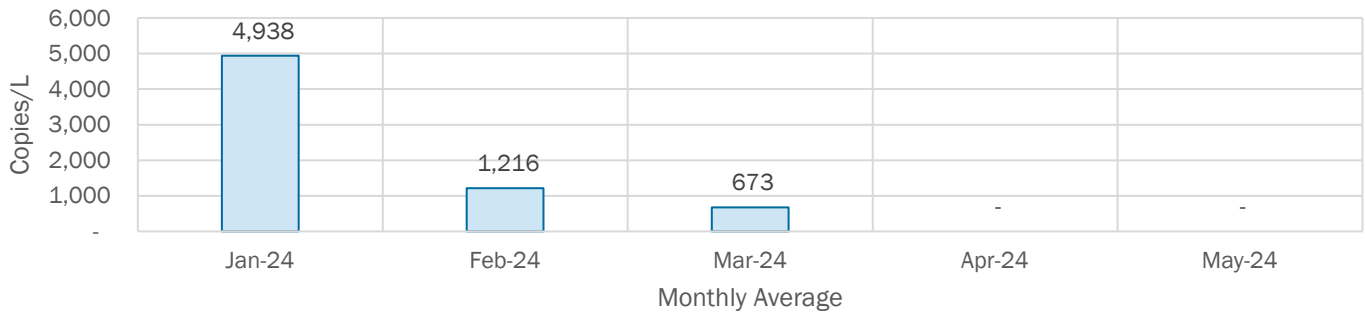
## Influenza B

Wastewater Effective Concentration (copies/L)

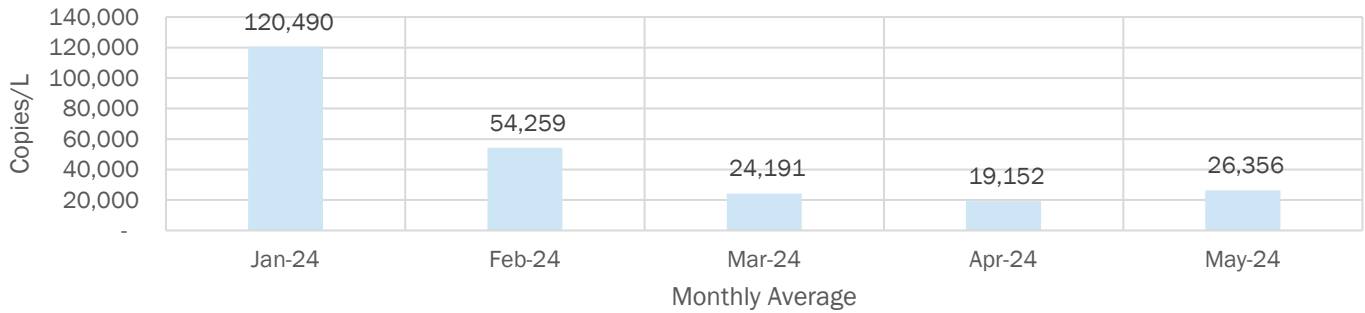


# CDC – NWSS

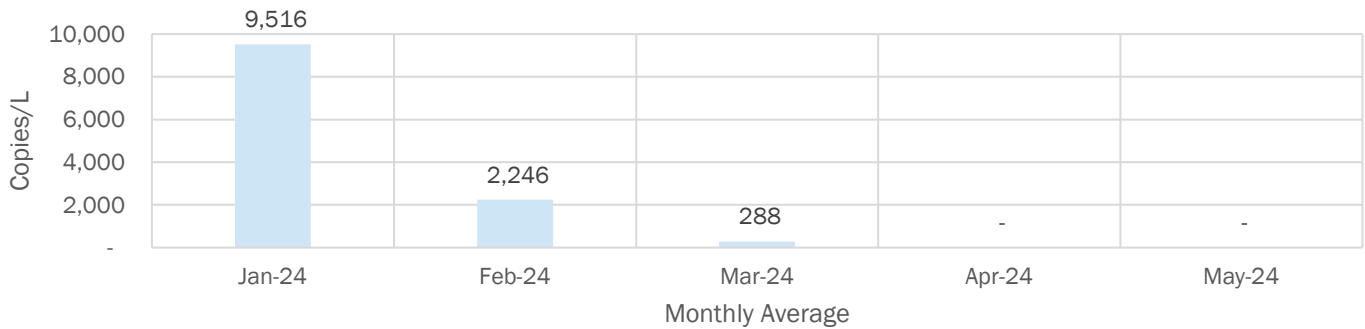
VSD Wastewater Treatment Plant  
Influenza A Concentration  
Average Number of Viral Copies per Liter of Wastewater by Month



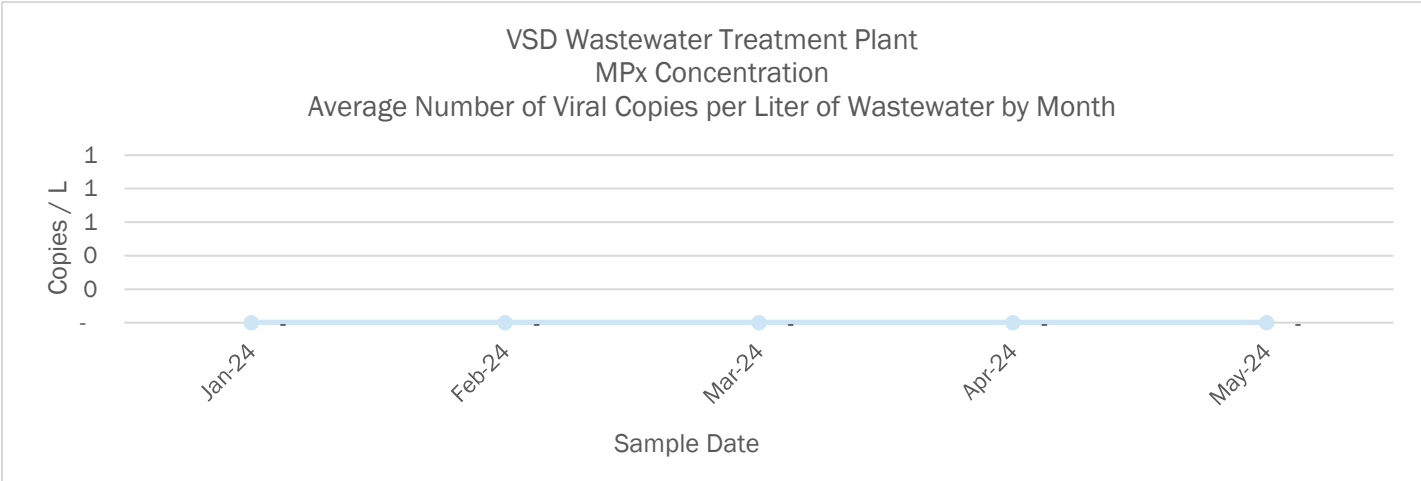
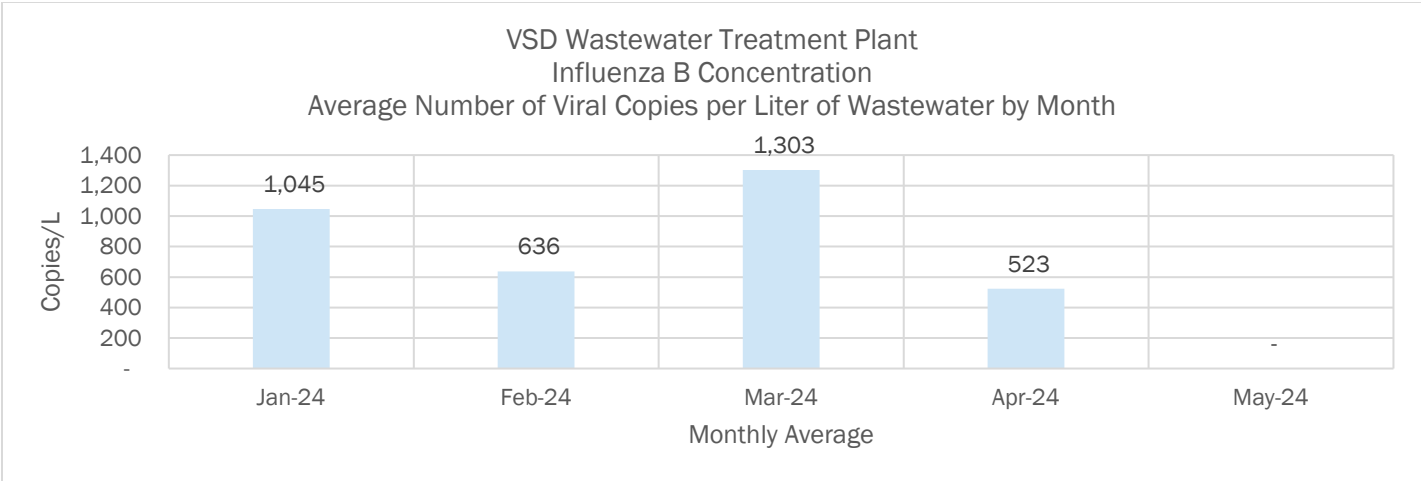
VSD Wastewater Treatment Plant  
SARS-CoV-2 Concentration  
Average Number of Viral Copies per Liter of Wastewater by Month



VSD Wastewater Treatment Plant  
RSV Concentration  
Average Number of Viral Copies per Liter of Wastewater by Month



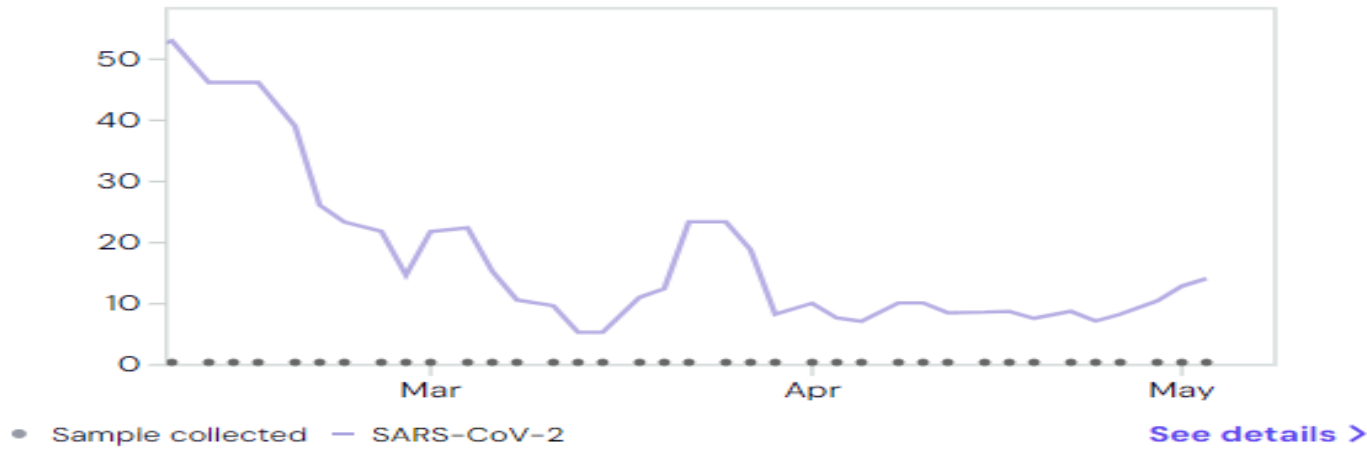




## WastewaterSCAN

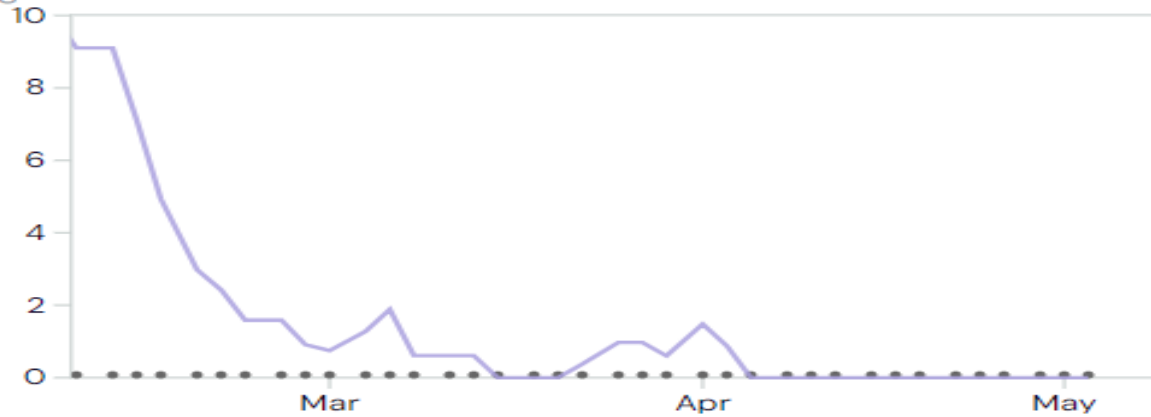
**SARS-CoV-2** Low

No trend in the last 21 days and low concentration



## Respiratory syncytial virus (RSV) Low

Pathogen is seasonal and not in onset

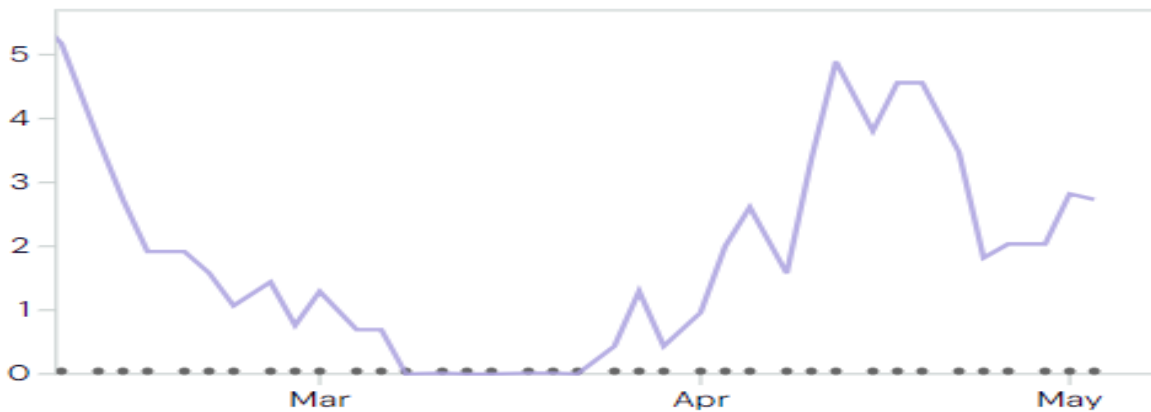


• Sample collected — RSV

[See details >](#)

## Influenza A Low

Pathogen is seasonal and not in onset

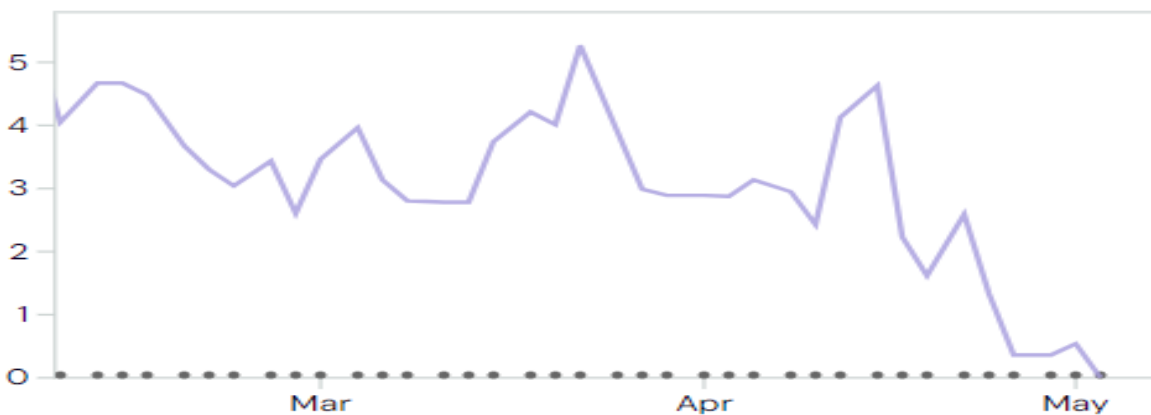


• Sample collected — Influenza A

[See details >](#)

## Influenza B Low

Pathogen is seasonal and not in onset

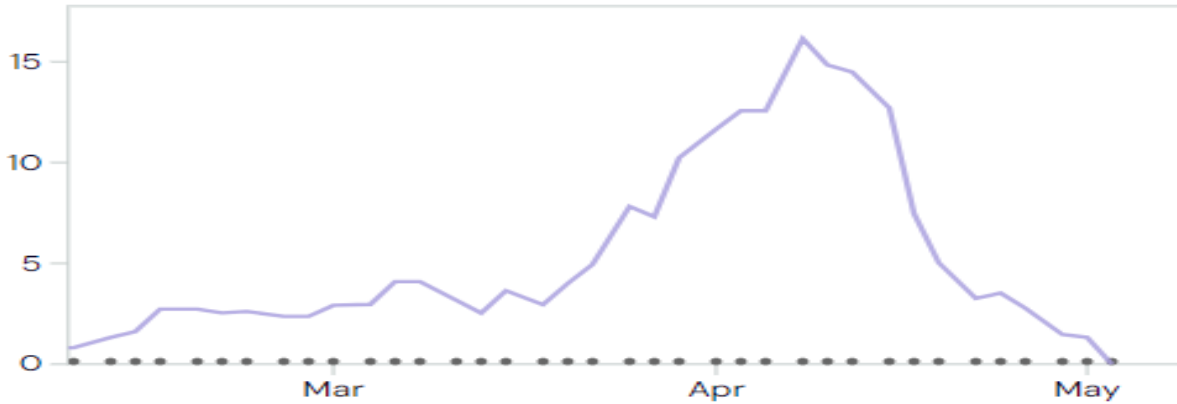


• Sample collected — Influenza B

[See details >](#)

### Human Metapneumovirus Low

Downward trend in the last 21 days and low concentration

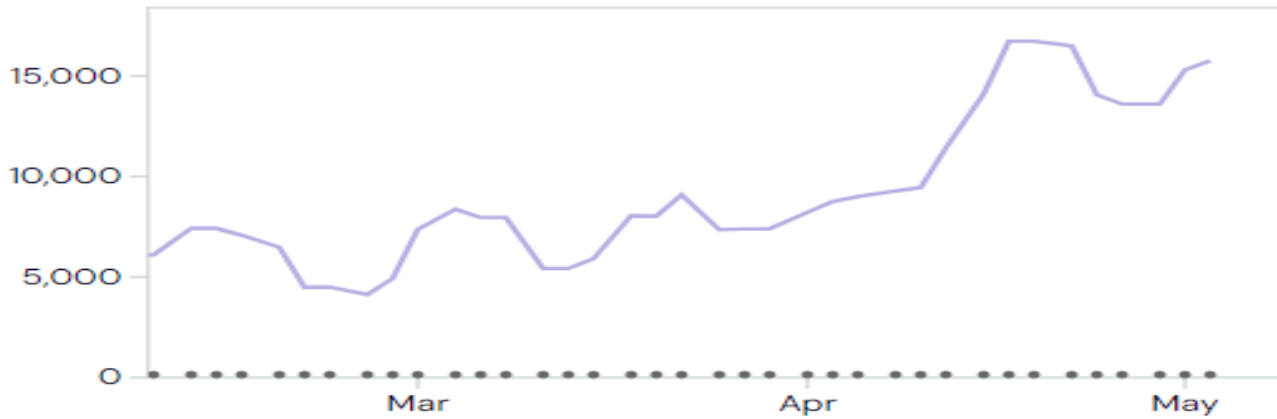


● Sample collected — Human Metapneumovirus

[See details >](#)

### Norovirus Medium

No trend in the last 21 days and medium concentration

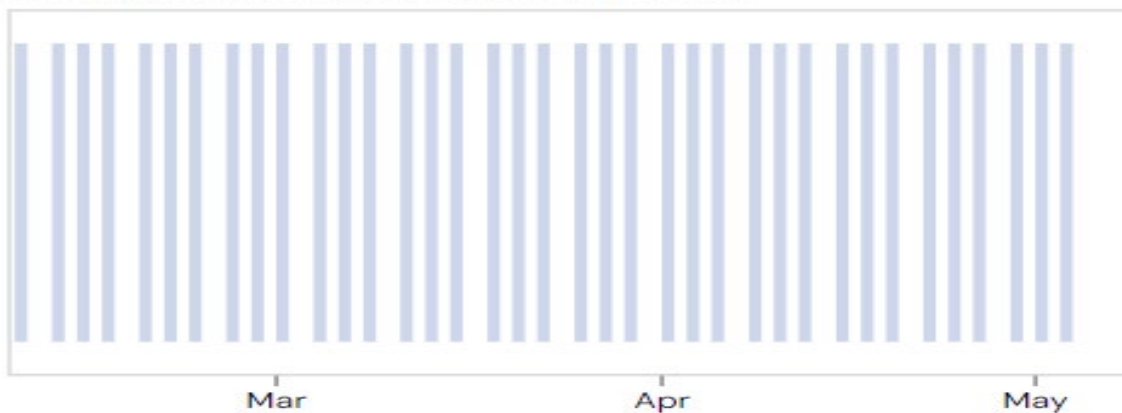


● Sample collected — Norovirus

[See details >](#)

### Mpox Low

0 out of 5 samples in the past 10 days were positive

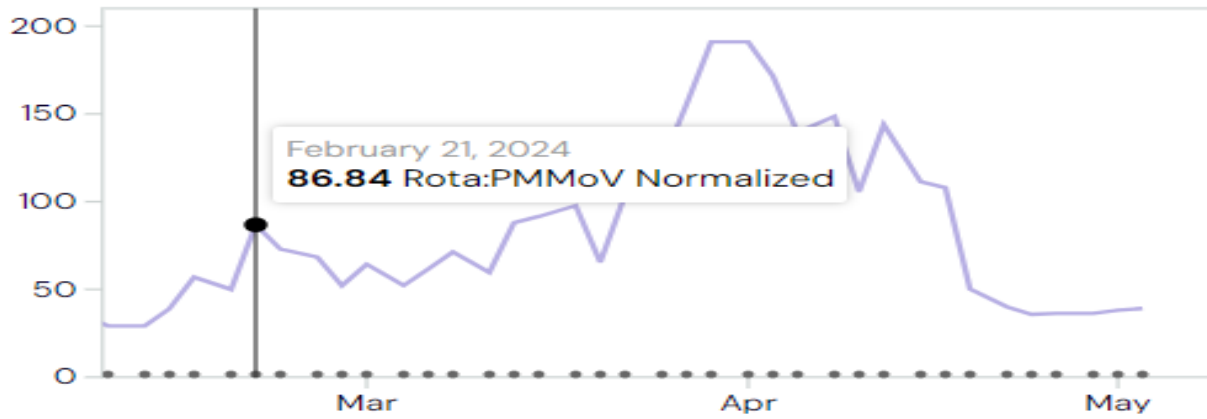


Level: ■ Not detected ■ Detected

[See details >](#)

## Rotavirus Low

No trend in the last 21 days and low concentration

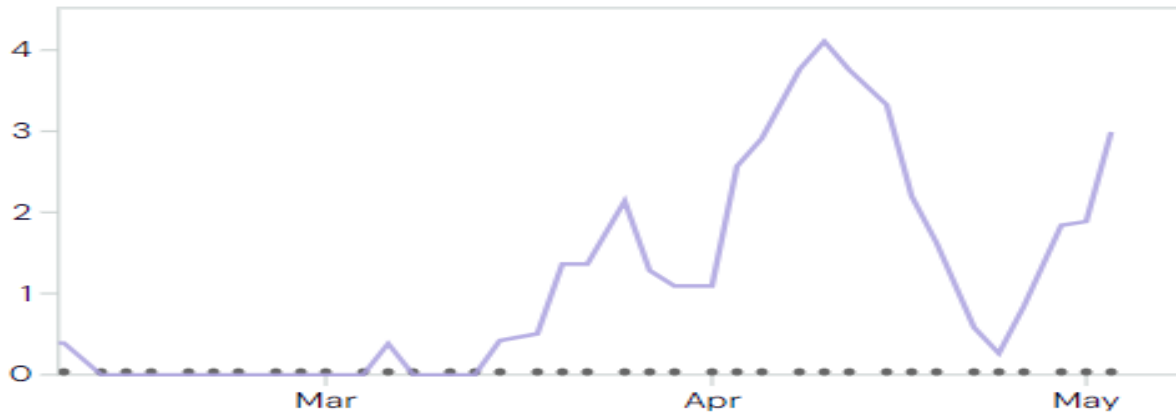


• Sample collected — Rotavirus

[See details >](#)

## Parainfluenza Low

No trend in the last 21 days and low concentration

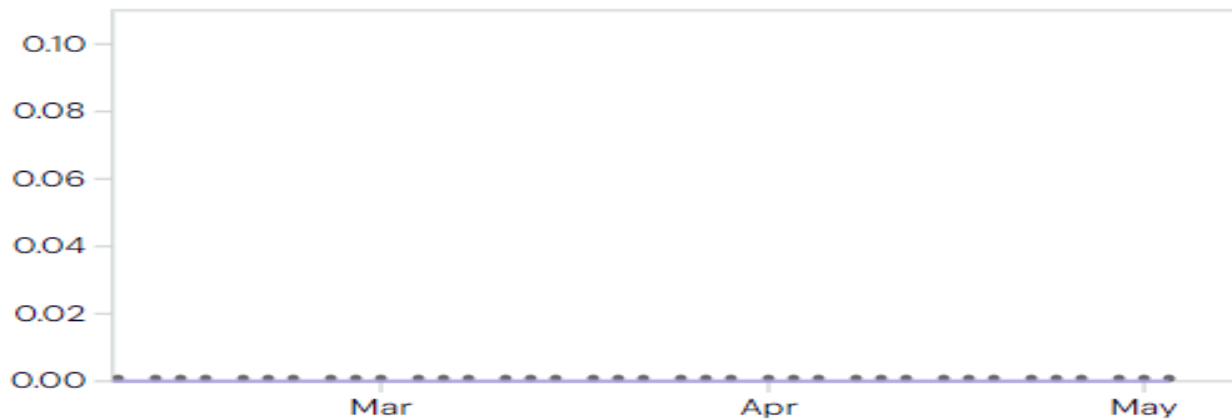


• Sample collected — Parainfluenza

[See details >](#)

## EVD68 Low

0 out of 5 samples in the past 10 days were positive

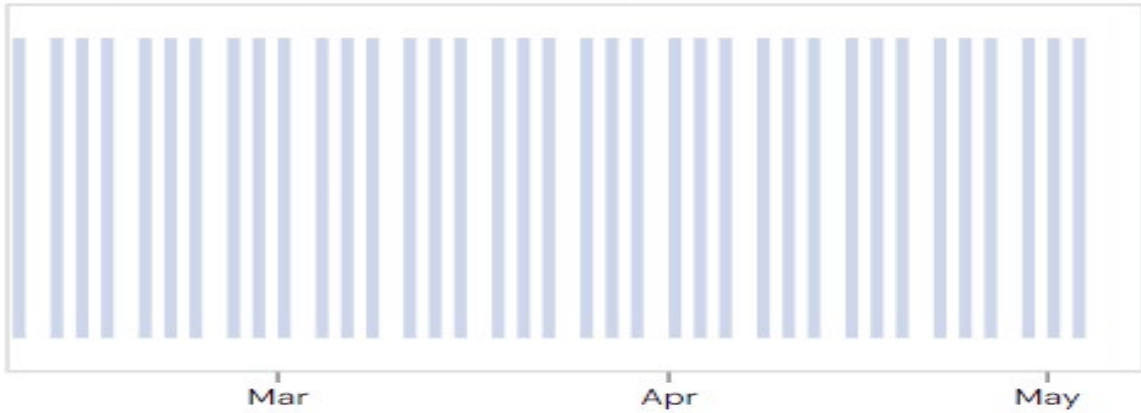


• Sample collected — EVD68

[See details >](#)

## Candida auris Low

0 out of 5 samples in the past 10 days were positive

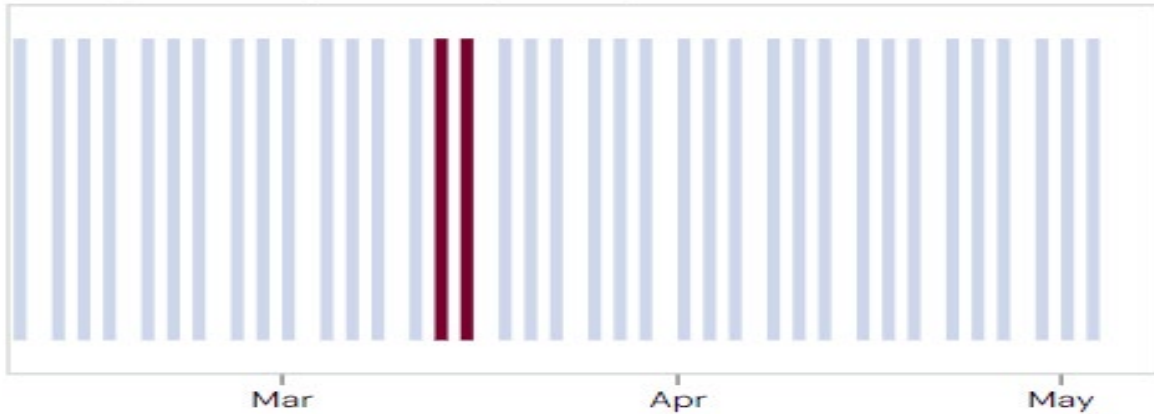


Level: ■ Not detected ■ Detected

[See details >](#)

## Hepatitis A Low

0 out of 5 samples in the past 10 days were positive



Level: ■ Not detected ■ Detected

[See details >](#)