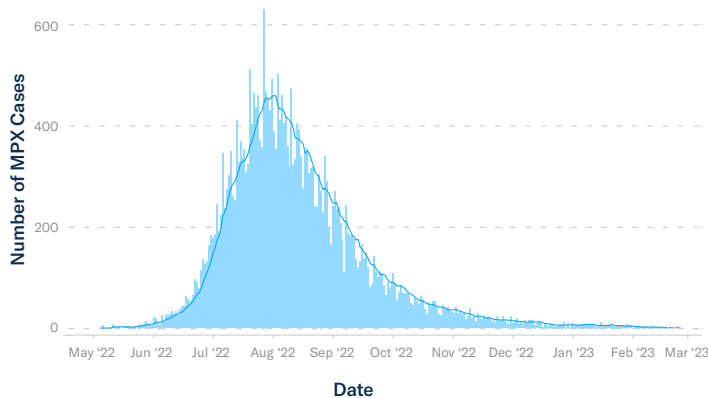


Background: Mpox

Mpox (formerly known as monkeypox) is a disease caused by infection with mpox virus (MPXV) – a type of *Orthopoxvirus*. The virus is [endemic in several countries](#) in Central and West Africa. There are two clades (types) of the virus: [Clade I \(formerly Congo Basin clade\)](#) and [Clade II \(formerly the West African clade\)](#). The 2022 outbreak is Clade II, which is considered less deadly.

The disease was originally called “monkeypox” because it was first discovered in 1958 in two colonies of research monkeys, with the first human case recorded in 1970. The actual source of the disease remains unknown, though various animals are susceptible to MPXV, such as certain squirrels, rats, and non-human primates.

Epidemiological Curve of Monkeypox Cases in the U.S. by Date



Data Source: <https://www.cdc.gov/poxvirus/monkeypox/cases-data/technical-report/report-4.html>

Mpox Transmission

MPXV can spread in several ways, including person-to-person transmission via direct contact with infectious skin (rashes and scabs) or bodily fluids (intimate physical contact such as kissing, cuddling, or sex). Much less commonly, MPXV can also spread through respiratory secretions (face-to-face contact), during pregnancy, or by touching items that an infected individual used (such as bed linens, towels, or clothing). Lastly, animal-to-human transmission can occur via direct contact with infected meat or bodily fluids, or from being bitten/scratched by an infected animal.

It's important to remember that mpox is not nearly as contagious as COVID-19. It does not spread through pathways such as walking by or engaging in casual conversation with an infected individual. A [recent NEJM article](#) found that 95% of transmission occurred through sexual activity; with only 0.8% likely due to nonsexual close contact, and just 0.6% likely from household contact.

Mpox 2022 Outbreak

Since January 1, 2022, there have been over 86,000 reported cases in 110 countries globally, across all six WHO regions. The first U.S. case was reported on May 17, 2022, in Massachusetts, and over 30,000 cases across all 50 states have since been confirmed. In non-endemic

countries such as the U.S., transmission has occurred primarily among men who have sex with men. As noted by [the WHO](#), this outbreak represents the first instance of reported cases and sustained transmission occurring in countries without direct epidemiological links to endemic countries in Central or West Africa.

Role of Wastewater in Mpox Monitoring

Wastewater monitoring for MPXV is important – information about where MPXV is present can help public health officials prepare for and mitigate spread of the disease as it moves through communities. Furthermore, wastewater testing can provide a better understanding of where under-reporting may be occurring, which can result from limited access to testing, asymptomatic cases, or individual health-seeking behavior.

Many entities at the federal, state, and local levels are currently testing for MPXV in wastewater. These include the CDC, universities, private companies, and collaborations between academic institutions and public health departments.

Biobot and Mpox

Biobot has partnered with the CDC to test for MPXV in wastewater from locations across the United States. Biobot tests for MPXV in wastewater first by isolating nucleic acids from influent wastewater samples, and then by using a CDC-approved, non-variola *Orthopoxvirus* PCR assay to determine the presence of MPXV DNA. This assay does not differentiate MPXV from several other viral species, including vaccinia, camelpox, and cowpox. However, currently in the U.S., a positive result with this assay is considered MPXV.

More Information

- Find more on our partnership with the CDC in our [press release](#).
- For more on MPXV in wastewater, refer to the Water Environment Federation's (WEF) [information sheet](#).
- For current updates on the 2022 MPXV outbreak in the U.S., visit the CDC's [summary page](#).