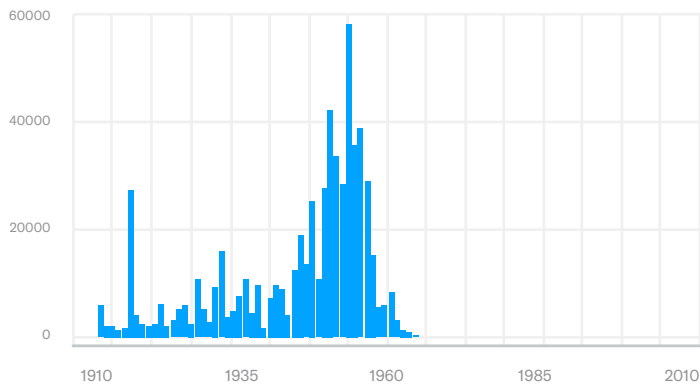


Background: Polio

Polio is a disease caused by an RNA virus. In most individuals, infection causes no symptoms. In about 25% of people, infection causes a mild flu-like illness. A small proportion of individuals (~ 1 in 200 to 1 in 2000 depending on the specific type of polio virus), experience paralysis or weakness which can affect the arms, legs, and muscles used for breathing. Infection is spread through person-to-person contact, primarily contact with infected stool, and less commonly through droplets from sneezes or coughs. Cases in the U.S. dropped dramatically after the introduction of the polio vaccine in 1955.

Reported Paralytic Polio Cases in the U.S.



Data Source: <https://www.ourworldindata.org/polio>

Role of Wastewater in Polio Monitoring

Wastewater has been used to detect polio since [the 1930's](#). Wastewater has been an important tool for polio due to the high proportion of asymptomatic cases. Because only infections leading to paralysis are usually identified (which happens in less than 1% of infections), the virus can circulate in a community undetected by clinical testing.

Polio in the U.S. - 2022

In July 2022, the New York State [Department of Health](#) announced a case of polio in Rockland County. Through wastewater analysis and clinical testing, the U.S. Centers for Disease Control and Prevention (CDC) was able to identify this case as vaccine-derived poliovirus (VDPV). Continued [wastewater testing](#) in Rockland County and other surrounding areas has resulted in the detection of polio in four NY counties, as well as New York City (as of 9/23/22). Due to the combination of human illness and genetically similar environmental samples, the U.S. is now considered a country with [circulating vaccine-derived poliovirus \(cVDPV\)](#). Vaccination is highly effective at preventing polio—the most important thing that individuals can do to protect themselves is make sure they are fully vaccinated according to [CDC guidelines](#). Though national vaccination rates are high (nationally, 92.4% of 24 month-olds have had 3 doses), certain communities have far-lower rates of vaccination and are more vulnerable.

What is Vaccine-Derived Poliovirus?

Vaccine-derived poliovirus (VDPV) is a strain related to the weakened live poliovirus contained in oral polio vaccine (OPV). If allowed to circulate in under- or un-immunized populations for long enough, or replicate in an immunodeficient individual, the weakened virus can revert to a form that causes illness and paralysis.

OPV is a safe and effective vaccine that contains a combination of one, two, or three strains of live, weakened poliovirus, and is given in the form of oral drops. OPV has been instrumental in eradicating wild polioviruses around the world, including in the United States, because it stops the spread of the virus by inducing immunity in the gut. VDPVs emerge when not enough people are vaccinated against polio, and the weakened strain of the poliovirus from OPV spreads among under-immunized populations. **The United States has used inactivated poliovirus vaccine (IPV) exclusively since 2000.**

Source: [CDC vaccine-derived poliovirus FAQ](#)

Biobot and Polio

Biobot is not currently developing polio testing methods, but we are actively monitoring the situation and will continue to evaluate future options as regulatory guidelines regarding polio testing become more clear.

More Information

- Guidance from the Water Environment Foundation can be found [here](#)
- More information on global eradication efforts can be found at www.polioeradication.org
- Further information about U.S. containment efforts can be found at [U.S. National Authority for Containment of Poliovirus | CDC](#)