

# Ebola-infected sewage may require longer holding period

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The Ebola virus, isolated in November 2014 from patient blood samples obtained in Mali. The virus was isolated on Vero cells in a BSL-4 suite at Rocky Mountain Laboratories. Credit: NIAID

Storing Ebola-infected sewage for a week at 86° Fahrenheit or higher should allow enough time for more than 99.99 percent of the virus to

die, though lower ambient temperatures may require a longer holding period, according to a new study by researchers at Georgia State University's School of Public Health.

The study co-authored by Lisa M. Casanova, assistant professor of [environmental health](#), and Scott R. Weaver, research assistant professor in Epidemiology and Biostatistics, used bacteriophage  $\Phi 6$ , a type of virus, as a stand-in to study how long Ebola and similar viruses can survive in latrines and other systems for collecting and disposing of sewage. Bacteriophage  $\Phi 6$  has a lipid envelope, meaning it has structural similarities to Ebola and several other types of virus, allowing for a safe study that did not require use of Ebola itself.

"The places hardest hit by Ebola are the places that often have the least infrastructure for safely disposing of sewage and are using things like pit latrines," said Dr. Casanova. "They need the answers to questions like this."

Their study, "Inactivation of an Enveloped Surrogate Virus in Human Sewage," was published recently in *Environmental Science & Technology Letters*.

To reduce the risk of infection for sanitary workers, the World Health Organization recommends latrine waste contaminated with Ebola be held for a week or longer before any efforts are made to transport it.

Casanova and Weaver conducted experiments on [sewage](#) samples taken from an urban wastewater reclamation facility, spiking the samples with  $\Phi 6$  as a stand-in for Ebola. Their analysis found that at 86° Fahrenheit (equal to 30° Celsius) the virus was essentially inactivated after 3-7 days. However, samples tested at 72.6° Fahrenheit (or 22°C) took several days longer to decay.

The study suggests longer holding times may be needed where temperatures are lower. Longer holding times may also be advisable to eliminate "longer-surviving subpopulations of viruses."

**More information:** *Environmental Science & Technology Letters*,  
[pubs.acs.org/doi/abs/10.1021/acs.estlett.5b00029](https://pubs.acs.org/doi/abs/10.1021/acs.estlett.5b00029)

Provided by Georgia State University

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