

Congress of the United States
Washington, DC 20515

September 16, 2020

Dr. Robert R. Redfield, MD
Director, Centers for Disease Control and Prevention
4770 Buford Highway, NE
Atlanta, GA, 30341-3717

Dear Dr. Redfield,

Thank you for your work and for the Centers for Disease Control and Prevention's (CDC) efforts to keep Americans safe and healthy during this tragic, life-altering, global pandemic.

As you are well-aware, the first step in controlling and mitigating the COVID-19 pandemic is widespread testing and identification of affected communities and individuals. Regrettably, as we write today, there has been no comprehensive national strategy for testing communities, neighborhoods or other distinct population centers. However, there are proven, but not yet widely adopted, technologies and strategies to identify and track COVID-19 infections affordably and at a national scale. One of these that shows great promise is wastewater-based epidemiology (WBE).

We are aware that CDC's initial COVID-19 pilot activities have been built upon prior investments in wastewater testing for surveillance of antibiotic resistant pathogens, and that COVID-19 supplemental funding is enabling CDC to provide more support to state and local health partners conducting sewage surveillance activities. We are also aware that the National Wastewater Surveillance System (NWSS), initiated in response to the pandemic, aims to help public health officials better understand community infection by ramping up local partnerships and developing a portal for health departments to submit wastewater testing data. In this letter, we lay out why we believe strong federal investment in WBE is necessary and request that you provide information on federal plans to implement a nationwide COVID-19 wastewater surveillance program.

The United States' response to the pandemic has been characterized by the slow implementation of the production and distribution of clinical testing and personal protective equipment, resulting in a patchwork of differing testing standards and capacities across the States. While South Korea tested over 60,000 people in the week following its first community transmission, the United States, a country with a much larger population and greater resources, took three weeks to reach that quantity of testing.¹ Clinical testing is costly, and the U.S. is not comprehensively clinically testing its population. The World Health Organization (WHO) advises that before reopening, the rate of positive tests as a percentage of total tests should stay at 5% or lower for two weeks.² High positivity rates indicate that a state is not "casting a wide enough net" to detect infected people,

¹ Lopez, German. "The Trump administration's botched coronavirus response, explained." <https://www.vox.com/policy-and-politics/2020/3/14/21177509/coronavirus-trump-covid-19-pandemic-response>

² Johns Hopkins University Coronavirus Resource Center. <https://coronavirus.jhu.edu/testing/testing-positivity>

while low positivity rates indicate that the state has enough data “to make informed decisions about reopening,” according to Johns Hopkins University Coronavirus Resource Center. Two additional factors also make stopping the spread of COVID-19 difficult: asymptomatic infected cases and a relatively long incubation period.³

Recent research suggests that WBE has the potential to significantly improve and expand the ability of public health workers and researchers to identify and track the outbreaks of COVID-19. Coronavirus can be detected in wastewater because this diagnostic matrix can inform on the relatively small fraction of the general population that is infected and excreting the virus particles in stool.⁴ WBE can be used to detect COVID-19 with reasonable sensitivity ranging in scale from metropolitan areas down to neighborhoods and even buildings. This most recently was demonstrated in a long-term WBE monitoring effort in the Greater Phoenix Metropolitan area, where a cluster of infection was first identified by WBE in the Town of Guadalupe, resulting in a public health response that helped reduce virus levels in the community to levels below the limit of detection.⁵ WBE employed in concert with clinical testing offers the potential for cost-effective, comprehensive COVID-19 monitoring in the United States.

Presently, colleges and universities across the U.S. have instituted wastewater testing to detect coronavirus, alongside other more widely adopted policies like mask wearing, social distancing, health status monitoring, and electronically logging classroom visits.⁶ Others are considering it; for example, there was a University of California Systemwide Convening on SARS-CoV-2 Wastewater Surveillance on July 23rd. Researchers suggest that these universities can serve as a testing ground for the wider adoption of WBE in the United States. Evidence from WBE implementation collected in two locations in the Netherlands, suggests that this adoption would be effective and beneficial: regular sampling and testing showed that the virus was detected in the wastewater in both locations within a week of the occurrence of the first cases in those locations.⁷

While the evidence for the effectiveness in coronavirus detection is relatively new, WBE has been used effectively in previous public health interventions, including the global effort to eradicate polio. Environmental surveillance through sampling of wastewater played a key role in evidencing the elimination of poliovirus from Egypt and India and “continues to play an important role in the eradication of WPV from the remaining polio-endemic countries of Pakistan, Afghanistan, and

³ Hart, Olga and Halden, Rolf. “Computational analysis of SARS-CoV-2/COVID-19 surveillance by wastewater-based epidemiology locally and globally: Feasibility, economy, opportunities and challenges.”
<https://doi.org/10.1016/j.scitotenv.2020.138875>

⁴ Netherlands National Institute for Public Health and the Environment. <https://www.rivm.nl/en/news/novel-coronavirus-found-in-wastewater>

⁵ World’s First Real-time Dashboard on COVID-19 Informed by Wastewater-based Epidemiology, Tempe, AZ;
<https://covid19.tempe.gov/>

⁶ Richtel, Matt. “Looking to Reopen, Colleges Become Labs for Coronavirus Tests and Tracking Apps.”
<https://www.nytimes.com/2020/08/30/us/colleges-coronavirus-research.html>

⁷ Netherlands National Institute for Public Health and the Environment. <https://www.rivm.nl/en/news/novel-coronavirus-found-in-wastewater>

Nigeria.”⁸ Furthermore, WBE through municipal wastewater testing has also served effectively to track drug usage and addiction across Europe, Australia, and Asia.⁹

The potential benefits of widespread adoption of WBE in the battle against COVID-19 are enormous. As evidenced by its employment in the effort against drug usage, this method of testing can be harnessed in several ways. First, it can serve as an early warning, detecting COVID-19 spread before clinical testing picks it up. Second, it can locate geographic hotspots of infection, allowing for more precisely targeted public health interventions. Third, it can be used to assess the effects of interventions by measuring amounts of COVID-19 before and after implementation. Research conducted suggests that this method of detection offers cost-effectiveness and scalability currently unachievable in clinical testing, while providing appropriate sensitivity and accuracy.¹⁰ This peer-reviewed, published work suggests the potential for substantial cost savings of millions to billions of dollars for each national surveillance campaign.¹¹

Notably, WBE should not replace widespread clinical testing, given that it cannot identify infected individuals. Clinical testing is necessary for diagnosis and conducting contact tracing. However, WBE can “alert emergency response teams to the presence of infected individuals in towns, cities and specific drainage areas (sub-sewersheds) of large metropolitan areas down to the neighborhood and building complex level.”¹² Furthermore, the U.S. is uniquely positioned to take advantage of this tool given that it hosts the “largest national and international WBE network and sample repository,” the Human Health Observatory at Arizona State University.¹³

With these potential benefits in mind, we request, by no later than September 30th, 2020, a detailed response explaining federal plans to implement a national WBE strategy and how Congress can assist these efforts. Specifically, we would like to know:

1. What is being done to be inclusive of rural, minority, and underserved communities?
2. What is the status of the National Wastewater Surveillance System database?
3. What is the CDC’s professional judgment budget estimate for necessary funding to successfully carry out this effort?
4. How is CDC collaborating with the Environmental Protection Agency on WBE?
5. What are the estimated costs? Is a cost-benefit analysis available?

⁸ Asghar, Humayun, Diop, Ousmane, et. all. “Environmental Surveillance for Polioviruses in the Global Polio Eradication Initiative.”

⁹ Keshaviah A (ed.). “The Potential of Wastewater Testing for Public Health and Safety.” <https://www.mathematica.org/our-publications-and-findings/publications/the-potential-of-wastewater-testing-for-public-health-and-safety-special-report>

¹⁰ Hart, Olga and Halden, Rolf. “Computational analysis of SARS-CoV-2/COVID-19 surveillance by wastewater-based epidemiology locally and globally: Feasibility, economy, opportunities and challenges.” <https://doi.org/10.1016/j.scitotenv.2020.138875>

¹¹ Ibid.

¹² Ibid.

¹³ Halden, R. U., Terlinden, E., Kraberger, S., Scotch, M., Steele, J., and A. Varsani. 2019. Tracking harmful chemicals and pathogens using the Human Health Observatory at ASU. *Online Journal of Public Health Informatics*, 11(1), e369. doi: 10.5210/ojphi.v11i1.9843. <https://journals.uic.edu/ojs/index.php/ojphi/article/view/9843/7958>

6. Are there plans to speak to early U.S. adaptors of the WBE technology, such as those that have used WBE to fight the opioid epidemic since 2018, to learn what has worked, where they encountered barriers, and how to most effectively use this tool?

Thank you for your consideration and for the CDC's continued efforts to protect America's health, safety and well-being. Please contact Rebecca Kahn at Rebecca.Kahn@mail.house.gov with Representative Cox's office with any questions.

Sincerely,



TJ Cox
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