

HIGH CONTAINMENT CONTINUITY LABORATORY AND INFRASTRUCTURE PROJECT

Mission

To equip CDC with the space needed to protect Americans from the deadliest disease threats and emerging dangers

Critical Activities

Viral Hemorrhagic Fevers:

- Develop and perform diagnostic testing for VHF such as Ebola and Lassa Fever
- Enhance understanding of how VHF cause disease, what antivirals and prototype vaccines are most effective, and how VHF are spread to humans
- Maintain the most comprehensive repository in the world for diagnostic specimens and virus collections

Smallpox:

- One of only two labs in the world working with live smallpox virus
- Unique capacity to evaluate new antiviral countermeasures and new vaccines against smallpox
- Development of new point of care diagnostic test to help diagnose possible smallpox cases quickly
- Evaluation of a potential smallpox vaccine to protect people at risk of adverse events from the current vaccine

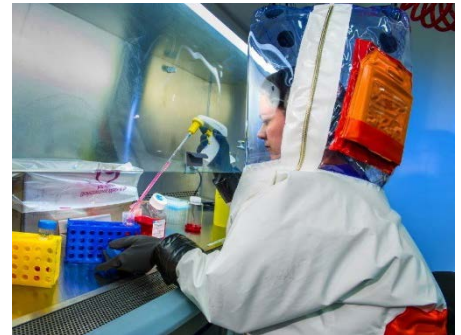
Influenza:

- Only USG public health lab that can receive emerging flu viruses quickly from other countries so further research can be conducted
- Conduct animal studies as a component of risk assessments that inform decision making on pre-pandemic vaccine manufacturing

Laboratory Readiness to Keep Americans Safe

CDC is a recognized global leader in response to infectious disease threats. CDC's ability to respond to infectious disease threats depends upon operational readiness of its laboratories and facilities. Without investment, the High Containment Laboratory (HCL) will be left with only a fraction of its current research space and CDC will fall behind in its ability to protect, defend, and respond to infectious disease threats. CDC's lab is unique in combining critical public health response with research efforts. To protect American citizens, CDC must maintain a world-class lab equipped to respond to public health emergencies in addition to researching the world's deadliest pathogens.

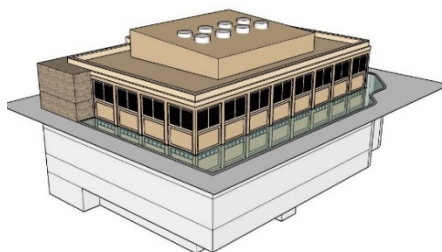
In CDC's HCL, scientists test for, respond to outbreaks of, and study deadly pathogens with potential to cause public health emergencies. Many of these have no treatment or vaccine and can only be worked on in labs with extensive safety features by experts wearing special personal protective equipment.



High Containment Laboratory Challenges

CDC's current HCL was built in 2005, and dramatic improvements in cutting edge new systems technologies cannot be integrated into existing facilities. Further, components for the lab's building systems are no longer manufactured. These building systems govern containment measures including air pressurization and door locks that ensure scientists are safe while working with these agents. These systems will show signs of failure within the next few years, and CDC may be forced into an unplanned shutdown of high containment laboratory work. CDC scientists cannot work in the labs without this critical safety system, and CDC cannot keep Americans safe from emerging deadly diseases without a safe high containment laboratory.

To build this new complex, safe and secure lab facility will take four years, and funding is needed now in FY 2018 to start this multi-year design, construction and testing process, before the operational status of the existing lab begins to deteriorate and operations need to be curtailed to protect the safety of our experienced staff.



High Containment Continuity Laboratory

This building is critical to CDC's continued ability to protect Americans from high consequence pathogens

To ensure CDC scientists can continue to respond to deadly outbreaks and sustain the pace of new test and vaccine discovery and evaluation, CDC will need to construct a facility that – at the very least – has the same amount of space we are already using.

Responding to Outbreaks

- CDC has had continually operating HCLs since 1970 that have helped investigate hundreds of outbreaks.
- During the 2017 surge in cases of influenza A (H7N9) in China, CDC's HCL was the only laboratory that provided information on the transmission and lethality of emerging avian influenza viruses for the USG's rapid assessment of pandemic risk.
- Select Agent authorized HCL capability has enabled U.S. response to illnesses such as Ebola, Marburg, Nipah, Rift Valley Fever, Crimean Congo Hemorrhagic Fever, Lassa Fever, hantavirus and other Category A select agent diseases.



- Unknown deadly viruses, such as SARS once was, are identified in this lab. Ability to identify new disease threats, screen antivirals, develop diagnostics and evaluate vaccines makes CDC's HCL a vital national resource.
- In 2015, highly pathogenic influenza A (H5N8) and A (H5N2) viruses, brought by migratory birds from Asia to the U.S., led to the culling of millions of domestic poultry. The CDC HCL rapidly tested these viruses, developing reagents needed for diagnostic testing and for generating pre-pandemic vaccines. Rapid response containment was successfully implemented in the U.S., and there were no human infections.

High Containment Continuity Laboratory Building

The High Containment Continuity Laboratory (HCCL) will enable CDC to continue to respond to infectious disease threats involving high consequence pathogens. Safe, modern containment facilities help us to better protect Americans. The HCCL will:



- Provide 95,118 gross square feet for research on smallpox and pathogens such as Ebola, Marburg virus, influenza, and other emerging viruses
- House three Biosafety level 4 suites and five Biosafety level 3 enhanced suites
- Contain state-of-the-art biosafety features including: HEPA filtered supply and exhaust air; pressure cascade zoning; effluent collection and treatment; pressure decay tested structure, coatings, and penetrations; and, breathing air and chemical showers that support BSL-4 workers in air pressure resistant suits

Infrastructure

In order to support the HCCL and building operation the following infrastructure will be constructed:

- Extended utility tunnels to support new laboratory facilities needed in coming years
- Thermal storage for chilled water air conditioning (a primary laboratory utility) to improve energy efficiency, minimize water usage, and provide increased campus resiliency
- Storm water retention and treatment and water system upgrades
- Parking structure to address severe parking shortfall, which coupled with lacking public transit, has hindered access to campus
- Entranceway improvements to improve safety and traffic throughput



Future of High Containment Laboratory Research

With the current HCL aging- out, CDC must construct a safer, modern laboratory to meet the infectious disease challenges of today and tomorrow. CDC's health protection activities with pathogens that require high containment laboratory capacity include:

- Risk assessment studies to determine the pandemic potential of emerging influenza viruses, including analysis of their transmission potential and their ability to cause severe disease.
- Developing and testing emerging flu viruses for use in pandemic vaccine production.
- Support for work with more than 30 highly dangerous pathogens, including hantavirus, which is endemic in the United States and of particular domestic concern because of increased cases in recent years.