



DOE-NNSA LOS
ALAMOS SITE OFFICE

Biosafety Lab Facts

U. S. DEPARTMENT OF ENERGY
NATIONAL NUCLEAR SECURITY ADMINISTRATION

QUICKFACTS

- **There are 4 levels of BSLs, classified according to the facility design and type of agents being studied.**
- **Researchers at BSLs study diseases, develop diagnostic tests, vaccines and treatments.**
- **There are more than 350 BSL-3 Facilities in the U.S.**
- **Bioterrorism is the deliberate release of a microbe into a community in which it is not a current health concern.**

The BSL at LANL

The United States has identified an emerging threat to homeland security posed by the possible use of biological weapons. As a result, research and development activities involving biological select agents have increased. Several entities are interested in conducting such work at Los Alamos National Laboratory (LANL), including the Department of Homeland Security (DHS). Additionally, other Federal agencies in the intelligence and security communities, as well as military organizations, have expressed interest in working with LANL in this regard. Other research for these organizations is conducted at LANL.

New threats to health continually emerge naturally as bacteria and viruses evolve, are transported to new environments, or develop resistance to drugs and vaccines. Some familiar examples of these so-called emerging or re-emerging infections include HIV/AIDS, West Nile virus, severe acute respiratory syndrome

(SARS), monkeypox, and annual outbreaks of influenza.

To control epidemics and protect the public health, medical researchers must quickly identify naturally occurring microbes and then develop diagnostic tests, treatments, and vaccines for them. Preparing for bioterrorism calls for the identical scientific skills and strategies. Biosafety Labs (BSLs) are necessary to develop new and improved diagnostics,

agents, whether they occur naturally or are deliberately released by terrorists. Such research sometimes requires working with the actual microbes or their toxins. This research must be conducted in special biosafety laboratories and in accord with the many laws, regulations, policies, and well-established guidelines that govern research on these microbes and the design, management, and operation of

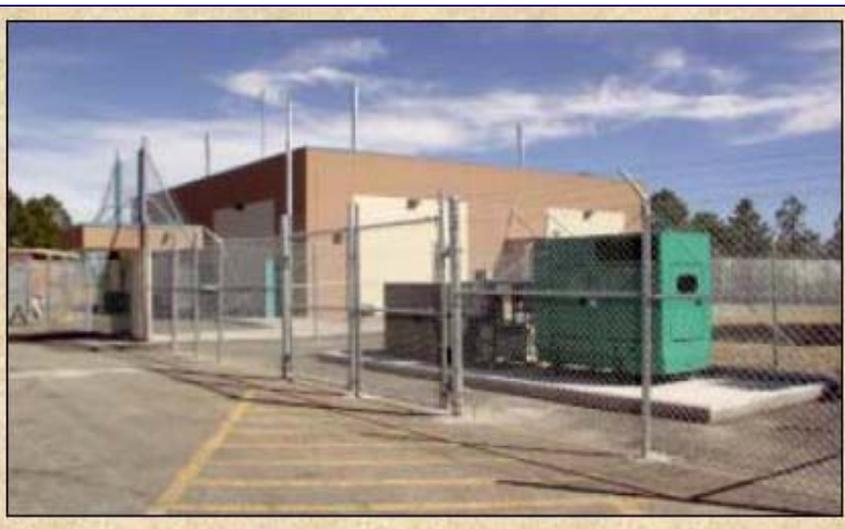


PHOTO OF BSL FACILITY AT LANL (2004).

vaccines, and treatments for diseases caused by infectious agents.

Medical tools such as these can only be developed with a solid understanding of the biology of the disease-causing

these laboratories. All these provisions aim to protect not only the lab workers but also the surrounding community from accidental exposure to infectious agents.



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The mission of the NNSA is to:

- To enhance United States national security through the military application of nuclear energy.
- To maintain and enhance the safety, reliability, and performance of the United States nuclear weapons stockpile, including the ability to design, produce and test, in order to meet national security requirements.
- To provide the United States Navy with safe, military effective nuclear propulsion plants and to ensure the safe and reliable operation of those plants.
- To promote international nuclear safety and proliferation.
 - To reduce global danger from weapons of mass destruction.
 - To support the United States leadership in science and technology.

We welcome your input!

The 4 Levels of Biosafety Laboratories

There are four biosafety levels (BSLs) that define proper laboratory techniques, safety equipment, and design, depending on the types of agents being studied:

- **BSL-1** labs are used to study agents not known to consistently cause disease in healthy adults. They follow basic safety procedures and require no special equipment or design features.
- **BSL-2** labs are used to study moderate-risk agents that pose a danger if accidentally inhaled, swallowed or exposed to the skin. Safety measures include the use of gloves and eyewear as well as handwashing sinks and waste decontamination facilities.
- **BSL-3** labs are used to study agents that can be transmitted through the air and cause potentially lethal infection. Researchers perform lab manipulations in a gas-tight enclosure. Other safety features include clothing decontamination, sealed windows, and specialized ventilation systems.
- **BSL-4** labs are used to study agents that pose a high risk of life-threatening disease for which no vaccine or therapy is available. Lab personnel are required to wear full-body, air-supplied suits and to shower when exiting the facility. The labs incorporate all BSL 3 features and occupy safe, isolated zones within a larger building.