

Attachment 5. Responses to Questions from the Planning and Transportation Commission and Public

This attachment provides responses to questions from the Planning and Transportation Commission and the public; these questions were received during the February 6, 2023 Planning and Transportation Commission meeting.

Characteristics of BSL-3 Facilities

What are a BSL-3 facilities, and what protections are required?

The following text which describes BSL-3 facilities is directly sourced from the U.S. Department of Health & Human Services website titled “Biosafety Level Requirements - Laboratory Containment for Human Pathogens: Biosafety Level 1 – Biosafety Level 4 facilities.”¹ This text provides a description of BSL-3 facilities and the required safety precautions.

Biosafety Level-3 (BSL-3)

BSL-3 laboratories are used to study infectious agents or toxins that may be transmitted through the air and cause potentially lethal infections. Researchers perform all experiments in a biosafety cabinet.² BSL-3 laboratories are designed to be easily decontaminated. As an additional safety measure, these laboratories must use controlled, or “directional,” air flow to ensure that air flows from non-laboratory areas (such as the hallway) into laboratory areas.

Other engineered safety features include a requirement for entry through two self-closing, interlocked doors, sealed windows, floors and walls, and filtered ventilation systems. BSL-3 labs must also be equipped to decontaminate laboratory waste using an incinerator, an autoclave, and/or another method of decontamination, depending on the biological risk assessment.

In addition to BSL-2 considerations,¹ BSL-3 laboratories have the following containment requirements:

Laboratory practices

- An Occupational Health Program exists for medical surveillance of laboratory workers. Laboratory workers are under medical surveillance and may be offered immunizations for infectious agents or toxins they work with, if available.
- Access to the laboratory is restricted and controlled at all times.

Safety equipment

- Appropriate PPE must be worn, and respirators might be required.

¹ “Biosafety Level Requirements.” *Science Safety Security*, U.S. Department of Health & Human Services. 25 Sept 2019, <https://www.phe.gov/s3/BioriskManagement/biocontainment/Pages/BSL-Requirements.aspx>.

² “Biosafety Cabinets.” *Science Safety Security*, U.S. Department of Health & Human Services. 25 Sept 2019, <https://www.phe.gov/s3/BioriskManagement/biocontainment/Pages/Biosafety-Cabinets.aspx>.

- All work with infectious agents or toxins must be performed within an appropriate biosafety cabinet.²

Facility construction

- A hands-free sink and eyewash are available near the exit.
- Exhaust air cannot be recirculated, and the laboratory must have sustained directional airflow by drawing air into the laboratory from clean areas towards potentially contaminated areas.
- Entrance to the lab is through two self-closing and interlocked doors.

BSL-3 Facilities in California

A regularly updated resource that documents all BSL-3 facilities in California is difficult to find; however, in preparation of the February 6, 2023 Planning and Transportation Commission Staff Report, staff found one source with data from 2014 which indicates that seven (7) BSL-3 facilities are located in California.³ (No BSL-4 facilities are located in California.)

Examples of BSL-3 facilities within California include: a facility operated by Gladstone Institutes at Mission Bay in San Francisco⁴; a facility operated by Microbiologics in San Diego⁵; and a facility operated by Stanford University in Palo Alto.⁶

Precautions

Security Precautions

During the February 6, 2023 Planning and Transportation Commission meeting, questions arose about the security of the buildings which house BSL activities. Regarding internal security, as mentioned in the previous section, buildings with laboratories have restricted access, and only trained, pre-approved personnel are allowed access to laboratories.

Regarding external security, laboratories with assigned biosafety levels that are located in urban areas, such as the Bay Area, or near major transportation corridors and access points, such as Highway 101 or the San Carlos Airport, are not considered more vulnerable to security threats, as compared to laboratories located in more remote locations. The precautions taken to safeguard laboratories in urban areas, their employees, and the surrounding environment are

³ "Biolabs in Your Backyard." *USA Today*. <https://www.usatoday.com/pages/interactives/biolabs/>. Accessed 18 January 2023.

⁴ Arcuni, Peter. "Inside New Biosafety Lab, Where Scientists Wrangle Live Coronavirus." *KQED*. 27 July 2020, <https://www.kqed.org/science/1967648/inside-sfs-new-biosafety-lab-scientists-study-live-coronavirus>.

⁵ "Microbiologics expands viral capabilities for SARS-CoV-2 with new BSL-3 laboratory at its San Diego facility." *Microbiologics*. <https://www.microbiologics.com/company-news-microbiologics-opens-biosafety-level-3-lab-san-diego>. Accessed 7 February 2023.

⁶ Brodhead, Andrew and Taylor Kubota. "A look inside Stanford's expanded Biosafety Level 3 (BSL3) lab." *Stanford News*. 4 December 2020. <https://news.stanford.edu/2020/12/04/look-inside-stanfords-expanded-biosafety-level-3-bsl3-lab/>.

considered ample from a security perspective.

Safety Precautions

The *Biosafety in Microbiological and Biomedical Laboratories* (BMBL) guidelines outline requirements for safety practices and equipment and the design of facilities.⁷ These safety requirements guide all aspects of BSL-3 activities from transporting materials and agents to facilities, to their use within facilities, to their disposal. These precautions seek to greatly reduce the likelihood of a possible exposure or release from laboratories with BSL activities. Table 1 provides an overview of requirements for BSL-3 activities, per the BMBL guidelines.

Table 1. Safety Requirements for BSL-3 Activities

Practices	Equipment	Facilities
<ul style="list-style-type: none">• Good micro-biological practice• Hand washing• No eating, drinking, or gum chewing in the laboratory• Most work may be performed on a bench top• Biohazard warning signs• "Sharps" precautions• Controlled access• Decontamination of all waste• Decontamination of lab clothing before laundering	<ul style="list-style-type: none">• Pipetting devices: Mouth pipetting is prohibited• Class I or II Biological Safety Cabinets (BSCs) or other physical containment devices with HEPA filters• Protective lab clothing, gloves, respiratory protection as needed	<ul style="list-style-type: none">• Open bench-top• Sink for hand washing is required• Autoclave available• Physical separation from access corridors• Self-closing, double-door access• Exhaust air is not recirculated• Negative airflow into laboratory• Design includes back up/redundant systems

Per the BMBL, facilities are required to be designed such that under failure conditions the airflow will not be reversed at the containment barrier. The facilities are tested annually or after significant modifications to ensure safety and operational parameters are met. Additionally, the biosafety cabinets (including the HEPA filters and filter housings) are to be certified at least annually to ensure correct performance.

Seismic Activity Precautions

All projects built in the City of San Carlos are subject to the most recently adopted California Building and Fire Code regulations, including regulations for seismic activity. The City of San Carlos has adopted the 2022 California Building Code and Fire Code by Ordinance in the San

⁷ Centers for Disease Control and Prevention, National Institutes of Health. *Biosafety in Microbiological and Biomedical Laboratories*. 6th Edition. U.S. Department of Health and Human Services. Revised June 2020.
www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2020-P.pdf

Carlos Municipal Code Chapter 15.04 - Technical Building Codes. These Codes are the most restrictive seismic regulations in the United States.

Flooding Precautions

Similarly, all projects built in the City of San Carlos are subject to provisions set forth in the City's Flood Damage Prevention regulations per Chapter 15.56 in the San Carlos Municipal Code.

The Flood Damage Prevention regulations require that all new construction be built at or above the floodplain. All mechanical equipment must also be constructed above the floodplain, including back-up generators. If underground parking is constructed, the underground parking is required to be protected from the risk of flood.

For Ordinance Option 2 (which would allow BSL-3 activities with a Conditional Use Permit), laboratory space must be elevated 10 feet above base flood elevation. This recommendation is based on planning guidance from OneShoreline, the San Mateo County Flood and Sea Level Rise Resiliency District.

BSL-3 Facilities' Safety Record

A limited number of breaches and lab-related infections have been documented; however, these are rare and limited occurrences. Additional regulations have been created by the Centers for Disease Control and Prevention and the National Institutes of Health in response to the breaches. Currently, there is no central reporting agency that tracks the incidents, and there is not enough data to track what percentage of facilities have breaches or lab-related infections. Since these incidents are rare, the precautions in place are considered sufficient to protect against frequent or notable breaches.