

SARS-CoV-2 Laboratory and Research Guidelines

The Office of laboratory Safety (OLS) has developed guidelines for research activities with SARS-CoV-2 and or clinical specimens from suspected or confirmed COVID-19 patients.

These guidelines address general principles regarding biosafety levels, however OLS or the Institutional Biosafety Committee (IBC), depending upon the precise scope of work, can alter the biosafety level for specific lab activities and procedures. Investigators should note the following:

- All research with SARS-CoV-2 or samples from COVID-19 patients must be described in research protocols approved by applicable institutional oversight committees, e.g. IBC, Institutional Review Board (IRB), and/or Institutional Animal Care and Use Committee (IACUC).
- For the purposes of these guidelines, specimens may include but are not limited to blood, serum, plasma, tissues, feces, urine, sputum, mucosal samples, bronchoalveolar lavage, and other respiratory secretions.

Research activities that must be performed at BSL-3/ABSL-3:

Current Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO) guidelines for research with SARS-CoV-2 require that any work involving isolation or propagation of virus, or infection of animal models, be performed at BSL-3/ABSL-3.

Research activities that may be performed at BSL-2+:

In many cases, handling of clinical specimens from suspected or confirmed COVID-19 patients can be performed at BSL-2+, including some of the following types of work:

- Processing, aliquoting, or preparing specimens for downstream assays or storage,
- Chemical or heat fixation of specimens,
- Extraction of nucleic acids,
- Preparation of inactivated specimens, or
- Performing diagnostic tests (e.g. serology) that do not involve potential propagation or concentration of virus.

Investigators should be aware of the following existing BSL-2+ requirements for lab facilities and work practices that must be met prior to handling SARS-CoV-2/COVID-19 clinical samples:

- All manipulation of potentially infectious materials **must** be performed in a certified

biosafety cabinet (BSC) or other primary containment device (e.g. sealed biosafety centrifuge safety cups or rotors that are loaded and unloaded in the BSC).

- All rooms operating at BSL-2+ must be negatively pressurized in relation to all surrounding laboratory and/or common areas to ensure appropriate secondary containment via directional airflow.
- While work at BSL-2+ is in progress, there must be a way of limiting access for those not appropriately trained or authorized for the work. While OLS prefers a dedicated room with a door, shared spaces with posting of “in use” signage can be acceptable for certain lab areas, upon the specific approval of OLS.
- Appropriate EPA-registered disinfectants for coronavirus must be used to decontaminate work surfaces, and solid and liquid wastes.
- Enhanced personal protective equipment (PPE) consisting of either a dedicated laboratory coat with a disposable liquid-resistant barrier (e.g. disposable apron), or a closed-front liquid barrier gown is required. Double gloves, a face mask or N-95 respirator, face shield or eye protection are also required. If proposed laboratory procedures cannot be performed inside a BSC, contact OLS as additional work practices and/or PPE must be required.
- Personnel must possess proficiency in BSL-2 laboratory practices as well as comprehension of applicable occupational health information (e.g. monitoring for symptoms, exposure response, reporting symptoms consistent with COVID-19 to Employee Health Services regardless of whether there is a known exposure or not). Training of personnel must be **documented**. The [Biosafety Level 2 with Enhanced Practices \(BSL-2+\)](#) guidelines includes a section for personnel signature to document their review and understanding of lab-specific training prior to beginning work.

Research activities that may be performed at BSL-2:

Work with appropriately inactivated or fixed specimens, and extracted nucleic acids may be performed at BSL-2 in most cases.

Registration of work, laboratory inspections, and biosafety manual review:

OLS recognizes the importance of supporting SARS-CoV-2/COVID-19 related research.

Investigators with currently approved BSL-2+ work areas and biosafety manuals should add proposed SARS-CoV-2/COVID-19 work to their manual and share with the OLS via labsafety@gwu.edu.

Investigators with currently approved BSL-2 work areas that seek to add SARS-CoV-2 research that potentially requires BSL-2+ containment as described above must contact OLS via labsafety@gwu.edu for approval of the designated space as BSL-2+. OLS will prioritize a laboratory safety inspection to ensure that all BSL-2+ requirements are met.