Considerations for Handling Potential SARS-CoV-2 Samples

**BSL2**

- Using automated instruments and analyzers (if aerosol containment is a feature) some devices might be older and not contained
- Staining and microscopic analysis of fixed smears
- Examination of bacterial cultures
- Pathologic examination and processing of formalin-fixed or otherwise inactivated tissues
  - Inactivation methods should be validated
- Molecular analysis of extracted nucleic acid preparations
- Final packaging of specimens for transport to diagnostic laboratories for additional testing
- Specimens should already be in a sealed, decontaminated primary container
- Using inactivated specimens, such as specimens in
- Nucleic acid extraction buffer
- Performing electron microscopic studies with glutaraldehyde fixed grids
  * CDC Source

**BSL2 with BSL3 practices**

- Aliquoting and/or diluting specimens
- Inoculating bacterial or mycological culture media
- Performing diagnostic tests that do not involve propagation of viral agents in vitro or in vivo
- Nucleic acid extraction procedures involving potentially infected specimens
- Preparation and chemical- or heat-fixing of smears for microscopic analysis
  * CDC Source

**BSL3**

- Virus isolation in cell culture and initial characterization of viral agents recovered in cultures of SARS-CoV-2 specimens

**Additional procedures**

- FACS/High Speed Cell Sorting
- Transfer of inactivated samples outside BSL3
- Inactivation by validated methods

**Laboratory Practices and Technique**

- Good (Standard) Microbiological Practices
  - Follow BSL3 practices and procedures according to CDC BMBL 5th ed.
  - Laboratory personnel must receive specific training in handling pathogenic and potentially lethal agents and must be supervised by scientists competent in handling infec-tious agents and associated procedures.

**Primary & Secondary Barriers and PPE**

- All procedures involving the manipulation of infectious materials must be conducted within a BSC, or other physical containment devices.
- Respiratory protection is required (N95 or PAPR/CAPR)
- Autoclave waste before disposal
- Facility exhaust system must have HEPA filtration

**Transfer of samples outside BSL3-based on risk assessment by biosafety officer**

- Ensure lids are tight
- Decontaminate outside of tubes
- Wrap sample with absorbent material
- Individually place into zip-lock bag
- Seal zip-lock bag and change gloves
- Add all wrapped samples into second bag
- Wrap bagged samples in ample packaging and place into designated carrier, firmly attach lid

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**Bench work**

- Whole blood, serum and urine
- Rapid respiratory testing performed at the point of care (no nucleic acid isolation)

**Laboratory Practices and Technique**

- Good (Standard) Microbiological Practices

**Primary Barriers and Personal Protective Equipment (PPE)**

- PPE: lab coat, single gloves, surgical mask, eye protection, face shield
- Work behind plexiglass screen in an isolated designated area (minimum)
- Notify others in the lab
- Work with samples done over a plastic-backed benchtop pad
- Surface decontamination at every step using EPA List N disinfectants and contact times.
- Potentially infectious materials must be placed in a durable, leak proof container during collection, handling, processing, storage, or transport within a facility.

**Administrative Controls:**

- Training and competency verification on donning and doffing required PPE
  *** The Lancet https://www.thelancet.com/journals/langas/article/PiiS2468-1253(20)30089-3fulltext

These considerations do not supersede any regulatory or country-specific requirements in your locale.

Laboratory practices, techniques, and administrative controls build upon the previous level. Additional controls are indicated at each level.