

## MITIGATION - SCIENCE AND TECHNOLOGY ADVANCES FOR CHEMICAL AND BIOLOGICAL HAZARD MITIGATION

### Coronaviruses (CV) And $\Phi 6$ Correlation Testing To Characterize Enveloped Virus Preparation, Virus Debris, Stabilization And Decontamination

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**Aims:** Develop a standardized COVID-19 mucus recipe for testing. Virus preparation and decontamination test methods will be developed for BSL1 virus ( $\Phi 6$  and MS2), at least one BSL2 coronavirus (229E), and then for BSL3 SARS-CoV-2.

**Methods and Results:** An extensive multi-year literature review was used to develop simulated lung fluid/mucus recipes to assess virus stabilization primarily for respiratory enveloped virus (SARS-CoV-2 and representative surrogates). Simulated lung fluid/mucus primarily includes host cell debris, mucin and salt. A sub-task for this project is to clone and produce human lung mucins, since these are not commercially available. This sub-task is in progress. Multiple batches of high titer virus have been produced and are being tested for stability. After generating multiple batches of virus and screening for virus titers, different simulated lung fluid recipes will be screened for stability during decontamination by testing inactivation kinetics using hot, humid air and ultraviolet light.

**Conclusions:** Development of a simulated lung fluid for respiratory enveloped virus is complex. The impact of debris on virus stabilization will strongly influence test data confidence for screening and selection of both decontamination and detection technologies.

**Significance and Impact of the Study:** Development of a simulated lung fluid recipe will advance test method standards, and increase confidence in virus test results. These methods impact the technical assessment when comparing technologies and assigning Technology Readiness Levels.

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