Principal Investigator: Date Approved:

**Centrifugation**

This SOP applies to centrifugation of biohazardous materials in University of Utah facilities.

Centrifugation generates aerosols and distorts primary containers, allowing aerosols to spread. Centrifuging biohazardous materials without an aerosol containment method exposes personnel and the environment to potentially infectious airborne droplets. To contain aerosols, centrifuges are placed inside aerosol containment devices (e.g., biosafety cabinet), or aerosol-tight containers, such as sealed rotors or buckets/safety cups (with gaskets/O-rings), are used to contain samples and opened only inside the biosafety cabinet.

**Personal Protective Equipment**

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**BSL1 or BSL2**

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**BSL2+**

**Engineering Controls, Equipment, and Materials**

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| **Centrifuge** | Appropriate for the tubes, rotor and speed required |
| **Biosafety Cabinet** | Enclosed, ventilated laboratory workspace that protects the worker from aerosols |
| **Aerosol-Tight Container(s)** | Primary tubes, centrifuge safety cups or centrifuge rotor with O-rings |

**Procedures**

1. Prepare samples in centrifuge tubes inside a BSC
2. Disinfect sample tube exteriors before removing from the BSC or load inside the BSC
3. Load centrifuge tubes into aerosol-tight safety cups or an aerosol-tight rotor and securely fasten the lid
4. Perform the centrifugation run
5. Check for leaks or spills after the centrifuge comes to a complete stop
6. Remove the safety cups or rotor from the centrifuge without breaking the aerosol-tight seal
7. Transfer the aerosol-tight container to the biosafety cabinet
8. Remove samples from the safety cup or rotor
9. Disinfect the interior and exterior of the safety cup/rotor following the Decontamination SOP

**Cautions and Considerations**

* If the centrifuge is inside an aerosol containment device, aerosol-tight containers are not required
* If primary centrifuge tubes are aerosol tight (i.e., have O-rings), safety cups are not required
* Examine O-rings before use for damage (e.g., cracks, deformities) and replace if needed
* Ensure that tubes are balanced and not over-filled
* Stop the centrifuge immediately if you notice any unusual noises or shaking
* Document regular disinfection of centrifuges in the Housekeeping and Decontamination Log
* Disinfect centrifuges before repair or maintenance activities, and document maintenance in the Equipment Maintenance Log
* To clean up a spills within a Closed Cup, Bucket, or Rotor
  + Put on lab coat, gloves, and proper eye protection prior to opening centrifuge. Open carefully to assess the damage: wait for one hour before opening the centrifuge in case containment has been breached.
  + Prepare the disinfectant and place supplies inside the biosafety cabinet (BSC).
  + If the spill is contained within a closed cup, bucket, or rotor, spray the exterior with disinfectant and allow at least 20 minutes of contact time. Remove the carrier to the BSC.
  + Open the centrifuge rotor or bucket inside of the BSC. Use a mechanical device (forceps, tongs, etc.) to remove broken glass and place directly into sharps container. Carefully remove any unbroken tubes. Wipe tubes and carrier/bucket with disinfectant.
  + After disinfection, carrier, bucket, or rotor must be washed with a mild soap and water.
  + Spray the interior of the centrifuge chamber with disinfectant and then wipe down with soap and water.
  + Dispose of all clean-up materials (except sharps) in an appropriate biohazardous waste container. Dispose of sharps in a biohazard sharps container.
  + Remove PPE, discard disposable PPE as biohazardous waste and wash hands.