



Standard Operating Procedure

UBCV-RMS-OHS-SOP**14-002**

Risk Management Services
www.riskmanagement.ubc.ca

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General Centrifuge Safety

1. SCOPE

The following information is simply meant to provide guidance in assisting you to develop your own centrifuge safety plan is not intended to be complete and may contain errors and omissions. For accurate up-to-date information please contact the manufacturer. Standard Operating Procedures must be followed when using centrifuges to ensure that all centrifuges in UBC laboratories are used, cared for and maintained in a safe manner.

2. RESPONSIBILITY

It is the responsibility of the employee supervisor to:

- train new users in safe usage and maintenance of the centrifuge, and supervise their use where necessary
- ensure that the safety procedures and centrifuge use log are kept close to the instrument
- provide copies of the user instructions including specifics on balancing loads in the rotor, maximum G loads in RPM, filling and sealing samples
- ensure all users fill out the centrifuge use log
- provide de-rating information on rotor based on centrifuge use log
- ensure that all the regular and periodic maintenance required is carried out and recorded in the maintenance log
- contact a service representative when repair is necessary and record repair details in centrifuge maintenance log

It is the responsibility of the user to:

- attend a mandatory training session on centrifuge lab safety, use, care and maintenance before being allowed to operate a centrifuge,
- operate and maintain all centrifuges in accordance with NIEHS policy and good safe laboratory procedures,
- safety procedures as required),
- Read and follow all instructions for safe usage and maintenance of the centrifuge.
- Should users at any time be unsure of the safe operation of the instrument they must refer to the instruction manual for details and/or ask the employee responsible for the centrifuge or the laboratory supervisor for assistance?



- Fill out the log each time the instrument is used,
- Report damage to centrifuge or rotor to the laboratory supervisor so action in terms of repair or de-rating may be performed.

After the training takes place, the training must be documented in accordance to WorkSafeBC, CFIA and PHAC regulations.

3. PERSONAL PROTECTIVE EQUIPMENT

Users should be wearing appropriate laboratory PPE

4. MATERIALS

In situations where risk group 2 agents will be centrifuged, centrifuge safety cups should be used. Tubes that are appropriate for the speeds and rotors of that particular centrifuge should be utilized.

5. REFERENCES AND DEFINITIONS

[UBC Laboratory Biosafety Manual](#)

6. PROCEDURE

6.1. General Safety Measures

- Centrifuges are instruments with strong potential for harming users due to the high speed at which they operate: mechanical failure of the rotor can result in injury, even death; and sample container breakage can generate aerosols that are harmful to inhale. Thus, it is very important to act safely when using and maintaining these instruments.

Note: ***** IF AT ANY TIME YOU ARE UNSURE HOW TO OPERATE THE INSTRUMENT SAFELY, PLEASE REFER TO THE INSTRUCTION MANUAL FOR DETAILS AND/OR ASK THE LABORATORY SUPERVISOR OR DESIGNATED EMPLOYEE FOR ASSISTANCE*****

- Centrifuges are instruments with strong potential for harming users due to the high speed at which they operate: mechanical failure of the rotor can result in injury, even death; and sample container breakage can generate aerosols that are harmful to inhale. Thus, it is very important to act safely when using and maintaining these instruments.
- The centrifuge should always be installed according to the manufacturer specifications.
- Do not locate the instrument near areas containing flammable reagents or combustible fluids, or where vibration will cause items to fall off nearby shelves.
- The centrifuge should be securely anchored by strong suction cups (benchtopy models), wheel brakes (floor models) etc. Movement of the instrument can damage parts and injure users.



- Request instructions from the manufacturer on safe transportation procedures if the centrifuge must be moved to another location and instructions are not in the operation manual.
- Proper selection, use and maintenance of rotors is critical to safe operation. Lack of care can lead to severe personal injury.
 - Use only rotors designed for use in this instrument.
 - Inspect the rotor for signs of corrosion or cracking before using. If found, do not use the rotor, and inform the employee responsible for the centrifuge of the problem.
 - Inspect the inter-lock system to ensure the cover cannot be opened while the rotor is spinning.
 - Never operate the rotor unless it is symmetrically loaded and balanced. Care is required to achieve this.
 - Never operate the rotor without the lid or cover closed and locked in place, if the lid cannot be locked, the machine must be removed from service.
 - Never exceed the maximum recommended speed of the rotor.
 - Clean and disinfect rotors and sample cavities or cups after each use with non- corrosive solutions.
- Sample management is also very important to safety. Lack of care can result in exposure of the user to harmful materials.
 - Always use sample tubes or bottles designed for the particular rotor being used
 - In general, samples should be capped to avoid generation of aerosols.
 - Nitrocellulose tubes should only be used when transparent and flexible. They must never be heated because of explosion possibility.
 - Plastic centrifuge tubes should be discarded after one cycle of ultracentrifugation. The failure rate for used tubes is a hazard that justifies using new tubes for each high G run.
 - When using radioactive, toxic, or pathogenic materials, be aware of potential hazards associated with them in case of leakage during centrifugation. If leakage does occur you may be exposed to particles dispersed in the air (aerosol). It is recommended that additional precautions be taken to prevent exposure to these materials such as the use of controlled ventilation or isolation areas.
 - If exposure occurs to radioactive, toxic or pathogenic materials all necessary precautions and appropriate decontamination procedures should be used (see lab safety procedures for toxic/pathogenic and Radiation Safety Guide for radioactive).
 - Dispose of all waste solutions according to appropriate health and safety guidelines.
- For safe use of the centrifuge



- Do not circumvent any of the safety features (such as lid closure override switches). They are there to protect you.
- Do not lean or place items on the instrument while it is operating.
- Do not leave the centrifuge until full operating speed is attained, and the instrument appears to be running normally without vibration.
- If vibration occurs, stop the run immediately; wait until the rotor stops, and check the load balances.
- In event of a power failure, do not try to open the lid to retrieve samples for at least one hour. After the rotor has stopped, follow the instructions in the manual for recovery of the

6.2. Emergency Procedure

In the event that an incident or accident related to centrifugation occurs:

- Turn off centrifuge and disconnect it from the power source
- Notify others in laboratory and evacuate
- Notify the lab supervisor
- Notify Department of University Safety
- Refer to hazardous agent use protocol (if required)
- Refer to radiation safety guide for radiochemical spills (if required)

7. REVIEW AND RETENTION

This SOP is reviewed annually or whenever deemed necessary by the responsible departmental representative.

8. DOCUMENT APPROVAL SIGNATURES

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History:			
Revised By:			
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Date	August 5, 2013	August 6, 2013	
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