



FUNDAMENTALS OF CENTRIFUGE SAFETY

CHAPTER 1:
CENTRIFUGE
OVERVIEW

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CHAPTER 2:
COMMON
CENTRIFUGES USED
IN LABORATORIES

CHAPTER 3:
CENTRIFUGE
HAZARDS

CHAPTER 4:
CENTRIFUGE
HAZARD
CONTROLS

CHAPTER 5:
CENTRIFUGE
EMERGENCIES

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Please click the next arrow below to continue...



NOTE: This course will take approximately 30 minutes to complete.





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CENTRIFUGE SAFETY INTRODUCTION VIDEO

CENTRIFUGE EXPLOSION



BREAKING NEWS



Shock wave from the accident shattered four windows and shook the inter



01:08 | 01:31





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CENTRIFUGE SAFETY

WELCOME TO FUNDAMENTALS OF CENTRIFUGE SAFETY

The purpose of this training is to provide general safety information intended to help laboratory staff recognize and control hazards associated with centrifuges.

Centrifuges are instruments used to separate mixtures based on particle size and density by spinning the mixtures at high speeds.

If used or maintained improperly, centrifuges have the potential to cause injury and potential exposures to biological hazards.



Note: This training is not intended to replace standard operating procedures specific to your laboratory.





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CENTRIFUGE OVERVIEW

GENERAL PARTS OF CENTRIFUGES

Here are the general parts of a centrifuge. Click on the name of each part to see a description of the part and where it is located.

[Centrifuge chamber](#)

[Centrifuge lid](#)

[Control panel](#)

[O-ring](#)

[Rotor](#)

[Rotor lid](#)

[Spindle](#)

[Motor](#)

[Power switch](#)



CLICK TO PLAY INTERACTION



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CENTRIFUGE HAZARDS

CENTRIFUGE HAZARDS (CONT.)

Physical (cont)

Explosions

- Incorrect tubes, unbalanced rotors and rotor failure can cause explosions.
- Rotors, especially those used in ultracentrifuges at high speed, are prone to metal fatigue over time. They can become cracked, distorted or corroded.
- Certain chemicals allowed to remain in the rotor from leaking samples or used to clean the rotor can also cause corrosion.

Noise

- You can sustain hearing loss with constant exposure to excessive noise levels over time.
- A high speed refrigerated centrifuge generates noise levels as high as 65 decibels (dBA).
- OSHA has set the "Action" level for enrolling in a hearing conservation program at an average of 85 dBA over an 8 hour work day. (See the Hearing Protection course for more information.)





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CENTRIFUGE HAZARD CONTROLS

CENTRIFUGE TUBE BALANCING

Centrifuge tube balancing is required. The number of rotor positions you will need to load can vary. Safe centrifugation requires balanced loading of the centrifuge rotor regardless of the number of positions. Unbalanced tubes can lead to permanent damage of the centrifuge and can be hazardous, particularly when operating at higher centrifugation speeds. If the centrifuge begins to shake or wobble, it is off balance and you should stop it immediately.

The precision of the balancing becomes progressively critical as the intended centrifugation speed increases. In most cases, the rotor should contain an even number of tubes. When working with an odd number of sample tubes use a balance or blank tube of the same weight as the opposing tube. Opposing tubes must be located 180 degrees from each other to achieve balance.



(Click here for [an example on how to properly balance.](#))





Correct! The biological safety cabinet and safety caps/cups are engineering controls that assist with minimizing the release of aerosols. Click next to continue.

OK

KNOWLEDGE CHECK

MULTIPLE ANSWER (SELECT ALL THAT APPLY)

Which of the following engineering controls assist with minimizing the release of infectious aerosols? Select all that apply.

- ☐ Face Shield
- ☒ Biological Safety Cabinet
- ☒ Safety caps/cups
- ☐ Safety Glasses

SUBMIT ANSWER





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CENTRIFUGE EMERGENCIES

ACCIDENTAL EXPOSURE

In the event of an exposure or suspected exposure:

- Follow your laboratory-specific SOPs or incident flow chart for exposures. This will have lab-specific information on how to handle the incident.
- Notify everyone in the area and your supervisor.
- Seek medical attention or call 911.
- After treatment, an incident report may be required to document any injury, illness or exposure, and signed by your supervisor.



Thank you!