

**“MOST CENTRIFUGE ACCIDENTS RESULT FROM USER ERROR.”**

- Occupational Safety and Health Administration

In 1998, a lab accident was put on record in which an ultracentrifuge spun out of control due to excessive mechanical stress caused by the gravitational force (g-force) of the high rotation speed. It destroyed a centrifuge, a nearby refrigerator, an ultra-low temperature freezer, a control system for an incubator, and all the windows in the room. The report revealed that the lab personnel used an **incompatible rotor** that did not match the centrifuge driveshaft. Fortunately, there were no reported injuries as the room was not occupied at the time.

THESE ACCIDENTS CAN BE PREVENTED IF USERS OPERATE HIGH-SPEED CENTRIFUGES PROPERLY.

Photo courtesy of Penn Environmental Health & Radiation Safety

HERE ARE FEW IMPORTANT GUIDELINES FOR OPERATING A CENTRIFUGE. COMPLIANCE WITH THESE PROCEDURES CAN REDUCE DAMAGE AND MINIMIZE OCCURRENCE OF SERIOUS INJURIES:

- Ensure that centrifuge bowls and tubes are dry and the spindle is clean.
- Do not use rotors and accessories that do not match the rotor of the centrifuge manufacturer.
- Inspect the sample tube for the presence of cracks, splits, or other damages before use. Replace when damaged.
- Avoid overfilling the tubes.
- Always use centrifuge safety cups with aerosol covers to contain spills and aerosols of potentially infectious materials.
- Ensure proper and tight installation of rotor in the driveshaft.
- Do not exceed the rotor's maximum run speed.
- Do not leave the centrifuge unattended. Wait until the centrifuge is at the desired speed/rcf setting and observe any unusual noise or excessive vibration especially upon system start-up.
- Close the centrifuge lid during operation.
- In case of spillage, wait for 10 minutes after the rotor stops before opening the lid. Decontaminate the centrifuge with 70% ethanol or 10% bleach solution afterward.
- Only properly trained personnel can check the O-rings on the rotor.
- Make sure that the centrifuge is in good condition after use.
- Schedule regular preventative maintenance.

**References:**

[1] Occupational Safety and Health Administration (2011). Laboratory Safety- Centrifuges. <https://www.osha.gov/sites/default/files/publications/OSHAquickfacts-lab-safety-centrifuges.pdf>

[2] Penn Environmental Health & Radiation Safety (n.d.). Ultracentrifuge Explosion Damages Laboratory. <https://ehrs.upenn.edu/health-safety/lab-safety/safety-alerts/ultracentrifuge-explosion-damages-laboratory>

