



Biosafety Tips

Karen B. Byers

Dana Farber Cancer Institute, Boston, Massachusetts

Biosafety Tips brings you practical approaches to biosafety or “news you can use.” If you are looking for a useful and sensible solution to a biocontainment problem or perhaps a reference to help convince a skeptical researcher of the need for caution, this is the place to look. In this column I will share some biosafety insights for managing a variety of workplace situations. I welcome feedback or suggestions for future topics. Please e-mail any comments or suggestions to karen_byers@dfci.harvard.edu or to Co-Editor Barbara Johnson at barbara_johnson@verizon.net.

Centrifugation at Biosafety Level 2/3

What if the Biosafety Level 2 or 3 research activities require centrifugation of microwell (or microtiter) plates? Previously, the options were limited. “Centrifugation of microwell plates poses a particular problem, as there are no gasket-sealable carriers available for them. The lids of the microwell plates can be sealed with tape, or replaced with an adhesive-backed Mylar film. Neither practice is ideal, but either is better than centrifugation in ‘open carriers’” (Richmond, 1988).

Now, simpler solutions are commercially available. Jouan, Thermo Electron Corporation, Kendro, and Beckman all provide accessories for contained centrifugation of microtiter plates, and the containment has been validated by outside testing laboratories. Beckman has a separate pamphlet on centrifuge containment, which may be useful for training purposes (see www.beckmancoulter.com/Literature/BioResearch/BR-9807A.pdf). The pamphlet discusses three levels of containment provided by labware, rotors, and the centrifuge. It also provides rein-

forcement for removing sealed rotors from the centrifuge and opening them in the biosafety cabinet, as well as recommendations for ultracentrifuge containment for agents handled at BSL-3 including HEPA filtration of exhaust, and/or enclosing the unit in a biosafety cabinet.

It is very helpful that vendors are providing more guidance in the selection of appropriate equipment for contained centrifugation. Undoubtedly other vendors manufacture equivalent products and this column is in no way recommending one product over another. Biosafety professionals should provide this type of technical information to purchasing and scientific staff as an example of the array of contained buckets and rotors available. Such information may prevent inappropriate purchases and delays in obtaining biosafety approvals.

However, having the appropriate equipment in the laboratory is not enough and biosafety professionals still have to audit the condition of the equipment and its use (Figure 1). Figures 2 and 2A are from the training developed for HIV researchers at this institution; they are also posted above the refrigerated microfuges to remind staff to remove rotors and carry them to the biosafety cabinet before opening. Figure 3 reminds researchers that both sealed rotors and buckets rely on the integrity of o-rings to maintain containment.

Reference

Richmond, J. (1988). Safe practices and procedures for working with human specimens in biomedical research laboratories. *Journal of Clinical Immunoassay*, 11, 115-119.

Figure 1

Appropriate centrifuge containment accessories for microtiter plates and buckets are present in this drawer under the centrifuge—but will they be used for every potentially infectious spin?



Figure 2

Removing the rotor from the microfuge using the T-shaped wrench.

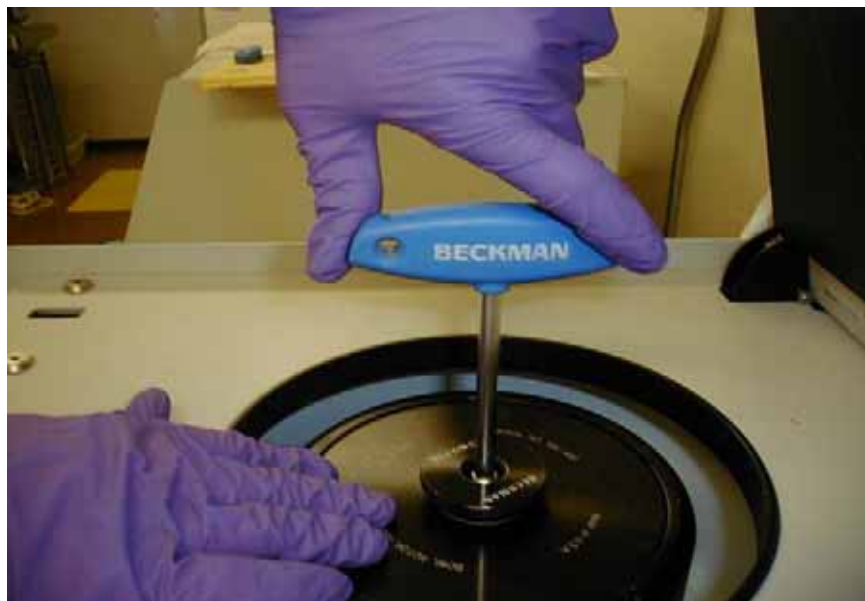


Figure 2A

Loading and unloading samples in the biosafety cabinet



Figure 3

No containment is provided by this rotor or the bucket safety covers because O-rings were either not installed or replaced as required.

