



Biosafety Tips

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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 situations that arise in the workplace. I welcome feedback or suggestions for future topics. Please send them by e-mail to karen_byers@dfci.harvard.edu or to the Journal Editors.

Are Needle-Locking Syringes Being Used in Your Laboratories?

The “Special Practices” section of the CDC/NIH *Guidelines for Biosafety Level 2* states that “only needle-locking syringes or disposable syringe-needle units (i.e., needle is integral to the syringe) are used for injection or aspiration of infectious materials” (CDC, 1999). Such devices are now used routinely; however, this was not always the case.

In 1979, Bruins and Tight reported a case of laboratory-acquired gonococcal conjunctivitis. “The accident occurred while a 37-year old bacteriology laboratory technician was inoculating *N. gonorrhoeae* into a rubber-stoppered vial of broth used in a diagnostic system. The tuberculin syringe and needle separated, spraying her face and left eye with a broth suspension of gonococci” (Bruins & Tight, 1979). The authors stated that “use of syringe with a self-locking device is recommended when injecting live pathogens and could have prevented this infection” (Bruins & Tight, 1979). The resulting gonococcal infection was cured with penicillin and erythromycin. But an obituary in the *Journal of the American*

Medical Association tells the story of a similar incident with a different pathogen and a different outcome. “Anna Pabst, bacteriologist of the U.S. Public Health Service, died December 25 of meningitis, which she contracted while conducting experiments in the laboratories of the National Institutes of Health. Miss Pabst received the infection December 17, when a squirming animal into which she was injecting the meningitis culture caused misdirection of the serum into her eye. She continued working until December 21, when she became ill. She was 39 years of age” (*JAMA*, 1936).

Industry and health and safety standards have virtually eliminated spray exposure during injection procedures. Nevertheless, it is advisable to check whether syringes with Luer-lok or similar devices are used for filtration procedures in your laboratories. Needle-locking tuberculin syringes became commercially available only a few years ago and some researchers may still purchase tuberculin syringes with an aptly named “slip” end, which has a straight tip with no locking features.

The following incident illustrates the potential for worker exposure when slip end tuberculin syringes are used. The timer went off, signaling the end of an incubation period for a complex experiment. As this experiment was time sensitive, the researcher suddenly had many experimental samples to filter. Quickly, the investigator attached small volume syringe filters to both 2cc and tuberculin syringes; there were just enough syringes in the drawer to filter every well in the multi-well tissue culture plates. During this procedure the researcher noticed a spray of infectious material occurred when the plunger was depressed into the syringe, but continued working in order to finish the experiment

within the required time constraints. After several such spray events, the researcher noted that the infectious spray (and critical loss of sample) did not occur with the Luer-lok 2cc syringe; the spray occurred only when the filter was attached to a tuberculin syringe with the slip end. Even when the filter was attached quite forcefully, the spray occurred when tuberculin syringes with a slip end were used. It was only after the samples were safely frozen that the potential for exposure was recognized and the incident was reported. Fortunately, the researcher was working in a biological safety cabinet and wearing appropriate personal protective equipment, which greatly reduced the risk from the potential exposure.

I described the incident to the technical services department of the filter manufacturer and was informed that the filter should be attached to a syringe with a locking device. The technical service representative agreed to recommend that future product literature should include information about the need to attach their filters to syringes with locking devices.

To prevent reoccurrence of such spray exposures, I immediately arranged to have only needle-locking tuberculin syringes purchased in our laboratories. To deal with existing supplies of tuberculin syringes with slip ends, memos explaining the incident were sent to every Principal Investigator and

the Lab Safety Officer of every lab. Lab personnel were instructed to post a memo regarding the use of needle-locking tuberculin syringes on the syringe cabinet to prevent reoccurrence of this type of incident. Two laboratories that used the tuberculin syringe with a slip end as an inexpensive mini-column were temporarily outraged at the change in purchasing policy, but they quickly found an acceptable alternative. These actions were taken to eliminate the potential for infectious spray due to the separation of a filter from a nonlocking syringe device. Of course, attaching the filter properly is required; failure to do so will still allow some potential for exposure during this procedure.

References

Anonymous. (1936). Obituary: Bacteriologist dies of meningitis. *JAMA*, 106, 129.

Bruins, S. C., & Tight, R. R. (1979). Laboratory-acquired gonococcal conjunctivitis. *JAMA*, 241(3), 274.

Centers for Disease Control and Prevention and National Institutes of Health. (1999). *Biosafety in Microbiological and Biomedical Laboratories* (4th ed.). Washington, DC: U.S. Government Printing Office.

Join a Committee

Have you ever considered joining a committee? When you choose to serve on a volunteer committee, you open up a world of possibilities for networking, professional growth, and career opportunities while serving your profession. Volunteer member groups are the backbone of the association because they:

- Serve as a forum for exchange of information
- Advance the science in all specialties of biosafety
- Develop guidelines and standards
- Provide education and training
- Link ABSA to many other institutions

You should explore committees in areas of the profession where you are active or have an interest. There is a great variety; you can be sure to find one of interest to you. Please review the list of committees and identify those areas in which you would like to participate or contact the chair of the committee (<http://www.absa.org/abocommittees.html>) that interests you to find out more information about the committee's goals. You are also invited to attend the committee's meeting during our national conference or at any other time (all committee meetings are open).