



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 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.

Staphylococcal Enterotoxin B (SEB) Laboratory Exposures

Is lab staff reluctant to wear personal protective equipment when working with toxins? These case studies warn that an itchy eye or nose can result in an exposure to experimental materials. Check out the September issue of *Emerging Infectious Diseases* at www.cdc.gov/ncidod/EID/vol10no9/04-0250.htm.

Researchers may relate to the three exposed laboratory workers in this article, since the procedures described are commonplace in many laboratories (Rusnak, 2004). For example, Worker 1 was injecting SEB into the endotracheal tube of a rabbit using a needle and syringe without a LuerLok. Less than 150 micrograms of *Staphylococcus enterotoxin B* (SEB) sprayed onto the researcher’s glove, and later he scratched his nose and the area around his left eye. Worker 2, who was not wearing gloves, was reconstituting SEB in the biosafety cabinet and was in the process of injecting 500 ug of SEB into a sealed vial, which was under pressure. Approximately 100 uL of SEB in solution foamed from the sealed vial

and one finger came into contact with the foam. She immediately washed her hands with soap and water, but rubbed her eye before drying her hands. It is estimated that Worker 2 was exposed to less than 50 micrograms of SEB. Worker 3 cleaned up a dime-sized amount of liquid found outside a biosafety cabinet. Within hours of these exposure incidents, all three patients had eye irritation, excessive yellow ocular discharge, and a swollen eyelid or face that did not resolve for 4 to 5 days. Workers 1 and 2 suffered severe gastrointestinal symptoms for 2-3 days [see article for details].

This paper is important, since it is the first report of conjunctivitis with eyelid or facial swelling resulting from ocular or cutaneous exposure to SEB. Gastrointestinal symptoms of SEB intoxication are documented in the literature. The author cites three historical incidents of aerosol exposure to SEB that occurred during the U.S. offensive biological warfare program conducted from 1945 to 1969. Twenty-four staff members were exposed in the three incidents, and 17 developed SEB intoxication symptoms (Wedum, 1996).

Published reports such as this article are a public service. Biosafety professionals should consider sharing this type of information with researchers to help prevent similar exposure incidents. If you have staff working with SEB, you should also send the web address for this article to your occupational health services. The discussion in the article emphasizes that SEB exposure incidents result in symptoms similar to that of an infectious exposure and your occupational health staff may find the report extremely helpful for proper diagnosis and follow-up after SEB exposures (Rusnak, 2004).

References

Rusnak, J. M., Kortepeter, M., Ulrich, R., Poli, M., & Boudreau, E. (2004). Laboratory exposures to staphylococcal enterotoxin B. *Emerging Infectious Diseases*, 10(9), 1544-1549. Available at: www.cdc.gov/ncidod/EID/vol10no9/04-0250.htm.

Wedum, A. G. (1996). The Detrick experience as a guide to the probable efficacy of P4 microbiological containment facilities on microbial recombinant DNA molecules. *Journal of the American Biological Safety Association*, 1(1), 7-25.

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