



## 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 Editor at irasalkin@aol.com.

### Achieving High Attendance Rates at Annual Retraining Sessions

How can you set up an effective annual retraining system to reinforce biosafety practices? There are probably as many methods as workplaces. One method that has been very successful at the Dana Farber Cancer Institute (DFCI) in Boston is to present an annual biosafety update as part of the environmental health and safety retraining effort. DFCI has about 1,200 biomedical research staff members, with eight in Environmental Health and Safety (EH&S). By working as a team, the EH&S group has achieved the following annual retraining rates:

- 2002: 97% attended out of the 909 research staff members\*
- 2001: 95% attended out of the 752 research staff members
- 2000: 97% attended out of the 841 research staff members
- 1999: 98% attended out of the 739 research staff members
- 1998: 86% attended out of the 700 research staff members

Retraining is required only for staff who have been at DFCI more than a year. New staff members are trained in the New Lab Staff Safety Orientation, where participation is 100% because keys and permanent identification are not issued without proof of attendance.

The Biosafety Officer could never achieve these attendance statistics working independently. Success has evolved over many years, starting with Liz Gross, CIH, today's EH&S Director who initiated the program in the late 1980s by visiting every research group annually. But as the number of researchers grew, the nightmare of scheduling individual sessions also grew. Today, EH&S has redesigned the annual safety update training to minimize its impact on the EH&S schedule, yet maximize our visibility and impact by increasing attendance rates.

DFCI's face-to-face annual update program covers the basic information required by the research community as a whole. Since it cannot meet every training need, many specialized training modules have been developed that are presented throughout the year. For example, in Biosafety these include Bloodborne Pathogen training, Retroviral Vector Safety, Animal Biosafety Level 2, Biosafety Level 3, Animal Biosafety Level 3, Shipping Infectious Agents, Shipping Clinical Specimens, etc.

However, annually training the entire research staff does offer many bonuses. These include opportunities to review community standards, such as appropriate practices for shared equipment rooms, cold rooms, waste handling, etc., and opportunities for researchers to provide feedback on EH&S policies and procedures. In addition, lab staff who might never take the time to call or email EH&S will often seek out the appropriate specialist to discuss new

issues during these sessions.

So how do we get so many researchers in their seats at annual retrain? The key to the high attendance rates are the combined efforts of the EH&S and research division administrative staffs. The EH&S administrative assistant contacts the business manager in each of the five research divisions to set up two or three sessions. These "division sessions" are advertised only within the division and involve several Principal Investigators (PI) groups. To accommodate scheduling conflicts and improve attendance, five to seven general sessions open to all research staff are also scheduled. These general annual retrain sessions are advertised by global emails and facility loudspeaker announcements. Again, the EH&S administrative assistants play a pivotal role by scoring quizzes within a day and forwarding scores and attendance sheets to the division business office for follow-up. Thus researchers who did not attend receive personal messages from their administrative staff until they do so. We've also have seen quiz results posted on departmental bulletin boards—peer pressure can be extremely helpful.

Each year the EH&S department holds about 20 sessions within 3 weeks. This is a grueling time, but everyone feels strongly that the effort is worthwhile. After this 3-week marathon, there is a 1-week break and then one or two make-up sessions are scheduled. At that point, EH&S staff call researchers who have not attended and urge them to do so. Finally, the few who insist on it receive a more comprehensive handout and a longer, more detailed quiz. A passing grade on that quiz is counted as completion of the annual retrain requirement.

What does the basic biosafety update cover? The following messages are always included:

- The importance of the green ID card that contains the Blood/Body Fluid exposure reporting procedure and other emergency procedures. If staff do not have it, replacements are provided.
- The location of posted spill procedures and the major concepts of spill procedures
- Biosafety Level 2 basics, with an emphasis on sharps substitution and handling
- Biohazard waste disposal policies, with an emphasis on "sharps" disposal
- An explanation of why razor blades and unat-

tached sterile surgical blades were removed from our supply store. Samples of disposable safety scalpels, which can be used for many research applications, are handed out.

- Select Agents: definition and highlights of regulatory requirements
- Epidemiology of bloodborne pathogens and a review of potential exposure incidents
- Elimination of cardboard containers from cold room storage.

The EH&S training takes exactly 1 hour: 20 minutes for chemical, environmental, and fire safety; 20 minutes for radiation safety; and 20 minutes for biosafety. Inevitably, every year a few reluctant PIs always ask, "How long is this *really* going to take?" Because we've practiced, we can say confidently and credibly, "1 hour."

One tip for keeping on schedule is having several sign-in clipboards and several piles of handouts. It is also helpful to have at least three EH&S staff members present. This allows for a quick distribution of the quiz and pens at the end of the session. Quizzes are collected as staff leave. Those who need extra time can work comfortably for a few more minutes while EH&S packs up the training materials.

A small fraction of the EH&S update training may not apply to some staff in attendance. For instance, an individual staff member might not personally use radioisotopes in his or her research. However, all generally agree that 20 minutes of basic information about a hazard used in their research laboratory is not too much for anyone to endure.

EH&S uses PowerPoint and a digital camera to prepare timely messages, and we capitalize on staff curiosity about what the "good" and "bad" pictures will be. To ensure that the presentation enhances the credibility of the EH&S Department, we prepare carefully so that each slide meets every standard of professionalism. For example, inappropriate sharps disposal or spill response must be described for educational benefit without any hint of who was involved or where it happened. Presenting first within our own department is very helpful—if coworkers find the message too convoluted, then it must be revised.

Because it provides a strong indication of whether or not training has been successful, the lab

audit program is an excellent indicator of what items to cover in the annual retrain. In 2002, for example, the lab audit data documented the benefit of repetition, so I now repeat the message about the appropriate method for sharps disposal in every annual biosafety presentation. On the written quiz given immediately after training, 99% of staff now correctly answer the question on DFCI's sharps container disposal method. Even better indicators of staff knowledge come when the correct answer is given to the same question posed by the EH&S specialist during a lab audit, and when overfilled sharps containers are no longer present in the laboratories.

As these experiences demonstrate, annual reinforcement of appropriate practices eventually affects the behavior of the research community. However, the downside may be that these results may reinforce

repetitive communications from the biosafety officer.

To sum up presenting an annual biosafety update as part of an environmental health and safety retraining effort can be a very effective method of reinforcing good biosafety practices. Oh wait, I said that already... .

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**Figure 1**

Knowledge of Sharps Disposal Practices

	% of Staff with Correct Quiz Answer at Retrain	% Labs with Correct Verbal Response During Lab Audit	% Labs with Overfilled Sharps Containers During Lab Audit
2001	99%	95%	2%
2000	88%	78%	3%
1999	93%	67%	5%
1998	Didn't ask that year.	58%	15%