



ENVIRONMENTAL HEALTH & ENGINEERING



THE ROLE OF WEB-BASED HEALTH AND SAFETY
TRAINING IN LABORATORY FACILITIES



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Employee health and safety (H&S) training is an essential part of meeting U.S. Environmental Protection Agency (EPA) and U.S. Occupational Safety Health Administration (OSHA) compliance requirements, and in a laboratory facility is especially important in maintaining a safe workplace for all employees. It provides those working in laboratories with the specialized knowledge they need to perform their jobs safely, and should provide a conduit for obtaining further information when needed. OSHA requires training in most of its general industry standards, including many of its most commonly cited standards such as bloodborne pathogens, hazard communication, and personal protective equipment. Failure to train employees properly in these and other topics can result in accidents, lost work time, and regulatory fines.

Maintaining the specialized H&S training program necessary for a laboratory facility has a number of challenges. Perhaps the most common are:

- ▶ Complying with the relevant standards (proper subject matter).
- ▶ Proper training for site-specific activities.
- ▶ Reaching all employees who require training.
- ▶ Maintaining the required training records.
- ▶ Providing employees with a source for obtaining answers to questions.
- ▶ Meeting budget requirements.

The traditional training method is classroom presentations conducted by a subject expert. This can be an effective method but requires scheduling time (both employee and trainer) and, of course, having a trainer knowledgeable in the topic(s) covered. The trainer (usually environmental health and safety staff) must plan the training, prepare the materials, schedule the training sessions, and track attendance records. Training a large number of employees also means that the



training must be repeated often in order to reach all employees. Therefore, live classroom training requires a substantial time commitment for environmental health and safety (EH&S) staff. As a result, alternative methods for training have emerged to augment classroom training, including video training (often a recording of the classroom training), software training (typically PowerPoint presentations), and web-based training.

While all three alternative methods have proven effective at reducing the time commitment of the EH&S staff, web-based training is emerging as the preferred method due to its adaptability to employees schedules, the ease with which the content can be updated to accommodate regulatory changes and site-specific needs, and the ability to automatically track training records.

To illustrate the practical benefits of web-based training programs in the laboratory setting, three case studies follow that describe how web training has been used at different institutions.

Increased Training Attendance/Compliance

Jennifer Davis, M.S., is the Manager of Environmental Health and Safety and Biosafety Officer at the Harvard Institutes of Medicine / New Research Building (HIM) in Boston, Massachusetts. HIM is a medical research facility occupied by approximately 2,100 researchers from Harvard Medical School, Brigham and Women's Hospital, Beth Israel Deaconess Medical Center, and Dana-Farber Cancer Institute. The EH&S staff historically provided training for its employees exclusively through twice monthly classroom sessions, each session lasting approximately 90 minutes to two hours depending on the number of participant questions. Ms. Davis calculates that these training sessions typically reached 75% of employees due to scheduling conflicts and employee turnover. New hires would have to wait until the next scheduled session to receive H&S training.



In July 2005, the HIM EH&S Office began offering H&S training to its employees via a web interface. Ms. Davis reports that web-based training has offered several significant benefits to HIM including:

- ▶ Increased number of employees trained.
- ▶ Increased timeliness of training.
- ▶ Reduced resources required to conduct training.
- ▶ Increased employee awareness of H&S issues.

Approximately one year after implementation of the web-based training, 1,078 HIM employees have received their H&S training online. According to Ms. Davis, the most striking result of the implementation of web-based training was the immediate improvement in on-time completion, from the initial 75% to nearly 100%. The improvement in employee access to training has allowed HIM management to institute a policy requiring all employees to maintain current training status to gain access to the facility via their access card. New employees are also required to complete the H&S training before their ID card allows access to the building.

The web training has also allowed HIM to reduce the resources dedicated to conducting training. EH&S staff now perform one monthly training session instead of two (specialized topics), prepare one-tenth the training materials, and tracking efforts are substantially reduced. Ms. Davis additionally reports that web-based training has increased employee awareness of health and safety issues, this is based on questions relating to training materials posed during routine laboratory inspections. The web-based training format additionally allows more detailed content to be presented to employees than previously presented in the two-hour in-person training. Her office has also seen an increase in questions from employees regarding specific H&S issues as they relate to their operations.



Improved Recordkeeping

Casey Lucas is the Laboratory Safety Coordinator at Brigham and Woman's Hospital (BWH) Department of Environmental Affairs (DEA). Mr. Lucas estimates that he previously dedicated two weeks of each year to H&S training (two one-hour training sessions per month plus overhead). Recently BWH has begun transitioning to web-based training to help alleviate the EH&S staff workload. Mr. Lucas sees the decrease in recordkeeping activities as the largest advantage of web-based training. Over 3,000 BWH laboratory (clinical, research, and associated staff) employees require H&S training at least annually. Previous tracking procedures required manual data-entry of trainee information (department, date of attendance, supervisor, etc.) and supervisors were responsible for keeping track of when employees required re-training. Routine audits of the records pointed to a relatively high number of employees with dated training.

With the web-based system, recordkeeping is completely automated. Also, with this method, supervisors and EH&S staff can be notified via email of outstanding dates. Mr. Lucas also finds the participant data useful during annual laboratory inspections. An individual laboratory's compliance can be compared to the percentage of trained staff, making the web-based training an important element of the inspection program. These data also provide a powerful compliance metric when used during evaluations of the H&S program to plan future strategies.

Providing Specialized Content

Jan Utrecht is the Director of Environmental Health and Safety at the University of Cincinnati (UC). Mr. Utrecht is responsible for providing H&S training to UC's 10,000 staff and 35,000 students.

In 2003, Mr. Utrecht sought to expand his training program for UC staff in research laboratories. He felt the highly-educated staff was not as receptive to the



general classroom offerings provided by the UC EH&S department. He sought a classroom training alternative that contained more specialized content, and was therefore, more engaging to the researchers, and a program that was within his budget. After discussions with peers at other universities, he decided to hire a recognized consulting company experienced in laboratory safety to create highly specialized content for web-based training. The content addressed the specific laboratory processes and equipment on campus. Staff representatives were allowed to review the training modules as they were developed.

Today Mr. Utrecht has a web-based training program that applies to laboratory workers, animal care staff, facilities staff, and general H&S compliance. The web-based training model has allowed UC to leverage this specialized training content over a large number of employees in an economical manner. It also provides him with a way to easily and inexpensively update the materials as needed, so his programs will not become outdated. Mr. Utrecht estimates that annually over 1,500 staff members now receive their training via the web.

Limitations of Web Training in the Laboratory

In each of the three case studies reviewed, web-based training was not able to displace classroom training entirely. The EH&S staff at all three institutions point to three important aspects of the classroom (or personalized) training approach that remains beneficial to them.

- ▶ Classroom training (or in-person training) remains important for site-specific procedures or hazards, and especially for the initial orientation training that familiarizes new employees with their surroundings.
- ▶ Classroom training allows an open forum for discussion that is not available in a web or automated format. While at least two sites reported an increase in overall awareness based on employee questions, they feel some site-specific activities or conditions warrant the atmosphere for discussion.



- ▶ Demonstrations are possible during classroom presentations that are not possible via the web. Especially for site-specific activities, demonstrations can be helpful during training.

For these reasons, the classroom approach is still being used at all three of the case study sites. Classroom topics are now typically limited to site-specific issues and the time/material commitment has been substantially reduced.

Summary

Web-based H&S training is becoming commonplace in many industries but is relatively new in the laboratory and research settings due to the specialized nature of the activities. However, web-based programs have recently been developed that cover many of the training requirements for the laboratory setting. These programs have been shown to reduce the burden on EH&S staff from both training and recordkeeping, while having a positive impact on the H&S program through a higher level of training compliance and a greater awareness of H&S within the organization.

Currently, web-based training is not seen as a substitute for all aspects of H&S training in these settings. In most applications, classroom or personalized training is still seen as necessary for new employee orientation training and for site-specific conditions that require specialized content or that can benefit from an open discussion format.

H&S web-based training programs for laboratory settings provide an immediate benefit to large organizations through improved employee access to training materials, a reduction in the classroom training required, and automated recordkeeping. Both large and small organizations can benefit from economical access to highly specialized (and up-to-date) content developed by industry experts.



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