Acknowledgement

Project Team Members

<table>
<thead>
<tr>
<th>Name</th>
<th>University</th>
</tr>
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<tbody>
<tr>
<td>Julie Koppel, <strong>Project Leader</strong></td>
<td><em>University of California Santa Barbara</em></td>
</tr>
<tr>
<td>Brooke Vaughn</td>
<td><em>University of California Irvine</em></td>
</tr>
<tr>
<td>Jessica Drew de Paz, Psy.D.</td>
<td><em>University of California Merced</em></td>
</tr>
<tr>
<td>Kevin Creed</td>
<td><em>University of California San Diego</em></td>
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<tr>
<td>Rich Belmontez</td>
<td><em>University of California Riverside</em></td>
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<tr>
<td>Janette De La Rosa Ducut, Ed.D.</td>
<td><em>University of California Santa Cruz</em></td>
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<tr>
<td>Dale Thrasher</td>
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Systemwide Training and Education Workgroup (STEW)

About STEW

The Systemwide Training and Education Workgroup (STEW) is composed of Environmental Health and Safety (EH&S) representatives from each of the University of California (UC) campuses, national laboratories, and Office of the President (OP). The group’s purpose is to collaborate on projects and programs shared in common.

The workgroup is responsible for ensuring that systemwide training and education initiatives and projects are aligned with organizational values, goals, and objectives and support both the UC mission and the EH&S strategic plan. The workgroup identifies opportunities for collaboration and encourage the sharing and standardization of training that is based upon accepted best practices, standards, and guidelines. The workgroup is also responsible for reviewing systemwide training projects and making recommendations to the EHS Leadership Council.

Members

Agreed and adopted April 21, 2011 in Merced, CA. Revised July 8, 2011

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<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Thor Benzing</td>
<td><em>Agricultural and Natural Resources (ANR)</em></td>
</tr>
<tr>
<td>Brooke Vaughn</td>
<td><em>Lawrence Berkeley National Laboratory (LBNL)</em></td>
</tr>
<tr>
<td>M. Tim Bean</td>
<td><em>University of California Berkeley</em></td>
</tr>
<tr>
<td>Kelly Duncan</td>
<td><em>University of California Davis</em></td>
</tr>
<tr>
<td>Karin Wasler</td>
<td><em>University of California Los Angeles</em></td>
</tr>
<tr>
<td>Kevin Creed</td>
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<tr>
<td>Rich Belmontez</td>
<td><em>University of California San Diego</em></td>
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<tr>
<td>Henk Mar</td>
<td><em>University of California San Francisco</em></td>
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<tr>
<td>Julie Koppel</td>
<td><em>University of California Santa Barbara</em></td>
</tr>
<tr>
<td>Kitty Woldow</td>
<td><em>University of California Santa Cruz</em></td>
</tr>
<tr>
<td>Erike Young</td>
<td><em>University of California Office of the President</em></td>
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Introduction

The University of California (UC) acknowledges its obligation to provide Environmental Health & Safety (EH&S) training, ensuring the skills necessary for safe and efficient support of the University mission. In providing comprehensible training to such a large and diverse population, due attention must be paid to barriers such as levels of literacy, learning abilities, and language.

The Occupational Health and Safety Administration (OSHA) has also recognized the potential risk that lack of comprehensible training poses to workplace safety. Thus, OSHA stipulates that training be presented in a language, and at a level of comprehension, which the participant readily understands. The lack of best practices, standards, and guidelines on how to provide training in this manner may result in inconsistent implementation and confusion across the University.

Policy

Successful completion of Environment, Health, Safety, Emergency, and/or Risk Management training shall facilitate learner comprehension. Training shall be developed, delivered, and evaluated such that the training needs of the target audience and any barriers to comprehension are addressed by the training program.

Purpose

The purpose of this document is to establish UC best practices, standards, and guidelines for EH&S training as required by regulation, policy, or job performance in a “readily understandable” format. These practices will take the form of standardized methods and acceptable criteria that facilitates learner comprehension. Standards and guidelines will be established within the framework of an effective training program.

Scope

These best practices, standards, and guidelines would apply to all EH&S training activities as required by regulation, policy, or safe job performance. These guidelines are not intended to prevail where more stringent regulations, guidelines or criteria for training is available or required.

Program Elements

The elements of an effective training program include adequate:

1. Staffing
2. Resources and Facilities
3. Course Development
4. Delivery
5. Evaluations
6. Records

Best practices, standards, and guidelines are outlines within each of these program elements in detail on the following pages.
There are two major staffing roles: Training Manager and Instructors.

**Training Manager**

Each training program should be under the direction of a Training Manager who is responsible for the program. This person’s role is to provide leadership, and assure the usefulness of appropriate health and safety training programs. The Training Manager maintains the program elements of adequate and competent staffing, resources and facilities, course development, training materials, evaluations, and records management.

**Experience.** The Training Manager should have a minimum of two years of training and education experience in developing and delivering worker safety and health training (or equivalent).

**Responsibilities:**

- **Review of training materials.** The Training Manager should ensure the review of all training course materials and other training aids prior to their initial use and as needed thereafter. These include course syllabi, handouts, manuals, instructor manuals, audiovisual aids, enhanced technology methods, demonstration and hands-on equipment, and other such training materials. This review is to ensure the technical accuracy of the materials against requirements by federal and state agencies (i.e., Cal/OSHA, CDC, FEMA, NFPA, EPA), as well as UCOP and campus specific requirements.

- **Evaluation of Program.** The Training Manager should develop and maintain a program evaluation plan. At least annually, the Training Manager should modify the program to address identified deficiencies (based on course evaluations), relevant new standards or regulations, or new training methods and technologies. Program evaluations should address the key questions in the section on *Evaluations.*

**Instructors**

Instructors are subject matter experts who deliver content in a classroom setting, or instructional designers who deliver content online, under direction of a Training Manager.

**Experience.** Some OSHA standards (i.e., 29 CFR 1910.1210) require trainers to be qualified to instruct about the subject matter that is being presented in training. Instruction should be done by qualified persons. The ANSI Z490.1 standard defines a competent training professional as a person prepared by education, training, or experience to develop and implement various elements of a training program. Instructors and classroom facilitators should be deemed competent by the Training Manager to instruct specific courses or training components by:

- Related subject matter *education* (i.e., degree, diploma, certificate, transcript);
- Documented relevant *experience* (i.e., copy of a resume, reference check, or professional certification);
- Maintaining competency by participating in *continuing education or professional development programs*; or
- An annual *evaluation of instructional competence* by the campus

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**Checkpoint**

**Training Manager:**

*Should maintain the program elements of adequate and competent staffing, resources and facilities, course development, training materials, and records management.*

- Ensures the review of all course materials and other training aids against requirements by federal, state, and local agencies (i.e., Cal/OSHA, UCOP, and campus).

- Enacts a plan for program evaluation.

**Instructors:**

*Should be deemed competent via experience, education, or training to instruct specific courses or training components.*
There may be times when contractors or vendors are used to provide training. In those cases, ensuring competency resides with the training provider. The Training Manager may deem the contractor or vendor competent by formal/informal review of the company’s profile.

Other staffing roles include:

1. **Administrative Assistants or Analysts.** Responsible for preparing rosters, entering rosters, maintaining databases, or assisting with classroom setup.

2. **Instructional designer.** Determines the current state and needs of the learner, defines the end goal of instruction, and creates some “intervention” to assist in the

3. **Information Technology (IT) staff.** Writes original coding (or publishes) online training courses, develops webpages to support course materials, or supports educational technology in a classroom setting.

4. **Multimedia / Production staff.** Technical writers, videographers, or visual designers who are skilled in communication of content. May produce posters, handouts, brochures, or design powerpoint presentations.
Resources and Facilities

Ideally, training facilities should have sufficient resources and equipment to perform classroom and activity-based learning in a setting conducive to effective learning.

However, often such facilities are not available and instructors find themselves having to make do and adapt to training in the environment they are given. Sometimes training will be done in remote or non-traditional locations. For example, this could be “in the field” where workers are waiting to be hired, in the case of day laborers. In other cases, you may be in a smaller room than anticipated, or there may be no electrical outlets, or flip charts in the room where you are training. Trainers should anticipate such setbacks and prepare as best as they can.

Facilities

Space and facilities should encourage small group exercises or hands-on training using equipment as part of activity-based learning. Adequate and appropriate facilities for supporting the training include the following:

- **Sufficient space** for all attendees to sit comfortably during instruction;
- **Sufficient room setup** for participants to interact with one another;
- **Enough equipment** for all attendees and demonstration equipment for the instructor/facilitator (if applicable);
- **Technology** equipment, technical support, and resources sufficient to support training, such as during instructor presentations or web-based training used by participants to enhance learning (if applicable).

![Figure 1. Room Setups That Encourage Participation and Improve Learning](image)

**Checkpoint**

**Ratios**

There should be at least one instructor for every 25 participants.

**Facilities:**

Training facilities should have sufficient resources, and equipment to perform classroom and activity-based learning in a setting conducive to effective learning. Provide adequate:

1. **Space** that is comfortable,
2. **Room set-up** that encourages interaction,
3. **Equipment** for hands-on practice, and
4. **Technology** / technical support to support training and enhance learning.
Course Development

Per ANSI Z-490.1-2009, training development should follow a systematic process that includes:

1. Needs assessment
2. Objectives
3. Course Design
4. Delivery
5. Evaluation

Training courses should be developed and updated as necessary to be consistent with recognized principles of training development / instructional design. Training is effective when knowledge is imparted, or a desired outcome emerges in support of specified learning objectives. For training to be successful it must both be properly developed and delivered, but also be understood by the learner. The barriers to understanding are many; they are distinct and may be profound. In addition to the obvious barrier of language, less evident barriers such as literacy, learning style, and special needs must be addressed in order for training to be effective.

Needs assessment

Annually, the Training Manager should review organizational (campus), occupational (job-specific), and individual needs for training. Particular attention should be devoted to the following with respect to course design and content:

- Regulatory requirements utilizing a training matrix
- Demographics of the training target audience and their training needs.

The needs assessment should identify the target audience characteristics and plan for instruction by influencing course design.

Regulatory requirements

The Training Manager should identify the minimum training requirements that each individual must complete in order to be compliant with federal, state, local, and campus regulations. At minimum, the training matrix published by Cal/OSHA should be incorporated.

Checkpoint

Course Development should systematically include:

1. Needs assessment(s) should identify the target audience characteristics and influence course design by addressing:
   a. Training courses that need to be completed per regulatory requirements by incorporating a training matrix (at minimum, the one published by Cal/OSHA); and
   b. Demographics of target audience and their training needs (including their literacy level)

2. Objectives that are measurable and observable, and specific to what a participant must do after the training

3. Course design that translates adult learning principles into lesson plans; such as ADDIE, Backward Design, and Problem Based Learning.
Demographics

Needs of specific populations should be taken into consideration. Training should address the question, “What is the literacy level of your target audience?”

Federal Occupational Safety and Health Administration (OSHA) has acknowledged training comprehension as a significant risk to workplace safety and so stipulates information be presented in a manner that employees receiving it are capable of understanding (OSHA, 2010).

<table>
<thead>
<tr>
<th>Population</th>
<th>Practices</th>
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<tbody>
<tr>
<td>1. English Language Learner (ELL), English as a Second Language (ESL), or Limited English proficiency.</td>
<td>Materials should be easy to understand (simplified) or written in languages other than English. Favor those materials that encourage interaction, participant input, and critical thinking. Convey information using pictograms, visuals, and demonstrations or other methods that are non-verbal. Partner them with other participants who can help. Employ approaches similar to those used for low literacy audiences.</td>
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</table>
| 2. Illiteracy.  
**Literacy can be defined as the ability to “use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential”** (National Coalition for Literacy, 2009). Some individuals, including those born in the U.S., have limited literacy in their primary language. Some may speak a language but not able to read or write it; others may be able to speak, read, or write but at a level significantly lower than the level of the training. | Prepare or acquire low-literacy training materials and teaching methods that are visual in nature and not limited to written communication (i.e., teach to a 5th grade level). Use teaching methods that require fewer literacy skills (i.e., photos, short role-plays, case studies, demonstrations, hands on practice, and small group activities). Demonstrate what you’re saying by using touchable items (i.e., models, samples). Use short, simple sentences, avoiding jargon and slang terms. Present one topic at a time. Repeat key information. Use materials with large print, simple (serif) font, lots of white space, and drawings. |
A person's verbal ability often tends to exceed their literacy levels. | For best results, communicate and provide materials in the native language of the participants. If the instructor does not speak the participants’ primary language, interpreters may be used. Try to use a translator with trusted credentials. Using coworkers as translators should be done with caution. Employ approaches similar to those used for low literacy audiences. |
| 4. Non-traditional employees (Day laborers, contingent workers, and temporary workers).  
**Individuals in facilities, craft, physical plant, field, dining, and or housing positions.** | Favor visual and verbal methods over written text. Many of these employees don’t have regular access to a computer. Employ approaches similar to those used for low literacy or non-English speaking audiences; ensuring maximum communication of content with minimum language interference. |
| 5. Special Needs.  
**Individuals with an inability to perform some or all of the tasks of daily life; may require modifications or adjustments that make it easier (possible) for a person with a disability to participate in the same manner as other employees.** Common special needs include challenges with learning, communication challenges, emotional and behavioral disorders, physical disabilities, and developmental disorders. | Accommodate these individuals by implementing modifications to the lesson plan (i.e., skipping subjects, simplified assessments, shorter assignments, extra aids, and extended time). Skip material that is inappropriate for the individual’s abilities, or teach less information than typical participants. Implement shorter assignments, such as a test with 10 questions instead of 50. Provide a list of words (called a word bank) during tests to reduce lack of recall. Allow them to benefit from offering extended time to recall information or complete training tasks. |
| 6. Young Workers.  
Workers who are high school or college age and recent additions to the workforce require additional guidance. They may be fully able to intellectually comprehend training information, but they lack the experience that time in the workforce provides. | Provide real-life examples or role-playing scenarios. Place emphasis on safety and health precautions, experiential exercises, and demonstrations that exhibit the inherent danger that lurks in the workplace. |
**Objectives**

Every instructor has objectives he/she wishes to accomplish during training. Learning objectives should be participant-focused and state the desired learning outcome. Objectives should be identified for each training module that are measurable and observable. When constructing objectives, the main question that objectives answer is:

**What should the participant be able to do differently after the training is completed?**

Objectives should follow recognized models that aid in the construction of practical objectives, such as Bloom’s Taxonomy, or Roger Mager’s Theory of Behavioral Objectives. This list is not all inclusive, but represents the most common models.

**Blooms Taxonomy**

Objectives focusing on cognition (knowledge), affection (emotions), and psychomotor (skills) should be classified into six types of learning. “Knowledge” is the lowest and “Evaluation” as the highest form of learning.

<table>
<thead>
<tr>
<th>Level of Learning</th>
<th>Examples</th>
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<tr>
<td>1. Knowledge</td>
<td>Participants will be able to <strong>recite</strong> the safety rules when cooking with open flames.</td>
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<tr>
<td>2. Comprehension</td>
<td>Participants will be able to <strong>explain</strong> the steps for using a fire extinguisher.</td>
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<tr>
<td>3. Application</td>
<td>Participants will be able to <strong>apply</strong> the fire triangle concept to predict whether something will burn.</td>
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<tr>
<td>4. Analysis</td>
<td>Participants will be able to <strong>compare</strong> the different classes of fires.</td>
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<tr>
<td>5. Synthesis</td>
<td>Participants will be able to <strong>design</strong> a room layout with an emphasis on safe exiting in the event of a fire.</td>
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<tr>
<td>6. Evaluation</td>
<td>Participants will be able to <strong>produce</strong> a campus policy involving use of candles in an office.</td>
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**Roger Mager’s Theory of Behavioral Objectives**

Objectives should include three characteristics: performance, conditions, and criterion (standard), such as in this example:

- **Performance**: Participants will be able to identify the proper fire extinguisher to use…
- **Condition**: …**when given** a choice of 5 different classes of fires…
- **Criterion**: …**accurately** in 3 out of 5 scenarios.

Note that training objectives emphasize what the **participant** will be able to do, **not** what the instructor intends to do. In each example, participants are expected to be able to accomplish specific goals by the end of the course. When developing learning objectives, be mindful of what is in your control in the classroom and what is out of your and the participants’ control in the workplace.
Course design

Course design should incorporate one of several models of instructional design. This will assist in translating adult learning principles into plans for training materials, activities, information resources, and evaluation. Here is a brief overview of three models that can be applied to classroom-based or web-based training.

**ADDIE model**

The instructional design model called “ADDIE” is an acronym which stands for the main components of a process: Analysis, Design, Development, Implementation, and Evaluation. Training materials (content) are produced as the course author progresses through the cycle.

- **Analysis.** Who are the learners? What are the expectations for the course?
- **Design.** What is the assessment plan? Course outline?
- **Develop.** Which training materials must be produced?
- **Implement.** How can the course be launched?
- **Evaluate.** What changes that need to be made to the course?

**Backward Design model**

Backward Design strategy describes a process of designing curriculum and learning experiences to meet specified purposes. Beginning with the end in mind (objectives), the course author identifies evidence of learning (performance), and then produces training materials (content) that equip the learners to perform.

- **Identify learning outcomes** (objectives). What are participants expected to understand, know, and do?
- **Determine acceptable evidence** (performance). What would you accept as evidence that participants learned?
- **Plan learning experiences and instruction** (content) and evaluation strategies. What activities will enable participants to achieve the outcomes (objectives)? How will they demonstrate what they can do?

**Problem Based Learning model**

Problem Based Learning is the process of formulating problems as a context for participants to acquire skills and basic knowledge. Design is centered on solving real-world scenarios, typically in the form of case-studies. Training materials (content) are produced as the author provides resources to enable solution-finding (Rees, 2010).

- **Define the problem.** What do you think? What would you do? What needs to be considered prior to beginning work?
- **Identify possible solutions.** Which resources do participants need to solve the problem?
- **Outline an action plan.** What feedback, facts, concepts, and principles can instructors provide to point the participants in the right direction?
Delivery

Delivery of training should facilitate learning comprehension by incorporating:

1. Adult learning principles
2. Teaching methods appropriate to the target audience
3. Training materials that are easy-to-read and highlight the most important messages or needs

Adult Learning Principles

Adults in a learning situation have particular needs. To ensure successful transference of health and safety skills, it’s important to incorporate these elements of andragogy:

<table>
<thead>
<tr>
<th>Principle</th>
<th>Practices</th>
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</table>
| 1. Autonomous and Self-Directed | - Ask what they would like to get out of the training before beginning class, and adjust lesson plan based on their needs.
- Discuss what they think they need to accomplish the objectives or do their jobs.
- Allow them to skip material they already understand.
- Present in a way that caters to a variety of learning styles. |
| 2. Experienced | - Ask them to share an example from their life experiences to help clarify the lesson.
- Approach “unlearning” of old information gently before facilitating learning of new information. |
| 3. Goal-Oriented | - Explain the reasons why completing the training is important.
- Use real-world problems or case studies that call upon expertise of group members.
- Focus on “doing” something with information, rather than simply “knowing” the information. |
| 4. Require relevance | - Provide them with the objectives for the class.
- Ask them to reflect on how they may use what they’ve learned in the future. |
| 5. Practical | - Explain how the training will be useful on the job. |
| 6. Need to be shown respect | - Encourage them to express their thoughts, opinions, and reasoning on the subject.
- Treat them as equals in the subject you’re training.
- Appeal to intrinsic motivation by providing feedback that increases self-esteem, satisfaction, or quality of life. |

Sources: Knowles (1996) and Knowles, Holton, & Swanson (1998)

Teaching methods

There should be an analysis and selection of a teaching method appropriate to the training target audience and the objectives. Instructors should adapt teaching methods that reach participants at all skill or literacy levels, learning styles, and experiential levels. A diverse set of instructional strategies should be adapted to address a full range of cognitive levels.

Literacy Levels

Techniques to reach all literacy levels include:

1. Assume that all participants are unequally skilled, or are not confident, in speaking / reading / writing / math.
2. Make sure your handouts are visually appealing and easy to understand.
3. Adjust your rate of speech and supplement with displayed print.
4. Do not rely on printed material alone. When information is important, make sure plenty of time for discussion is built into the class.
5. Let the group know that they will not necessarily be expected to read material by themselves during the training. If other materials must be read aloud, read them yourself or ask for a volunteer. Never call on someone who does not volunteer.
6. Make it clear that you will not put people on the spot. Let them know that you are available during breaks to talk about this or other concerns.
7. Read all instructions aloud. Do not rely on written instructions or checklists as the only way of explaining an activity or concept.
8. Plan for plenty of small group activities where participants get to work together on shared tasks. This includes facilitating reading, discussing, integrating new information, relating to life experience, recording ideas on flip charts, and reporting back to the whole group. In small groups, participants can contribute to the tasks according to their different backgrounds and abilities.
9. Try to use as many teaching techniques as possible that require little or no reading.
10. At the beginning of a class mention that you are aware people in the group may have different levels of reading and writing skills.
11. Establish a positive learning situation where it is okay not to know and where questions are expected and valued. Participants need to be able to say when they do not understand and to feel comfortable asking for explanations of unfamiliar terms or concepts.
12. Give out only the most important written material. Make any other materials available as an option.
13. If possible, provide audio recordings of key readings so that participants have the option to listen and read along.
14. Explain any special terms, jargon, or abbreviations that come up during the training. Write them on a flip chart.
15. If participants have to write, post a list of key words. This can serve as a resource for people with writing or spelling difficulties.
Learning styles

*Techniques that appeal to different learning styles*

Facilitate the tendency of people to use one of their senses more than others when learning. Visual learners (who constitute half the population) learn best by seeing information. Auditory learners (who are less common) learn best by hearing; they remember the details of conversations and lectures and may have strong language skills. Tactile learners (or kinesthetic) learn best by doing; and prefer hands-on experience.

<table>
<thead>
<tr>
<th>Visual Seeing</th>
<th>Auditory Hearing</th>
<th>Tactile Doing</th>
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<tr>
<td>• Provide visual aids (i.e., pictures, charts, graphs, maps, flowcharts, diagrams, timelines, graphic organizers, outlines)</td>
<td>• Encourage class discussions, debates, speeches, or teach-backs</td>
<td>• Provide frequent breaks during lecture</td>
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<td>• Use multimedia (i.e., computers, videos, powerpoint, Prezi, mindmaps)</td>
<td>• Provide an opportunity for them to recite the main points of a handout or lecture</td>
<td>• Incorporate activities that allow for movement while learning (i.e., ergonomic exercises, hands-on use of a fire extinguisher, dancing)</td>
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<tr>
<td>• Use color to highlight important points in text</td>
<td>• Allow them to read information out loud</td>
<td>• Ask them to take notes and encourage them to underline key points as they read</td>
</tr>
<tr>
<td>• Ask them to preview chapters by looking at subheadings and illustrations before reading the text</td>
<td>• Create mnemonics, or musical jingles to aid memorization</td>
<td>• Use skits and role-plays to emphasize information</td>
</tr>
<tr>
<td>• Illustrate your ideas as a picture or brainstorming bubble before writing them down</td>
<td>• Use analogies and storytelling to demonstrate your point</td>
<td></td>
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<tr>
<td>• Seat them up front, away from windows and doors (to avoid distractions)</td>
<td>• Encourage spoken answers to questions (i.e., interviews) instead of written answers (i.e., on a test)</td>
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<td>• Write a story and illustrate it</td>
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Adapted from Sadker and Zittleman (2006)
Experience

*Techniques that encourage active learning.*

Instructors should implement participatory training methods that draw on participants’ own experiences, as well as encourage valuable exchanges between instructors and participant. Facilitate teamwork and opportunities for participants to analyze health and safety problems in a group and develop solutions. Implement active learning techniques that allow you to observe who may be having difficulty with the concepts; and engage with them to ensure they understand. The best participatory methods 1) draw on participants’ own knowledge and experience about health and safety issues; 2) emphasize learning through doing without relying on reading; and 3) create a comfortable learning experience for everyone. The following are examples of methods to encourage participants to be actively engaged in class:

<table>
<thead>
<tr>
<th>Active learning technique</th>
<th>Practice</th>
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<tbody>
<tr>
<td>Think-Pair-Share</td>
<td>Give participants a task such as a question or problem to solve, an original example to develop, etc. Have them work on this 2-5 minutes alone (think). Then have them discuss their ideas for 3-5 minutes with a partner sitting next to them (pair). Finally, ask or choose pairs to share their ideas with the group (share).</td>
</tr>
<tr>
<td>Case Study</td>
<td>Provide a scenario for them to read. Have them discuss and analyze the case, applying concepts, data, and theory from the class. They can work as individuals or in groups or do this as a think-pair-share. Consider combining this with a brief in-class writing assignment.</td>
</tr>
<tr>
<td>Concept mapping</td>
<td>Enable them to create visual representations of models, ideas, and the relationships between concepts. Have them draw circles around concepts and connect phrases with lines.</td>
</tr>
<tr>
<td>Debates</td>
<td>These can be formal or informal, individual or group. Allow participants the opportunity to take a position and provide information to support that view. Consider asking participants their personal view on an issue and then make them argue the opposite position.</td>
</tr>
<tr>
<td>Games</td>
<td>Games such as jeopardy and crossword puzzles can be adapted to course material and used for review, for assignments, or for exams.</td>
</tr>
<tr>
<td>Review session</td>
<td>Ask each participant to identify at least one question related to the material s/he doesn't understand, and try to answer a question raised by another participant. Encourage them to ask questions; and allow others to volunteer answers. Provide participants who ask/answer questions receive a &quot;treat&quot; (i.e., small candy bars, gum, and boxes of raisins).</td>
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Training materials

Training materials, such as handouts, PowerPoints, or flip charts, are often used as visual aids that facilitate and enhance the participant’s learning experience. Materials should be easy-to-read and should highlight the most important messages or needs. Keep in mind that visual aids (such as PowerPoints, handouts, overheads, and flip charts) play a supportive role to the main teaching technique and do not substitute for teaching.

Peer-review (optional): The Training Manager may wish to have training materials peer reviewed by technically competent external reviewers or by a standing advisory board established for that specific purpose. These reviewers should possess relevant expertise and experience in the disciplines appropriate to the course subject. It is advisable that one or more of the reviewers be an experienced worker representing those to whom the training is directed. While it is not required under, having materials peer reviewed by those with relevant expertise has proven useful.

The following are some principles for creating the text for easy-to-read materials:

**Easy-to-read principles**

- Base the content on the individuals’ most important needs.
- Identify the “priority message.” The priority message should convey the most important information about a problem and how it could be solved. It should be short, informative, and easy to remember.
- Don't offer too much information that a reader can feel overwhelmed.
- Organize text into short, logical sections by using headings or subtitles.
- Use words that are easy to understand.
- Define technical terms or jargons.
- Keep sentences short and simple.
- Use a conversational style and active voice, such as the kind of language that the participants use.

The design of the material is as important as the content. Making the materials visually appealing and easier for the eye will encourage people to read it. The following are tips for the design of the materials:

**Designing materials**

- Use a large, easy to read font for the main text.
- Emphasize important points with underlining, bold type, italics, or boxes.
- Include plenty of white spaces by using wide margins.
- Use plenty of simple illustrations to explain the text.
- Use simple line drawings, free of clutter and abstract drawings.

Checkpoint

**Delivery** should facilitate learning comprehension by incorporating:

1. **Adult learning principles**
   - that connect the participant’s prior knowledge, life experiences, and interest during instruction

2. Analysis and selection of teaching methods appropriate to the target audience; including attention to diverse literacy levels, learning styles, and experiential levels.

1. **Training materials** (i.e., handouts, PowerPoints, or flip charts) that are used as visual aids which enhance the learning experience and do not substitute for teaching. Materials should be easy-to-read and highlight the most important messages or needs.
**Using PowerPoint**

PowerPoint is **not a teaching technique**; it is a visual aid that can be used to enhance learning, just like flip charts, overheads, and handouts. PowerPoint will not, in and of itself, improve participant learning. It is the way that instructors use PowerPoint that can encourage learning. Deciding when, where, and how it can be used appropriately is the key.

Many instructors mistakenly use PowerPoint as their main teaching technique. If an instructor teaches only by showing and reading a PowerPoint presentation, there is not much opportunity for participation. In fact, use of PowerPoint can stifle participation. The teaching turns out to be “one-way”, similar to the “traditional” model of education with the instructor as expert and the participants as just the receivers of information. As mentioned previously adult learning is most effective when it is participatory - when participants are active participants in the learning process.

There are three main issues to consider when using PowerPoint: content, design, and delivery.

1. **Content:**
   - **Plan** your lesson or class first, and then write the content of the PowerPoint slides.
   - Include the **main points**, not lots of text.

2. **Design:**
   Be creative in using PowerPoint. If you plan to use PowerPoint, it is critical that it be used in such a way that participants retain and use the information, as well as participate in the learning experience.

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Themes</strong></td>
<td></td>
</tr>
<tr>
<td>Simple design</td>
<td><img src="image1" alt="Good" /> <img src="image2" alt="Bad" /></td>
</tr>
<tr>
<td>Use lots of white space</td>
<td></td>
</tr>
<tr>
<td>Insert active learning questions</td>
<td></td>
</tr>
<tr>
<td>(What do you think? How would you respond? What’s wrong with this picture?)</td>
<td></td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td></td>
</tr>
<tr>
<td>One concept per slide</td>
<td><img src="image3" alt="Good" /> <img src="image4" alt="Bad" /></td>
</tr>
<tr>
<td>More images, less text</td>
<td></td>
</tr>
<tr>
<td>Contrast colors</td>
<td></td>
</tr>
<tr>
<td><strong>Font</strong></td>
<td></td>
</tr>
<tr>
<td>Large font sizes (26 pt.)</td>
<td><img src="image5" alt="Good" /> <img src="image6" alt="Bad" /></td>
</tr>
<tr>
<td>Limit to two fonts per slide</td>
<td></td>
</tr>
<tr>
<td>Use plain text (limit use of bold, italics, or underline)</td>
<td></td>
</tr>
<tr>
<td><strong>Images</strong></td>
<td></td>
</tr>
<tr>
<td>Chose similar images (use either clipart OR photos)</td>
<td><img src="image7" alt="Good" /> <img src="image8" alt="Bad" /></td>
</tr>
<tr>
<td>Layouts or diagrams bring them into actual scenarios they will encounter</td>
<td></td>
</tr>
<tr>
<td>Call-outs emphasize important aspects</td>
<td></td>
</tr>
</tbody>
</table>
3. **Delivery:**
   - Always remember that **PowerPoint is a visual aid**, not a teaching technique.
   - **Do not read** to the audience. Your slides should serve as a focal point for the issues to be discussed. Use them to help control the pace of presentation and discussion. Feature a slide and then follow with commentary, explanation and discussion. Use questions and discussion as the main part of the learning experience.
   - **Practice** using the PowerPoint before you actually use it in a class. Make sure you are comfortable moving between slides and between information in slides.

A final note on technology: using PowerPoint requires that you have all the technology you need, that it is in good working order, and that you know how to use it. The best prepared PowerPoint will fail if the technology fails, or if the instructor has trouble using it. Always have a back-up plan in place (i.e., copies of your presentation in a handout, or a backup projector).

**Using Flip Charts**

Flip charts, like PowerPoints, are visual aids that are used to facilitate, enhance or bring more clarity to the learning experience. It is an interactive and flexible aid that promotes interaction and engagement between the facilitator and the participants.

Flip charts promote participation as they are interactive—the facilitator can use the flip chart to write participants' ideas or answers. They also promote flexibility in teaching and learning—since the facilitator is writing as discussion evolves and not fixed in a "set" progression. Flip charts are low-tech, inexpensive, and easily portable. They also reinforce learning because participants can see and hear what is being talked about.

Participants feel like they have contributed if the facilitator writes what the participant says. It is best to use the words the participant uses and not to paraphrase. It is necessary to remember that what gets written needs to be discussed. Filling a room with lists of things people have said without analyzing and discussing what they say does not produce real learning.

**Tips when using flipcharts**

- Use only dark marker colors, such as black, dark brown, or dark blue. Lighter colors should only be used to highlight. Using many colors on a flip chart will catch your audience's eye.
- Print in large block letters. Do a “test” flip chart page before a workshop and go to the back of the room to make sure it can be read from there.
- Be sure not to crowd the flip chart with too much information. Only key points should be written.
- Watch your spelling. If you have problems with spelling, work on memorizing the correct spelling of words you are likely to use. But do not let spelling get in the way of using a flip chart. Creating a "spell-free" zone in the class may take some pressure off.
- Prepare some flip charts in advance. Be sure to proof read any flip charts prepared in advance.
- Post pages you want participants to continue to be able to see, or pages you want to refer back to.
- Tear pieces of tape ahead of time to make it easier to post flip chart pages.
- Keep prepared flip chart covered with blank page until you are ready for the class to see it. When finished reference to that information, "flip" it over, unless you want the class to be reminded of the information.
- If possible, obtain flip chart paper with light, preprinted "grid" lines to help you print more legibly.
- Do not turn your back on the group and "talk to the flip chart." Write what is needed, and then turn back to the group. A few moments of silence is okay. Do not block your audience's view of the chart-stand to the side.
- You can, in advance, lightly pencil in reminder notes to yourself on the flip chart.
Course Evaluation

Summative evaluation of training should be conducted regularly (preferably after every class or online training session) using a widely used model, such as the Kirkpatrick Model of Training Evaluation (2006). The four levels that should be considered during a summative evaluation include:

- Level 1: Reaction
- Level 2: Learning
- Level 3: Behavior
- Level 4: Results

Other training evaluation techniques and methods that should be considered to measure the effectiveness of training programs include NIOSH's Training Intervention Effectiveness Research (TIER) paradigm, Ecological Momentary Assessment, and Simulation Methodologies for Training and Evaluation (Centers for Disease and Control, 2004).

Level 1: Reaction Assessment / Survey

A reaction survey is a subjective evaluation of the training course by the participants that assesses how they “feel”. Sometimes called “smile sheets”, reaction surveys measure the participant's immediate perceptions of the quality and usefulness of the training. The results provide information regarding relevancy of information and the teaching style of the instructor. Questions about trainer presentation skills, accommodations, pace, and difficulty and usefulness of content may be included in a reaction survey (Reference: ANSI Z490.1). Reaction to training can be conducted by using participant feedback questionnaires, gathering informal comments from participants, and by holding focus group sessions with participants.

Examples of questions to assess participant reaction:

- **What is your overall reaction to the course?**
  - A) Very Good
  - B) Good
  - C) Average
  - D) Poor
  - E) Very Poor

- **What did you like best? What did you like least?**

- **The instructor’s contribution to the training process was valuable.**
  - A) Strongly agree
  - B) Agree
  - C) Neutral
  - D) Disagree
  - E) Strongly disagree

- **Were the materials, hand-outs and/or activities useful?**
  - Yes ___ No ___ Don’t know

- **Were the teaching methods effective?**
  - Yes ___ No ___ Don’t know

- **Would you recommend this training to others?**
  - Yes ___ No ___ Don’t know

Comments: ___________________________________________________________
Level 2: Learning Assessment

Assesses what the participant “thinks”. Measure the skills, knowledge, or attitude that the participant retains as a result of the training. If you use pre- and post-tests in your training, then the post-test will show the knowledge gained during training. Alternately, small group activities can serve as a “post-test” to see if participants are “getting it.” You may also conduct follow-up evaluations or focus groups in three to six months following the training to check retention of information.

Examples of questions to assess learning:

- The most common way that toxins enter the body is through
  A.) Skin Contact or absorption
  B.) Eye Contact or eye absorption
  C.) Inhalation- breathing
  D.) Ingestion- swallowing

- Engineering, administrative, and work practice controls are all used to limit lead exposure. If all these controls are used and the individuals’ exposure to lead is still above the permissible exposure limit (PEL), then respirators MUST be used in order to protect the worker’s health
  A.) True
  B.) False
  C.) I Don’t Know

Level 3: Behavior Assessment

Assesses what the individual “does”. Evaluations are typically conducted three to six months after the training by direct observation, tests or surveys (written or electronically) or interviews (i.e., focus groups). Examples of measures include the (increased) level of individual involvement on safety committees, (decreased) number of formal complaints filed, or (increased) sharing of safety and health information with coworkers who did not participant in training.

Examples of questions to assess behavior changes:

- Since the training, which of the following have you done that you did not do before your training?
  - I pay more attention to the materials I am working with (transporting, loading, or unloading)
  - I make sure I have shipping papers, and have read them
  - I ask for material safety data sheets
  - I look at the placards associated with the materials I am handling
  - I speak up if I think there is a safety and health issue
  - I worker with hazardous materials with more caution and awareness
  - I have not done anything different yet

- What have you been able to do since returning from training to share new safety and health knowledge with other workers?
  - Write in my campus/union newspaper
  - Talk or work in safety meetings or safety committees
  - Talk informally on the job
  - Work with the campus/union to communicate safety and health priorities to management
  - Train other workers
  - Nothing yet

- Since you attended this particular training program, have you tried to make improvements in health or safety or participated in other health and safety-related activities in your workplace or in a workplace where you represent members?
  ___Yes ___ No
  If you answered "No": What was/were the reason(s) you were not able to be active in health or safety issues with your union since attending this training program (please check all reasons that apply):
  ___Other people take care of safety and health
  ___No issue came up that needed addressing
  ___Local union had other pressing issues to deal with
  ___Not a priority for me in the work I do with the local union
  ___Concern about retaliation for raising health and safety issues
  ___Not enough time between when we took this training and now to do much
  ___Other:____________________________________________________________
Level 4: Results

Identifies the organizational impacts that are achieved due to what the participants learned from the training. Also known as a return on investment (ROI), this type of evaluation is difficult to measure.

Program Evaluation

Key questions for evaluating the quality and appropriateness of an overall training program should include the following:

- **Staffing:** Is there evidence of instructor competency? Are instructors using the training outline, assessment, and content developed?
- **Resources and Facilities:** Were appropriate staff and facilities available and committed to the program? Are new educational technologies integrated, and have impacts been assessed?
- **Course development:** (Needs assessment) Have minimum training requirements been identified? Is training provided in a manner that employees receiving it are capable of understanding? (Objectives) Is there evidence that objectives are being accomplished? (Course design) Are courses designed taking into account objectives and assessments?
- **Delivery:** Does the program incorporate adult learning principles, a variety of teaching methods, and appropriate training materials? Is there an appropriate mix of classroom, demonstration, and active learning? Are the course materials current and the delivery methods relevant to the training target audience?
- **Evaluations:** How does the program measure effectiveness? Are improvements made into the program based on evaluations? Does the program address identified deficiencies (based on course evaluations), relevant new standards or regulations, or new training methods and technologies?
- **Records:** Are record identifiable, retrained, and accessible?

Checkpoint

Evaluations

Course evaluations should measure one of three levels:

1. **Reactions:** Measure immediate perception of the quality and usefulness of the training, relevancy of information, and/or the teaching style of the instructor(s).

2. **Learning:** Measure skills, knowledge, or attitudes that the participant retains as a result of the training.

3. **Behavior:** Measure the influence the training has had on work culture.

4. **Results:** Measure organizational impact or return on investment (ROI).
Records

A record keeping system should be established for controlling all records and documents to ensure that the records are:

1. **Identifiable**: dated, current, accurate, and legible.
2. **Retained**: kept for a period of time following the training.
3. **Accessible**: retrievable and maintained in an orderly manner.

Identification

Certain regulations require specific records be kept for proof of completion of required training. Campuses should keep enough documentation to help them compile reports.

*Records that identify course completion*

Classroom training should be documented on a roster, and online training should be documented on an online training transcript.

1. **ROSTERS** should identify:
   - Course name
   - Date, time, and location
   - Name of participant(s) and unique Identification #
   - Name of the instructor(s)

   Rosters can take the form of meeting sign-in sheets, minutes, or certificates of completion.

2. **ONLINE TRAINING TRANSCRIPTs** should identify:
   - Course name
   - Date of completion
   - Name of participant and unique Identification #
   - Assessment results*

   *Due to the absence of an instructor who can certify that the individual has passed, an online training transcript should reference assessment results as evidence of passing. Examples include test scores, “pass/fail” status, grades, tracking of content review.

It is common practice to take attendance of all who attended training sessions; however, OSHA does not require signatures. Some OSHA standards (i.e., 29 CFR 1910.132) require verification through written certification that each affected employee has received and understood the training. The written certification must contain the course (or subject) name, date of training, and name(s) of participant(s). The ANSI Z-490.1-2009 standard indicates that a unique (or individualized) number must be provided for each participant.
Records that identify course content

3. **TRAINING MATERIALs should identify:**

- Name of author(s) designing/developing the training
- Target audience
- Objectives
- Assessment Methods
- Materials needed (i.e., technology, equipment)

It may also be useful to identify sources used to develop the training materials. Training materials may document this information across different written mediums such as course syllabi, handouts, manuals (participant or instructor), Powerpoint presentations, webpages, learning management systems, course catalogs, and/or schedules of classes.

4. **EVALUATIONs should identify:**

- Course name
- Date
- Name of the instructor(s), if applicable

5. **COURSE CATALOGs should identify:**

- Description of course (including a list of topics and any applicable prerequisites or corequisites)
- Length
- Date or version of training
- Name of instructor(s) delivering the training (for classroom training)

**Retention**

**Hardcopies**

Training record hardcopies should be approached similarly to official records of government entities. They should be kept (at minimum) for five years after the training. Due to the excessive capital burden that paper records may pose, campuses may choose to electronically archive (i.e., scan or microfiche) the documents, and then send them off-site for storage, archiving, or dispose of them completely. At that time, training records should be referenced in an electronic database (see section on Accessibility). Hardcopies should not be discarded unless there is a way of capturing the equivalent information elsewhere.

**Employee records**

Training records should be kept (at minimum) during the participant’s full period of employment. Even if there are no rules specifically requiring a record retention time, each campus may want to set a policy to retain training records for a period after employment has been terminated (i.e., 30 years after the last day worked).

**Accessibility**

Records should be organized in a manner that they are readily available within 24 hours of official request by auditors / inspectors, management, participants, etc.
Electronic databases

Electronic databases should be redundant. That is, there should be mirror image in case of corruption of the original file(s). This can often be accomplished by campus server systems. Personal computers, USB flash drives, or other “temporary” forms of data storage should be avoided. Classroom records should be backed up with a roster (original, copy, or electronic archive); that is, rosters should serve as evidence of successful completion of training.

Learning management systems (LMS), such as the SumTotal LMS, are a preferred method for documentation, tracking, and reporting of training, online training, and training content. These software applications provide an easy way to retrieve and manage training records. Campuses may wish to formulate policy identifying these electronic databases as the official record of health and safety training.

Right of access

In compliance with the Family Educational Rights and Privacy Act, with the exception of directory information, all records are confidential and available only to the participant(s). The following information has been designated as directory information by UC systemwide policy:

Directory information (available to public)
- Name
- Address (Local and/or Permanent)
- Email
- Telephone numbers
- Birth date and place
- Field(s) of study
- Date(s) of attendance
- Grade Level
- Enrollment status (i.e., undergraduate or graduate, full time or part time)
- Number course units enrolled
- Degrees and honors received
- Most recent previous educational institution
- Photo
- Participation in officially recognized activities (i.e., athletics)
- Athlete information (name, weight, and height)

This information, in accordance with FERPA, may be released to any person who requests it unless specifically requested by participant(s) that it be restricted. The University may not disclose or confirm directory information without the participant’s consent if a social security number (SSN) or other non-directory information is used, alone or combined with other data elements, to identify or help identify the participant or their records. In other words, if a potential employer wants to confirm a participant’s dates of attendance and submits the participant’s SSN, the University may not use the SSN to help identify the participant. To do so would confirm the SSN, which is not directory information.

Employee access

Access to participant training information should be limited to managers and supervisors who are required to know the training history related to the employee’s job duties. Employee’s training records should be assessable if needed in an accident related incident for federal, state, or local investigations. Many states are aggressive protectors of employee privacy and random or unauthorized access to personnel files can bring on severe penalties. Make sure that personnel training files are kept in a secure and assessable location. When asked by people outside the company to provide "verification" of certain employment information about your employees, make it a practice to confirm only the information your employees have authorized you to release. Employee authorization should be in writing and specify the information they wish you to reveal. Tell your employee the policy is designed for his/her protection.
Labeling

Proprietary information is defined broadly as any information that gives the University a competitive advantage or could be damaging to the University if the disclosure of this information is out of control.

Proprietary documents need to be protected by appropriate labeling from the time they are created until they are released or are safely destroyed. Three commonly used proprietary labels are as follows:

- **Proprietary: Internal Use Only**
  Use this label for general information, such as schedule of classes, or course listings, that are distributed throughout the University.

- **Proprietary/Confidential: Need-to-Know**
  Use this label for all pre-release product documentation and information. This covers all information that is distributed to product teams (manuals, release notes, research papers, or specifications).

- **Proprietary/Confidential: Registered**
  Use this label for highly sensitive information, where numbered copies are made and carefully controlled.

In general, most documentation should have the label "[Campus Name] Proprietary/Confidential: Need-to-Know." Be sure to remove the proprietary label before producing the final production version of the documentation. If you have any questions about proprietary labels, send them to counsel in your legal department.
Appendices

Appendix A
Multilingual Resources

Below are resources to use when looking for (mostly) Spanish language health and safety material. Remember that simply translating English health and safety materials into Spanish or another language is not necessarily adequate for your target population to understand the material. There are many different terms and dialects in Spanish (and other languages) and you need to ensure you are using the correct ones. In addition, using the correct literacy level is just as important in other languages as it is in English. It is best to test the translated materials using a focus group made up of a subset of your target population.

English to Spanish OSHA Dictionary.
- Frequently used Construction Industry terms [http://www.osha.gov/dcsp/compliance_assistance/spanish/osha_construction_terms_ensp_freq.html]
- Frequently used General Industry Terms [http://www.osha.gov/dcsp/compliance_assistance/spanish/osha_general_terms_ensp_freq.html]


ESL/Bilingual Resource Guide for Mainstream Teachers
Provides language acquisition charts, essential tips for working with English Language Learners, suggestions for supporting ESL students, and things to consider when teaching newcomers to read. Portland, OR: Portland Public Schools District. Retrieved April 17, 2011 from [http://www.pps.k12.or.us/curriculum/PDFs/ESL_Modifications.pdf]

Literacy

National Institute for Occupational Safety and Health
[http://www.cdc.gov/spanish/niosh/pubs-sp.html]
Includes links to NIOSH publications on a variety of construction topics, and also provides links to other agencies and organizations that have Spanish resources.

Multilingual Resource Guide.
Extensive collection of links to worker health and safety training materials (such as factsheets, curricula, and checklists) that are available from many sources online in languages other than English. At the end of the Guide, there is a listing of websites with additional links to health and safety information and resources in other languages.

Electronic Library of Construction Occupational Safety and Health (eLCOSHH)
[http://www.cdc.gov/niosh/elcosh.html]
Electronic library developed and maintained by the Center for Construction Research and Training and is intended to provide accurate, user-friendly information about safety and health for construction workers from a wide range of sources worldwide. Information is organized by hazard, trade and job site, and they have educational materials including tailgate guides, hazard alerts, and worker pocket cards and brochures. They reference construction-related materials available in other languages, including: Creole, French, German, Italian, Polish, Portuguese and Spanish.
Spanish Language Construction Training Website, Georgia Tech
http://www.oshainfo.gatech.edu/hispanic/em pie ze-aqui.html
Provides training guides in Spanish on several construction health and safety topics. For each topic, there are educational materials presented in various formats, including posters, pamphlets, tailgate session guides, and formal presentations.

Hispanics Work Safe
http://www.hispanicsworksafe.org
Provides training and educational materials for Hispanic construction workers, and includes the OSHA 10-hr course in Spanish, a English-Spanish construction dictionary, a video that offers an overview of the different health and safety hazards being encountered at construction workplaces, and other educational materials.

Labor Occupational Health Program, UC Berkeley
http://www.dhs.ca.gov/ohb/BuildSafe/links.htm
Includes a curriculum on construction safety, Tailgate Training for California Construction Workers, which is available in both English and Spanish. The book can help construction foremen and other trainers conduct effective safety training sessions on the job. It includes detailed Training Guides on 14 construction safety topics, with matching Checklists on related Cal/OSHA regulations. For some topics, Case Studies (based on actual injuries and accidents) and Factsheets are also provided. Both the English and Spanish editions of Tailgate Training for California Construction Workers are available for sale and can also be read online in English and Spanish.

Occupational Health Branch, California Department of Health Services
http://www.dhs.ca.gov/ohb/BuildSafe/
Includes a health and safety tailgate training kit in English and Spanish. The kit consists of Safety Break cards that cover 23 general construction safety topics and are linked to information in the Cal/OSHA Pocket Guide for the Construction Industry. These cards are simple to use and designed to improve the quality of tailgates.

MI Trabajo Seguro
http://www.MiTrabajoSeguro.org
Spanish-language website with helpful safety and health information available for construction workers. Developed in collaboration with the hit telenovela "Pecados Ajenos", this site introduces helpful construction safety information to workers and their families, parallel to a construction safety storyline on the show.
Appendix B

Training program resources

It is important to periodically evaluate the training program to make sure that training is effective and that programs are achieving the intended results. Evaluation should determine how well a program is implemented, how much knowledge is gained by participants, and the outcomes of the training. The following are resources and guides that can be used to create and conduct a successful evaluation and maintain quality control of the training program.

Program evaluation resources

Presents and explores a range of successful evaluation ideas, techniques, and tools for: 1) Identifying areas for program improvement, 2) Measuring the short- and longer-term accomplishments of a worker training program, and 3) Assessing whether, and to what extent, training has brought positive changes to the work place. For copies, please contact the NIEHS National Clearinghouse for Worker Safety and Health Training at (202) 331-7733 or wetpclear@niehs.nih.gov.

Center for the Study of Evaluation Program Evaluation Kit, UCLA (1987)
Consists of 9 volumes of practical guidelines for designing and implementing evaluation.

Measuring and Evaluating the Outcomes of Training (1996)
Collection of research papers that was presented at the 1996 NIEHS Spring meeting on measures and evaluation of safety and health training programs.

Standards and Guidelines

American National Standards Institute (ANSI)

Centers for Disease Control and Prevention
Assessing Occupational Safety and Health Training: A Literature Review
NIOSH Publication No. 98-145

National Institute of Environmental Health Sciences (NIEHS)
Minimum Health and Safety Training Criteria: Guidance for Hazardous Waste Operations and Emergency Response (HAZWOPER), HAZWOPER-Supporting and All-Hazards Disaster Prevention, Preparedness and Response
http://tools.niehs.nih.gov/wetp

Occupational Safety and Health Administration (OSHA):
Training requirements in OSHA standards and training guidelines.
http://www.osha.gov/Publications/osha2254.pdf

Outreach training program guidelines.
http://www.osha.gov/dte/outreach/program_requirements.pdf

University of California Los Angeles
Worker's Sourcebook: Spanish Language Health and Safety Materials for Workers
Labor and Occupational Safety and Health

UCLA Center for Labor Research and Education
Appendix C

Reference


