

## **Education and Training for Underserved Populations**

**An Issue Paper for Discussion at the Eliminating Health and Safety Disparities at Work Conference, Chicago, Illinois, September 14 and 15, 2011**

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## **Discussion Questions**

The authors propose the following questions for discussion at the conference:

- 1) Our paper describes a variety of approaches to OSH education and training for underserved populations. Are there any important types of training/education programs or training methods that are not covered in this paper that should be?
- 2) Our paper discusses various challenges and obstacles to effective training and education for underserved groups of workers. Are there other important challenges that are not included in the paper that should be?
- 3) The paper divides training programs into three different types depending on the purpose of the training: “knowledge transfer,” “attitudinal or motivational change,” and “empowerment.” Do you agree with this schema? Or there other types of training that are not included here?
- 4) The paper argues that quality training evaluation can be accomplished even with limited funding: do you agree with this assertion? Are there other good examples of evaluations of training and education programs for underserved workers accomplished with limited funding that the paper should include?

## *Introduction*

This White Paper will examine issues related to occupational safety and health education and training as they pertain to underserved communities. The primary focus of our paper will be on direct worker training, though we will also touch on public education and social marketing programs that reach a larger audience.

Our examination will cover a broad spectrum of contexts, from brief interactions with day laborers on street corners to ongoing programs directed towards stable workforces. We will look at a variety of training and educational techniques and will attempt to highlight issues that trainers and researchers should consider in the design and implementation of training programs for underserved communities. Finally, we will address issues of evaluation of such programs, with specific emphasis on special considerations for programs involving low-literacy and limited-English speaking workers.

Training is, of course, only one of many tools we can use to reduce occupational health disparities and its effectiveness may be limited in certain situations by broader socioeconomic factors and structural barriers. The reader is encouraged to refer to the other papers in this series that address these broader societal factors.

## *Definitions and Concepts*

In NIOSH's comprehensive 2010 publication *A Systematic Review of the Effectiveness of Training and Education for the Protection of Workers* (Robson), the authors define training as "planned efforts to facilitate the learning of specific OHS competencies." In this paper, we define training more broadly. Beyond simple attempts to transmit knowledge, our definition encompasses a range of efforts designed to engage trainees with the goal of affecting motivation, attitudes, and behavior for the purpose of improving workers' health and safety on the job. While there may exist different shades of meaning between the terms "education" and "training," for the purpose of this paper, we will use the term "training" to encompass the full array of programs that engage individuals directly for the aforementioned purposes.

## **Section 1: Designing Education and Training Programs**

### *The First Question: What is the Primary Purpose of a Given Training Program?*

In designing a given training program, it is important to identify first the primary purpose of the training. This will affect the choice of training methods, as well as appropriate evaluation methods and metrics. The primary focus of a training program may be on:

- a) Knowledge Transfer/Skills Development, e.g., a program designed to teach workers about the chemical hazards present in their workplace and the warning signs and labels associated with each;
- b) Attitudinal Change, e.g., a program geared towards increasing workers' degree of concern about safety and health hazards in the workplace or enhancing the extent to which they believe that it is possible to reduce their exposure to such hazards by taking certain actions; or
- c) "Motivational Change/Empowerment", e.g., a program designed to encourage people to talk with their co-workers about job hazards and to take action together to solve problems.

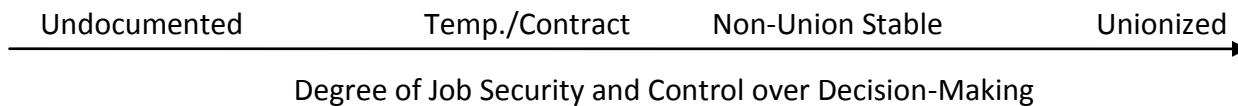
In practice, most good training programs involve a combination of the above. A training program may, for example, be designed to *transmit information* about chemical hazards in the workplace in order to *change workers' attitudes* about the seriousness of such hazards in order to *motivate action* on the workers' part to reduce their exposures to such hazards.

### *Training Contexts*

The changing nature of work in the U.S. and globally in recent years has had an effect on OSH training programs. Traditionally, most OSH training was organized and carried out in the workplace, led by employers, unions, or both, or in the context of apprenticeship programs tied to unions and employers. In recent years, many community-based organizations have initiated worker safety and health training programs directed towards individuals whose common denominator was not an employer or membership in a specific union but, rather, identification with a given ethnic or language community or with a neighborhood or geographic area. This trend has coincided with, and developed in response to, a shift in the patterns of employment in the U.S., as stable, long-term employment and union membership have steadily declined and a greater proportion of workers has become "contingent." At the same time, the proportion of immigrants and people with limited English in the workforce has increased. These workers are often likely to identify more strongly with community-based organizations that they see as representing their community than with employer or union representatives.

Work context may be thought of as a continuum based on the stability of employment and the extent to which workers are organized and protected by U.S. employment laws. On one end of this continuum are unionized workers with stable employment. These workers feel more secure in their jobs, have more opportunity for input into decisions affecting their working conditions, and are more likely to have the benefit of paid time for safety and health training. On the other end of the spectrum are temporary and contractual workers who have high levels of job insecurity and have little influence on decision-making affecting their working conditions. On the most extreme end of this spectrum are undocumented immigrant workers who are fearful not only of speaking up for the safety and health rights but of the specter of deportation if they come into conflict with their employer. While undocumented workers may, in theory, enjoy

many of the same protections under U.S. employment law as others, in reality, these protections are extremely difficult to enforce.



These varying work contexts will, to a large extent, influence the goals, structure and training methods of a given training program. An OSH training program geared towards stably employed unionized workers, for example, may have the luxury of multiple training sessions over a period of months, while a program targeting day laborers may, in some cases, reach a given trainee for a brief period on only a single occasion. Trainees on the far right end of our spectrum above can be expected to enjoy a degree of institutional support from both labor and management in seeking changes inspired by the lessons of a training program; those on the left end may find little such support and are less likely to be willing to risk their precarious jobs in order to press for changes in working conditions as a result of a training program.

While this continuum is, obviously, oversimplified, it is presented here as a reminder that those workers who experience occupational health disparities—largely low-wage and immigrant workers—are most likely to be on the weakest end of this spectrum. Therefore, training programs directed towards these groups must recognize the many barriers that trainees face in putting into action lessons learned from a training program. A training may succeed, for example, in impressing upon trainees the importance of wearing appropriate protective equipment, but if the employer fails to provide it, workers in precarious employment situations may have few realistic alternatives available for protecting their health and safety.

### *Public Education/Social Marketing Programs*

In addition to direct training of workers through the workplace and community, some agencies, public and private, have sought to reach workers and their families through broader public health messages. Agencies have developed and implemented creative social marketing campaigns addressing issues such as lead-based paint exposures to residential painters (CDPH) and heat illness among farmworkers, for example (CADIR.) These programs have produced materials that could be used in direct worker training programs, in addition to their broad public education efforts. Other agencies have collaborated with groups in the private sector to introduce OSH themes into existing popular media. In one program, for example, a government agency collaborated with a team of OSH experts and the creative team of a popular Spanish language *telenovela*, or soap opera, to introduce construction safety messages designed to reach Latino construction workers and their families (CPWR)

In the contemporary context of U.S. society in which many of the workers who are exposed to the most significant occupational health and safety hazards do not have access to OSH training in their workplaces, these creative efforts to reach workers with OSH messages through the community and a variety of media have become increasingly important.

### *Train-the-Trainer Programs*

Another innovation in OSH training in recent years has been the development of programs designed to train trusted individuals in a community or workplace, who then are expected to provide training and education to their peers. These programs are based on the understanding that people are most receptive to messages from people who they perceive to be “like them.” Several national unions have developed very successful, long-term programs that have provided training to hundreds of “worker-trainers,” who have, in turn, trained thousands of their fellow employees. (Univ. of Michigan/UAW)

It is important to note that conducting a high quality Train-the-Trainer program is not easy. To be successful, trainees must receive intensive follow-up, coaching, and resources. Such programs must budget and plan for this time-intensive follow-up if they are to be successful.

### *Lay Health Advisor Programs*

In a variation of the Train-the-Trainer model, many community-based programs have built on the Lay Health Advisor model that has proven highly successful in public health practice. Lay Health Advisor (also referred to as “Lay Health Promoter,” “Community Health Promoter,” or “Peer Trainer”) programs have established a strong track record in the public health field, particularly among the Latino immigrant community (see Rhodes for a comprehensive review of such programs). These programs have been used successfully in the OSH field to promote the use of safety eyewear and pesticide safety among farmworkers (Forst, Luque, Arcury, Liebman), to train Latino day laborers in construction safety (Williams ), and to train poultry processing workers in the prevention of cumulative trauma disorders. (Grzywacz )

This latter example provides an interesting case study of the value of community health promoters and of the obstacles that such programs can face.

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## CASE STUDY



JUSTA, Justice and Health for Poultry Workers, was a NIOSH-funded CBPR partnership between Sara Quandt and other health scientists at Wake Forest School of Medicine and a community-based organization, Centro Latino of Caldwell County, Inc., designed to develop ways to promote health and safety among non-unionized Latino immigrant workers at several different poultry processing plants in western North Carolina. Over the course of participatory formative research activities (Quandt 2006; Marín 2009), the partnership identified cumulative trauma disorders (CTDs) as a major health concern for the workers. It was debilitating, impairing their ability to work and to carry out normal family and social activities outside of work. Many workers did not connect their repetitive work tasks and CTDs, often blaming their disabling pain and weakness on arthritis and contact with water in the workplace. Many also doubted that they, as immigrants, many of whom were undocumented, were eligible for workers' compensation for injuries and illnesses due to their jobs. Considering these conditions and the project's lack of access to the work sites, the partnership identified a lay health promoter (promotora de salud) approach to reach workers individually or in small groups in the community as a viable educational strategy.

The partnership developed a medically accurate and culturally tailored lesson to teach workers to identify, treat, or prevent CTDs and to teach them about workers' rights to a safe workplace. The lesson centered around "Maria's Story", a realistic story about a fictitious woman in the community (Figure 1). Low literacy, Spanish and English language materials developed included a flip chart, lesson plan and script for the promotoras, and take-home brochure for the worker. Current and former poultry workers were identified and trained as *promotoras*. Over 28 months, five *promotoras* delivered the lesson to 731 workers. Both ethnographic data (Marín 2009) and a more formal pre-post evaluation in a small sample of workers (Grzywacz 2009) demonstrate improvements in knowledge and self-efficacy, and appropriate behavior changes. Based on this success, five other lessons were developed and disseminated into the community

## **The Small Group Activity Method** is based on **activities**.

An activity can take from 30 minutes to an hour. Each activity has a common basic structure:

- Small Group Tasks
- Report-Back
- Summary

### **1. Small Group**

**Tasks:** Trainees work in groups at tables (preferably round.) Each activity has a task for the groups to work on together. Tasks require that the groups use their experience to tackle problems, and make judgments on key issues. Part of the task often includes looking at factsheets.

**2. Report-Back:** The group selects a scribe whose job it is to take notes on the small group discussion and report back to the full group. The trainer records these reports on large pads of paper in front of the workshop so that all can refer to it. After the scribe's report, the workshop is thrown open to general discussion about the problem at hand.

**3. Summary:** The trainer highlights the key points, and brings up any problems and points that may have been overlooked in the report-back. Good summaries tend to be short and to the point.

using *promotoras*. Some materials were modified for a general manufacturing workforce, and all materials were made available to other community groups working with immigrant workers.

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### *Overview of Training Methods*

Traditionally, OSH training has relied primarily on a lecture format, supplemented with written material. Thankfully, the field of OSH training has developed a wide range of creative, more engaging methods over the years. Many of these methods are guided by the principles of “popular education,” an approach that emphasizes active roles of training participants in analyzing problems and developing practical solutions. These methods have been demonstrated to be not only more engaging, but also more effective. A comprehensive review found that more engaging training methods, such as simulations and hands-on exercises, were more effective than less engaging methods, such as lectures. (Burke)

We present below a brief overview of some of the more participatory methods that have been used successfully by OSH trainers.

**1. Small group discussions and group problem-solving** form the core of a concept of training based on the “Small Group Activity Method” (see sidebar), which is based on the theory that that working adults learn best in situations that maximize active participation. This method was developed at least as early as 1980 by union health and safety trainers and has been refined over the years. Proponents argue that “lecture-style teaching methods used in most programs actually hurt the learning process, promote passivity on the part of workers, de-value our knowledge and skills, and make us feel inadequate.” (OCAW)

**2. Risk Mapping** is an effective tool for OSH trainers to engage participants in an active process of hazard identification that is centered on what the trainees themselves view as significant hazards. Trainees are divided into small groups, preferably by workplace and



work area (if possible) and asked to create a schematic drawing of their workplace, including major machinery, processes, entrances, exits, etc. Armed with various colored markers, participants note the specific hazards they identify in each area, associated with each process, machine, etc. Different colors are used for chemical, physical, ergonomic, safety, and stress hazards.

- 3. Body Mapping**, similar to risk mapping, allows participants to identify work-related health symptoms through a process of graphic representation. Trainees are divided into small groups and given an outline of the human body, on which they place dots indicating where they experience pain in their bodies. The purpose of the activity is to enable participants to see common patterns of health symptoms that may be work-related.
- 4. Telling a story using graphic materials** is an effective method for communicating information to low-literacy or limited English trainees and engaging them in discussions. Materials that rely primarily on illustrations, with only limited text in simple language, have been used effectively to train poultry workers on prevention of repetitive strain injuries and farmworkers on pesticide hazards, for example. Such materials, when done best, are not simplistic, but rich in content, presenting a recognizable human drama that provides an interesting context in which to convey an OSH-related message. These materials can be a valuable component of health promoter programs, giving promoters a tool that they can easily use as a basis for training members of their communities.



*Comic book created by Maria Brunette and colleagues from UMass-Lowell for use in training Hispanic construction workers. The title translates as "Lucky Cheo in 'Ladder Safety'" (Brunette 2010.)*

- 5. Hands-on exercises and simulations** are a very effective method of engaging participants actively in a training program and requiring them to apply knowledge

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gained in real-life situations. This method can be used to practice relatively simple tasks, such as fit-testing a respirator or for more complex operations, such as putting into practice an emergency response plan for a hazardous chemical release. Burke argues that these methods are particularly effective in reinforcing training messages because they require trainees to reflect on lessons learned, leading them to “infer causal and conditional relations between events and actions, leading to the development of strategies for handling unforeseen events...” (Burke 2006)

6. **Role Plays** can be used to present a problem to a group of trainees and to engage them in an active way in a process of reflection and development of possible solutions to the problem. In a typical role play, trainers might seek volunteers from among the trainees to read a simple script that presents a situation in which a worker faces a serious safety hazard at work, but fears losing her job if she raises her concerns to her employer. The trainer would then turn to the full group and ask them to voice their opinions on how the worker should respond in this situation. (With low-literacy groups of workers, the volunteers may be given verbal guidelines, rather than instructed to read a written script.)
7. **Computer-based instruction**, which has been widely used in OSH training, can range from entirely passive programs which simply put lectures into a computer presentation format to highly engaging, interactive programs requiring trainees to reflect on messages and to apply new information to solve problems. Effective computer-based instruction should provide feedback to trainees in order to enable them to evaluate their progress and learn from mistakes.
8. **Quizzes, Games** and similar activities can be an effective and entertaining way to transmit and reinforce information, as an alternative to lectures, slide presentations, and other methods that rely on passive learning. Rather than simply reading a list of rights that employees enjoy under the Occupational Safety and Health Act, for example, a trainer might present this in the form of a quiz, asking trainees to identify which statements are true and which false. Each quiz question can be followed by more detailed explanation by the trainer and the group may be invited to discuss issues or questions that arise. Games can be used as a means to reinforce training messages, in lieu of a verbal or written review of material covered in the training.
9. **“Photovoice,” Theater, Video, and other Arts-based Approaches** can engage trainees in creative processes to identify problems and reflect on solutions in ways that often feel more “real” to participants than traditional training. As one proponent notes “Popular arts and education projects lend themselves to problem-solving...and allow community members to take a lead role in conceptualizing how they want to live...” (Sullivan.) One method, called “Forum Theater,” involves presentation of a simple theater piece presenting a problem relevant to training participants. Trainees are invited to step into the performance as actors at any point, in order to present their ideas and influence the course of the dialogue. This method has been used successfully by OSH trainers to challenge trainees to reflect on how they would respond to a workplace health and safety problem and to address barriers to solutions. “Photovoice” is another

creative approach that has been used as a method of participatory hazard identification. In one case, workers were equipped with cameras and asked to photograph hazardous situations on their jobs. The photos were then used as the basis for group discussion and reflection on solutions to these safety and health hazards. (Flum)

- 10. Storytelling** is another creative method of training that can be a powerful learning tool. Many workers in highly hazardous trades learn job skills and safety-related skills and information more from their peers than from professional trainers. A study of the use of storytelling as a training technique among mineworkers argues that the relating of stories by experienced miners of workplace disasters that led to deaths and injuries of friends and co-workers is one of the most compelling methods of getting younger miners' attention. As the authors of this study put it "Stories work at a very different level than pure information-sharing because they deal not just with rational thought, but also with how we feel about what we have heard." (Cullen)

### *Training Content*

While training programs designed to reach underserved workers may include a wide range of safety and health topics, practitioners in the field agree on a few principles regarding training content, such as:

- 1) All training programs for underserved workers should include information about workers' rights under OSHA, where to get help in addressing workplace safety and health problems, and resources for more information.
- 2) Training should encourage workers to take collective action, rather than individual action, to address safety and health problems in order to reduce the likelihood that vulnerable workers will be exposed to retaliation.
- 3) Training that provides leadership skills for organizing and taking action is likely to be more effective than training that simply transmits knowledge or teaches skills. Such training is more likely to address the very real and powerful structural barriers to improving workplace safety and health conditions among underserved workers. Such training not only can assist workers in standing up for their safety and health at work, but can also lead to government agencies being more responsive to the needs of these workers.
- 4) Training programs should recognize that ideal solutions to OSH problems are often not feasible for many underserved workers and should encourage trainees to develop smaller steps towards the resolution of such problems.

### *Social and Cultural Factors to Consider in Designing a Training Program for Underserved Communities*

**Literacy Issues:** Many low-wage workers, whether native- or foreign-born, have limited formal education. Some 14% of Americans have literacy skills classified as "below basic" by the U.S. Department of Education (USDE.) Nearly 50% cannot read well enough to find a single piece of

information in a short publication, nor can they make low level inferences based on what they read (NALS.) The largest group of foreign-born in the U.S., those of Mexican origin, have an average of only about 8 years of formal schooling . (Rand) Foreign-born workers from developing countries may not only have very limited English abilities, but may also have very limited literacy in their native language. Thus, it is essential when providing training to workers in these communities that trainers not rely too heavily on written materials, especially text-dense materials. Written materials should use relatively few words, clear pictures, bulleted key points, and lots of white space. Some other suggested strategies for addressing literacy issues in training include:

- Conduct a needs assessment beforehand to understand the literacy level of trainees
- Provide optional additional written materials for those who have higher levels of literacy
- Don't call on people to read or ask them to interpret charts or graphs--read materials out loud yourself or ask for volunteers.
- Use participatory activities such as mapping, games, quizzes, etc., rather than having trainees read materials.
- Field test all materials with the intended audience to ensure that they are appropriate.
- Perhaps most importantly, respect the wealth of skills and experiences that trainees with limited literacy bring to the issues. It is critical that trainers remember that limited formal schooling results in some specific weaknesses in learning, but this does not prevent workers with limited literacy from being valuable sources of knowledge and wisdom about how to confront health and safety challenges in the workplace.

**Cultural appropriateness of materials and training activities:** A team of NIOSH researchers recently completed a review of literature addressing the cultural appropriateness of OSH materials. ( Afunah) Though this review looked specifically at materials designed for Hispanic immigrants, its lessons are relevant to materials geared towards any particular ethnic or cultural group. This review noted that a range of factors must be considered when examining cultural appropriateness, including “how to reach target audiences, developing a document, translation issues, how graphics or images are presented, format, and factors related to readability such as sentence structure, vocabulary, reading level, and the content itself.”

Some specific suggestions that have been made (Brunette 2005, Massett 1996, Larson, Afunah, LOHP) for ensuring that materials and training are culturally appropriate include:

- Involve members of the intended audience in the design and development of the materials. If this is not possible, the material should at least be focus group-tested with the target audience.
- Use graphics that are meaningful and relevant to the target audience. If cartoon characters or photos are used, they should depict members of the target audience.
- For written materials, consider using formats that are familiar to the target audience. For example, one study found that Hispanic women preferred to receive health

communications in the form of a ‘fotonovela,’ in which a story unfolds through photos with captions in a dramatic fashion (Masset, cited by Afunah.)

- In designing training activities, consider the cultural context of participants. For example, if you plan on using a quiz game activity, research whether there is a game show that is popular in the target audience’s culture (rather than assuming that they will relate to “Jeopardy,” for example.)
- Understand cultural values and beliefs that may affect behavior. Many cultures do not share Western biomedical ideas about illness causation. Many Latin Americans believe, for example, that showering after working under the hot sun or washing hands after pesticide exposure may cause rheumatism. (Quandt, 1998.)
- When possible, use peer trainers or health promoters to reach members of their own cultural groups. A large body of health promoter research supports the idea that people are most receptive to receiving information from individuals of their own cultural group.
- Take into consideration differing cultural attitudes towards learning and adapt your training accordingly. In many cultures, for example, the “student” or training participant is expected to sit quietly, passively receiving information from the “expert” teacher. It is considered inappropriate to express opinions or question anything presented by the instructor. Activities may need to be adapted to encourage participation, for example, by breaking into very small groups so that individuals feel comfortable expressing opinions.
- Gender dynamics may impede the participation of female trainees (in any culture!) Effort should be taken to ensure that women have ample opportunity to participate, dividing small groups by gender, for example.
- Respect different cultural styles of communication in trainings. In some cultures, telling detailed personal stories is very important in establishing trust—more important than “sticking to the agenda.” Trainers must seek to find a balance between keeping a training on track and gaining the respect and trust of trainees by providing adequate time for the sharing of personal stories.
- While it is important to recognize general differences between cultures, we have to be careful not to stereotype or assume that all individuals from a given ethnic or national group share the same beliefs, character traits, or educational backgrounds.

**Prior Experience of Trainees:** Every worker entering a training program brings a complex history of work and life experience that colors how they respond to the training. Foreign-born workers, in particular, come to employment in the U.S. with a history that may be very different from that of U.S.-born trainers. This prior experience may greatly influence how they react to training messages. A worker who comes from a country where those who speak up about unsafe working conditions have been subject to violent repression, for example, may not be very open to messages encouraging workers to talk to employers or co-workers about job hazards. Likewise, many foreign-born trainees are likely to have experienced major shifts in their fields of work in the course of migration. The construction laborer in an OSH training may

have been a Ph. D. sociologist in his home country and the woman working as a hotel maid may have been an accountant. These shifts in employment patterns mean that trainees may have limited familiarity with the hazards of their current jobs.

**Documentation Status:** Trainers must be very sensitive to the particular conditions that undocumented workers face. While OSH trainers may want to encourage workers to stand up for their safety and health rights, many undocumented workers may justifiably view this as an unrealistic, potentially threatening, option. Similarly, trainers need to be careful not to guarantee workers that the protections promised by the Occupational Safety and Health Act will actually shield them from retaliation in the real world.

**Characteristics of Trainers:** First and foremost it is important to recognize that creating and conducting training requires skill. Knowledge of a subject does not qualify one as a trainer. This is especially true as OSH trainers are increasingly being called on to facilitate group process among workers, not simply to transmit information or show them how to perform tasks. For this reason, it is important to spend time choosing and training individuals to play this role.

One mistake commonly made in cross-cultural trainings is assuming that an effective trainer needs only an interpreter to train effectively workers from a different cultural background. But it is important to recognize that all of us have been raised and live within a cultural and social context which impacts how we see ourselves, others, and the world around us. Discussions of cross-cultural training tend to focus on the workers (often racial or ethnic minorities) and how they differ from the cultural norms of the dominant group in society (to which many trainers belong.) Little attention is paid to the perspectives, prejudices, and assumptions that the trainers themselves bring to the table. Even less attention is paid to how they can become more aware of their own cultural perspective and social position and how that understanding can be applied to working with people from different backgrounds. Learning to recognize and critique one's own social position and culture is often more difficult, but no less important, than recognizing and appreciating that of others. Indeed, to become truly competent with diversity we must understand our own culture and social position as well as that of others.

A second common mistake is to assume that simply because someone is a member of a linguistic or cultural group, that person will be an effective trainer. Discussions about culture in the U.S. tend to focus on race and ethnicity; however, just because people belong to the same racial, ethnic or cultural group does not mean that there are not significant differences (e.g. gender, class) within that group that can limit the ability of a trainer from that group to relate to those with whom they are working (Eggerth & Flynn, 2010). Indeed, class or gender can be more important in determining social relationships in some cultures than race. Few people would assume that a pale complexion and the ability to speak English would be sufficient qualifications for leading a safety training for construction workers in the United States. Yet, established or acculturated members of immigrant groups are often employed as trainers, a decision based largely on their race/ethnicity and bilingual language ability, with little or no

consideration of social differences that may complicate the dynamic between trainers and trainees. While many of these people may be effective trainers, we should avoid the automatic assumption of solidarity because of skin color or country of origin.

In an ideal world, all OSH trainers would be technically competent, fluent in the language, and of the same cultural and social background as the workers they are training. In practice, this is often not possible. It is therefore imperative for all involved in creating and facilitating training, whether they are from the ethnic/racial group of the audience or not, to recognize their own social position (e.g. ethnic, racial, class, gender etc.) and how this influences the perspective that they bring to training. Developing this awareness is an ongoing and long-term process. As we work toward improving competence with diversity of trainers there is a need to find practical solutions for promoting OSH in an increasingly diverse workforce today. One approach that has often proven effective is to use a training team that pairs an experienced OSH trainer with an individual who is from the same cultural/linguistic group as the trainees.

**Training Logistics:** All trainings should consider carefully the logistical issues that can facilitate participation by trainees, but this is particularly important for trainings targeting underserved workers. Among these factors are:

- 1) Training environments that feel safe and comfortable to trainees, such as a community-based organization that provides assistance to their community;
- 2) The provision of child care services and a welcoming attitude towards families;
- 3) The availability of food and refreshments for trainees who may be working long hours or multiple jobs;
- 4) A room set-up that encourages participation by trainees, such as round tables or a U-shaped table set-up, rather than the traditional classroom style, which emphasizes the role of the instructor as the source of knowledge and trainees as passive recipients.

### *Challenges of Training Programs for Underserved Communities*

Designing and implementing an effective training program for underserved communities—whether they be foreign-born or low-wage native-born workers—inevitably involves a number of special challenges. These include:

- **Language issues for limited/non-English speaking workers:** In situations in which trainers and trainees do not share a common language, it is necessary to employ interpreters. Interpreters are often informally drawn from among the trainee population or the broader community. These bilingual intermediaries may have the best intentions but often have limited abilities in the face of the complex challenges of interpretation. In these cases, trainers may not be able to have full confidence that training content is being adequately conveyed. When financially feasible, it is far better to hire a

professional interpreter, ideally equipped with headsets and capable of performing simultaneous interpretation. When using interpreters it is essential that trainers not speak too fast, avoid using jargon, and remind trainees to do the same. (For a more detailed discussion of these issues see “Tips for developing and adapting trainings in other languages”, LOHP.)

- Structural barriers--power relations in the workplace: If the goal of a particular training program is to raise workers’ awareness of job hazards and motivate them to take action to reduce hazards, groups of trainees who have limited power to effect change in the workplace may find the training irrelevant, even discouraging. “What good is this information”, they may ask, “if we can’t do anything about it? “ There is no simple answer to this question, but trainers can address this problem by acknowledging the reality that trainees face in the workplace and structuring training activities in such a way that trainees must consider various options for taking action to protect their safety and health on the job. In situations of extreme vulnerability these options should include the option of simply leaving a very dangerous job.
- Competing priorities: In most cases, job safety and health will be on the lower end of low-wage workers’ priority lists, taking a backseat to putting food on the table and meeting family obligations. Trainers must recognize this reality in designing and implementing programs. It may be difficult to get these workers to commit to attending training sessions unless they anticipate some immediate benefit. This problem can be addressed by combining OSH training with the provision of other services valued by the community—conducting training in conjunction with informational sessions on issues that workers may see as higher priorities, such as recapturing unpaid wages or finding employment, for example. Many OSH programs have also successfully integrated OSH training into English as a Second Language classes.
- Time constraints: Similarly, low wage and mobile workers often work long hours, multiple jobs, and changing shifts, making it difficult to engage them in ongoing training programs. Such workers often do not know in advance when they will be working, so cannot commit to attending a training. Trainers must recognize that these challenges are unavoidable and remain flexible, understanding that it may be impossible to stick to an ideal training plan.

The obstacles described above challenge us, as trainers of underserved workers, to think about how we can do a better job of “selling” job safety and health training in such a way that it becomes more appealing to these workers. The key may be to ensure that the training feels relevant to members of these communities by framing it more broadly in the context of issues of dignity and respect in the workplace. Issues related to clean and healthy outdoor environments have very successfully achieved this goal in recent years, linking the environment and social justice under the banner of “Environmental Justice.” Promoting safer and healthier



working conditions as an issue of “Justice in the Workplace” is an approach that has the potential to broaden the appeal of OSH training programs among underserved communities.

## **Section 2: Evaluation**

### **Introduction**

Training evaluation is done for many reasons; most importantly, to ensure that the training is achieving the intended results. Evaluation can determine not only how well a program is implemented and how much knowledge is gained by participants, but also outcomes of training, such as what changes occur in the workplace after training is complete. This could be increased awareness of health and safety risks and rights that are shared with co-workers or newly formed safety and health committees. It could be that workers who never understood or knew how to properly wear personal protective equipment now wear it and can show others how to do so. (NIEHS 1997.)

The goals and objectives of worker training focus on outcomes, rather than on learning for its own sake. If workers learn how to properly monitor confined space, they literally have the ability to save their own lives; but if upon returning to their workplace the monitoring is not done, then safety and health training has not really served its purpose.

If workers learn how to read material safety data sheets (MSDS’s) but do not have them at work and are not able to form safety and health committees that can help them get such resources, then the benefit of training is limited. Parsing out whether trained workers are unable to get access to MSDSs because they still don’t understand how to do so or because their employer is uncooperative is one challenge of training evaluation.

### **The Importance of Evaluating Training Programs**

It is especially important to evaluate the results of various approaches to providing safety and health information to underserved populations. Determining which approaches are most likely to be effective helps save time and money in the long run and helps ensure that workers get the information they need. If you are trying an approach to training for the first time (such as role play or art-based approaches), it will be particularly important to evaluate it so you know how well (or poorly) it worked.

- Evaluating worker training helps ongoing and future programs to better accomplish their training goals.
- Evaluation can guide us in improving future trainings
- Evaluation can support the use of non-traditional training methods

- Effective evaluation can provide the evidence that funders need in order to feel confident in providing ongoing support for safety and health training

## **Effective evaluation**

There are many methods for evaluating trainings, but in essence, evaluation involves an attempt to document conditions (knowledge, attitudes, beliefs, working conditions, and behaviors) before the training was implemented and any changes that occurred as a result of the training. While the general evaluation model is fairly straight forward it is important to realize that training takes place in the real world and over time which can sometimes complicate this seemingly simple model. There are, at times, factors outside the training (e.g. changes in company policy, high profile accidents at the worksite or in the community, etc.) that can impact the knowledge, attitudes, beliefs, practices and working conditions of workers and managers. If one of these events happens during the training period, any impact the event has on the workers or managers would likely register in the evaluation of the training but could be incorrectly attributed to the training. For example, if OSHA fines a company for not using trench protection at the same time that workers are being trained on trench safety, it would be unclear if any subsequent increase in the use of trench boxes could be attributed to the training or the OSHA fine. It is therefore essential to the evaluation process that real world factors be identified and accounted for before, during and after the training and evaluation.

While the basic method of comparing conditions before and after training is a fairly standard evaluation model, there are a number of methods that can be used to document and measure the impact of a training program. This section discusses general types of methods for evaluation and issues to consider when adapting them for different audiences. Many other resources provide a detailed description of evaluation methodologies (USDOL-OSHA, 2010; NIEHS, 1997).

There are two general categories of methods for evaluating trainings--quantitative and qualitative. Quantitative methods can generally be understood as anything that can be counted. Common examples of quantitative data collection include fixed choice tests or opinion surveys, counts of specific actions (e.g. number of safety complaints filed by workers in a given period of time), traffic to a website or toll free number etc. These data are generally analyzed using statistical methods. Qualitative methods can generally be understood as descriptive in-depth information. Common examples of qualitative data include open-ended individual interviews, focus groups and debriefing sessions. These two categories of methods are complementary and evaluation often will use both to get a comprehensive understanding of the impact of a training (See NIEHS, 1997 for a more detailed treatment of Qualitative and Quantitative methods).

Qualitative methods allow participants to explain their situation in their own words, which is particularly useful in identifying underlying perspectives, assumptions and reactions which can be helpful in bridging the cultural gap between trainers and participants of diverse

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backgrounds. A specific qualitative technique known as cognitive testing is particularly useful in reviewing training materials and evaluation tools to identify the differences in understanding and assumptions among diverse populations that need to be accounted for in any training or evaluation. Cognitive interviewing (or cognitive testing) consists of a series of related methods intended to assess a number of processes including whether individuals: comprehend information; can retrieve relevant information from memory; are differentially motivated in processing information; and can easily match their internal generated response to a given question with the response categories given by a survey (Willis, 1999). Cognitive testing is essential in developing and evaluating training materials in general and in particular for underserved populations, since there are inevitably differences (e.g., class, race, gender, levels of formal education, language, and immigration status) that separate the experience of the workers from the trainers and evaluators (Eggerth & Flynn, 2010).

Some key factors that influence the choice of evaluation methods include the primary purpose of a given training program, the target audience, and the training context.

### **Primary purpose of the training program**

The primary purpose or objective of the training program should have been identified during the creation of the training and will affect the choice of evaluation methods and metrics. As mentioned in the section on developing training, the primary focus of a training program may be on:

1. Knowledge Transfer – this is perhaps the most common type of training and generally has as its objective to provide workers with the knowledge or skills needed to stay safe. While the content of this type of training has traditionally been technical it can also be a useful model for other content areas such as training related to workers rights. The standard evaluation tool for this type of training is a pre-test/post- test model that frequently employs a written test administered before and after the training. Some considerations to take into account when applying this model to underserved populations include accounting for literacy levels, correct translation, and ensuring that the evaluation questions mean the same thing to the participants as they do to the trainers. Often alternative methods such as interviewer-administered questions rather than written questions work better with low-literacy populations. In addition, cognitive testing is essential to ensure the trainer and the participant understand the questions in the same way. Some examples of alternative methods include:

- Working in teams to answer a set of questions
- Playing games to review course content
- Using visuals as “testing” tools
- Multiple choice questions with pictures
- Oral checklists/hands-on demonstrations.

Examples of each of these methods, as well as resources for alternative skills assessment and references for these alternative methods can be found in *The Right to Understand* (1994).

2. Attitudinal or motivational change focuses on messages and content aimed at getting workers to change their attitudes towards safety and motivate them to implement the safety procedures they have been taught. The interest in this type of training or intervention can be seen in the rising popularity of including social marketing principles in occupational safety training. Collecting data about participants' attitudes towards safety at work via surveys (quantitative) or group discussion (qualitative) before and after the training is a common method for evaluating these elements of training. In addition, measuring concrete actions the training is motivating people to engage in (ranging from wearing earplugs to filing an OSHA complaint) is another common way to evaluate these types of training. One of the difficulties in evaluating attitude changes is that it is generally easier for respondents to report on specific actions they have taken than to articulate attitudes. In addition there are often no existing questionnaires that have been validated with respondents from underserved populations. This makes it preferable to measure the outcomes of such motivations. When dealing with underserved populations many of the efforts to "culturally tailor" materials fall into the motivational category (e.g., including family-based messages when targeting Latinos). While these efforts represent important first steps, further exploration of cultural issues should add additional insight. Employing a more verbal and participatory model, such as a small group discussion, may be more effective ways of collecting data on the effectiveness of training.
3. "Empowerment" – This model arises out of a recognition that unsafe conditions at work are often the result of systemic pressures or barriers (e.g. production quotas, fear of getting fired) that prevent workers from acting safely even when they have the knowledge and motivation to do so. The goal of this type of training is to provide workers with the opportunity to identify barriers to working safely and develop strategies for overcoming these barriers. Both quantitative measures (counting actions such as talking to a supervisor about safety concerns, filing an OSHA complaint, intentional work slow-downs etc.) and qualitative measures (discussing impact the training has had on how an individual or group does their job, changes in relationship with co-workers or supervisors, etc.) can be used. Qualitative methods are often more helpful in evaluating this type of training since the range of possible impacts and outcomes are often much broader than can be reflected in a multiple choice survey. This is particularly important with underserved populations, as different groups often face different barriers (e.g. immigration status) or develop different strategies for addressing common barriers. Allowing for more open-ended discussion on how the training affected the individual allows the trainers to better understand these differences. Allowing the participants to articulate their own experience allows for another level of processing of the experience and can further reinforce safety concerns or provide an additional opportunity to develop new perspectives on safety and the workplace. In essence, evaluation can reinforce the messages and dynamics of the training.

The above models are not mutually exclusive and good trainings often include elements of each.

## Overcoming Challenges to Evaluating Health and Safety Training

Evaluating any health and safety training presents challenges and most of these are amplified when dealing with underserved populations.

Perceived lack of internal capacity - Training providers and the organizations administering training programs often do not feel that they have the internal expertise to measure training effectiveness adequately and lack sufficient funds to hire an outside expert. But effective evaluation need not be overly costly or complex. There are many different evaluation strategies that can be used, some more formal and academic than others. Evaluation strategies may vary greatly depending on whether you are evaluating a brief interaction with day laborers on a street corner or an ongoing program with a more stable workforce. The *Resource Guide for Evaluating Worker Training* (NIEHS 1997) is a good resource for those looking to do evaluation. Others include *Tools of the Trade: A CWIT Guide to Participatory Evaluation* (Zimmermann, et al, 2008) and *The Right to Understand: Linking Literacy to Health and Safety Training*, 1994).

Inadequate funding - While the federal government is requiring more in the way of training evaluation, they typically do not provide adequate funding for the types of evaluation they require. For example, OSHA's Susan Harwood grants are mostly in the range of \$30,000 to \$200,000, depending on the scope of the project funded. By the time materials are developed and training is provided, little money remains to hire an external evaluator.

Ideally, evaluations would be able to track the impact of an intervention over time. For example, it would be advantageous to observe the types of actions (e.g. refusal to do dangerous tasks, talking to a supervisor, calling OSHA) a group of workers took when faced with dangerous situations at work before and after participating in a training. Likewise, it would be advantageous to have workers provide feedback on how a training has impacted the way they work over a period of time (3, 6, 9 or 12 months.) Often this ideal situation is not possible due to a lack of resources or access; but this does not mean that adequate evaluation is impossible. For example, while an evaluator might not be allowed to enter a workplace and observe workers confronting a supervisor about a hazard, she may be able to meet with them outside work and have them report the number of times they have taken such actions since receiving the training. While this may not be the gold standard for evaluation research, it is certainly better than nothing. The important thing is to not let the perfect become the enemy of the "good enough." This is especially true with underserved populations, many of whom work in jobs on the weak end of the job security and control over decision-making continuum described above. This means that trainings are often provided outside the workplace or among individuals who work for a variety of employers. Flexibility is therefore a key element in designing training evaluations with these groups of workers.

Difficulty accessing workers - Follow-up interviews, questionnaires, and focus groups can be good ways to assess, several months after a training, if and how workers are using the

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information that was provided. Assuming funding is available for this task, it is much easier to accomplish with a stable group who, for example, work in the same place day after day, or have access to the Internet for online surveys. This process is much more challenging when working with a transient population, which is often the reality when working with underserved populations. In addition, many of the same issues described above as challenges of training programs for underserved communities are also likely to present challenges in training evaluation. It is sometimes only possible to bring together for post-training evaluation a small sample of the workers that have been trained. One strategy for addressing this is to conduct focus groups. It is best to meet in a location that is easily accessible for the participants; if this is not possible, a stipend may be offered to encourage participation.

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### **Case Study**

Williams et al (2010) report on collaboration that New Labor, a workers' center in New Brunswick, New Jersey, that organizes construction day laborers, and the Occupational Training and Education Center of Rutgers University implemented from 2004 to 2009. The partnership created, presented, and evaluated a participatory construction health and safety training to participants of New Labor using a popular education format with worker trainers leading the sessions. They designed a mixed methods approach to evaluation using qualitative interviews and focus groups, and a quantitative base line and follow up survey. The focus groups and interviews assessed topics from training participants that were more nuanced and complex such as how workers support or compete with each other on the street corner, descriptions of the context of their work, and how day laborers and employers communicate with each other. The partnership then designed a 39 question survey that they offered both before and as a follow up to the training sessions based on the focus groups, interviews, a literature review, and pilot testing. There were 313 participants that completed the baseline survey with 70 completing the follow up for a response rate of 22%. Statistically significant findings in the follow up survey relate to an increase in certain PPE use, changes in the likelihood of self protective behaviors, and validation of the usefulness of the training and materials. The results are unique since the partnership reports on the impact of safety training for high risk Latina/o construction day laborers who participate in workers' centers, and were not organized by unions.

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### **Conclusions and Recommendations**

OSH training for underserved workers faces a variety of challenges, but creative trainers have developed a range of strategies and methods for overcoming these challenges. With careful

consideration of the particular context and needs of trainees, OSH trainers can carry out successful training programs, even in the most challenging circumstances.

Based on the findings of this White Paper, we make the following recommendations for successful training and educational programs for underserved workers:

- 1) OSH trainers should carefully consider factors such as the work context (stability of employment, presence or absence of a union, etc) of trainees in designing a given training program.
- 2) OSH trainers should consider using a variety of engaging, participatory methods in designing training programs, especially for low-literacy or limited-English workers.
- 3) OSH trainers should be especially sensitive to the particular challenges faced by immigrant workers who may be undocumented.
- 4) OSH trainers should carefully consider language and literacy limitations among trainees and should design training programs with these issues in mind.
- 5) OSH trainers should consider how their own personal characteristics and experiences might diminish or enhance their ability to understand the perspective of the target audience and should develop a plan to address these issues before designing or implementing a training program.
- 6) Organizations conducting evaluation of training programs should make particular efforts to ensure that evaluations take steps to overcome the barriers to participation in evaluation among underserved workers including language limitations and difficulty in gaining access to workers.
- 7) Funding agencies should allocate sufficient funds specifically for the purpose of conducting evaluation of OSH training programs.
- 8) The NIEHS document *Resource Guide for Evaluating Worker Training* (1997) should be updated to focus on evaluation specifically for underserved populations.

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