



Spanish-Speaking Construction Workers Discuss Their Safety Needs and Experiences

Residential Construction Training Program Evaluation Report

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Abbreviations

OSHA	U.S. Occupational Safety and Health Administration
PPE	Personal protective equipment

Spanish-Speaking Workers Discuss Their Safety Needs and Experiences

Summary

I think that, in the future, training in one's own language will be available and, when that day comes, many accidents and deaths will be prevented.

– A 20-year-old Hispanic laborer

Language is a substantial barrier to safety and health for Hispanic construction workers in the United States. In recognition of this, The Center to Protect Workers Rights (CPWR), in cooperation with the Occupational Safety and Health Administration (OSHA), sponsored the development and presentation of 10-hour safety and health training in Spanish for residential construction. Spanish-speaking trainers were available with class materials and handouts in Spanish (in addition to English materials), to reach out to some of the hundreds of thousands of construction workers in the United States who have trouble understanding, reading, and speaking English.

This report summarizes in-depth interviews with 47 Spanish-speaking construction workers, who received the training from CPWR in 2001. Those interviewed were from a broad range of construction trades and with a wide range of experience.*

The research focused on five areas: effects of language barriers, construction experience from outside the United States, comparing union and non-union work experiences, outcomes of training, and ways to improve training.

As a group, the workers found the Spanish-language brochures and overheads, and Spanish-speaking instructor helpful. Most said that, when they took other training in English, they did not understand a substantial amount of course content. They added that, even when they understood what was being said, they did not have the English language skills to ask questions or participate in discussions.

Three outcomes of training are discussed: (1) examples of how training altered work practices and prevented injuries, (2) instances where training might have prevented injuries, and (3) near misses, where incidents were averted because of training.

There is substantial testimony of changed behavior. The workers reported changes they had made in the use of fall protection and other personal protective equipment. More often now, they said, they practice lockout/tagout, check scaffold construction, and do not carry items when using ladders.

Almost all of those interviewed (45 of 47) said they would like more safety and health training. They asked for the training to be longer and offered more often. Many asked for more Spanish-speaking trainers. Many asked for refresher training.

Nearly all, 41 of 47, had already taken additional safety and health training since the 10-hour course. Six had taken the OSHA 500 course for trainers, suggesting that they would be teaching safety and health to other union workers. After the CPWR training, one individual was invited to join the board of his union local and was taking leadership in efforts to expand opportunities for members of his union.

There was a clear appreciation among these Spanish-speaking construction workers of the training, but also for the respect and concern shown to them by their unions.

*Because the numbers interviewed are relatively small, the results may not adequately reflect the views of the larger population of Spanish-speaking construction workers.

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Language is a substantial barrier to safety and health for Hispanic construction workers. In realization of this, The Center to Protect Workers Rights (CPWR), in cooperation with the U.S. Occupational Safety and Health Administration (OSHA), sponsored the development and presentation of a Spanish version of 10-hour safety and health training for union and non-union workers in residential construction. Trainers, class materials, and handouts were provided to reach out to some of the hundreds of thousands of Spanish-speaking construction workers in the United States who have trouble reading, speaking, and understanding English.

This report summarizes 47 in-depth telephone interviews with construction workers who received the training in Spanish from CPWR in 2001. The interviews were conducted to determine whether the 10-hour program led to better safety and health at work and a better quality of working life. Maria Lazo conducted the interviews in Spanish. (*See* appendixes.)

The project is a follow-up to a 2002 evaluation of the 2001 OSHA-supported 10-hour program (*see* Ruttenberg 2001).

The questionnaire for the new survey focused on five areas:

Effects of language barriers. Has there been training in Spanish available to the workers before? Have they taken training in English and not understood it? What are the benefits of receiving safety and health training in their native language?

Construction experience from outside the U.S. For trainees who worked construction in a country other than the United States, identify major differences between that work and construction work in the U.S.

Comparing union and non-union work experiences. For trainees who worked non-union in the United States before working union, identify the main differences in safety and health culture and practices.

Outcomes of training. Did the trainees believe there were fewer injuries and hazardous exposures after the training? Also, identify near-misses and incidents in which training might have made a difference in outcome.

Ways to improve training. What suggestions did the trainees offer to improve future safety and health training for Hispanic construction workers?

The interviewer assured individuals that there would be no personal identifiers and the responses would be completely confidential. In each case, a verbal consent to proceed was obtained before the interview began.

Background

Between 1980 and 2000, the number of construction workers who identified themselves as Hispanic quadrupled to 1.4 million, or 17% of wage-and-salary workers (CPWR 2002). Hispanics make up a disproportionately large share of workers in some construction trades, accounting, for instance, for 33% of drywallers, 31% of tile setters, 27% of concrete workers, 26% of painters, 23% of roofers, and 21% of laborers (CPWR 2002, 17b).

Besides making up a large share of the workforce, Hispanic construction workers are experiencing a disproportionately high rate of deaths – 19 per 100,000 full-time workers compared with 14 for all construction, a 36% difference, in 1999 (CPWR 2002, 33d). According to a 2003 workshop report by the National Academy of Sciences, foreign-born Latino men are nearly two-and-a-half times more likely to be killed on the job (in all industries) than the average U.S. worker, and about 50% more likely to be injured (The term “Latino” was used by the report.).

Work-related injury and illness rates for Hispanic construction workers were 7% lower than for all construction in 1999, but injuries and illnesses – for Hispanics and all construction workers – are believed to be underreported (CPWR 2002, 33). One reason may be that Spanish-speaking workers are often less aware of regulations and are less likely to report injuries and violations (National Research Council 2003).

In addition, approximately 627,000 construction workers – roughly half of the Hispanic construction workers in the United States – are illegal immigrants, who may not complain about unsafe work because they are afraid of losing their jobs (Hopkins 2003) or of deportation.

Language barriers partly explain the gap in death rates. Hispanic immigrants and Spanish-speaking workers often receive less job and safety-and-health training than U.S.-born

workers, partly because they do not speak English well or at all. At many job sites, safety instructions and warnings appear only in English.

To compound the language problem, many Hispanic construction workers in the U.S. have limited literacy in Spanish, as well as in English. The 2000 Census reported that 43% of the Hispanic population had not earned a high school diploma, compared to 11% of the non-Hispanic population. Among foreign-born U.S. residents from Latin America – more than half of the 33 million Hispanic U.S. residents born outside the U.S. – 35% have less than a ninth-grade education (*see* Therrien and Ramirez 2003; NIOSH 2002b).

Responding to the seriousness of the safety and health risks for Hispanic workers, OSHA Secretary John Henshaw in March 2002 signed an agreement to promote safe and healthful working conditions for Hispanic construction workers. His stated focuses were effective safety and health training and increased access to safety and health resources in Spanish (*Hispanic Journal* 2002). The OSHA initiative encourages bilingual individuals in construction to take OSHA’s train-the-trainer class (in English) so they can teach the 10-hour and 30-hour construction safety and health courses in Spanish.

Increasingly, employers, union personnel, and other trainers are recognizing the need for Spanish-language materials and training. A 2002 survey of 77 participants at a national construction safety conference in Illinois, about half of them trainers, found that more than half said they needed to use Spanish-language materials at least monthly (Ruttenberg 2002).

Survey Results

Workers recruited for the evaluation of CPWR training were diverse in terms of age, construction work experience, and length of time in the United States. Those interviewed were aged 20 to 60, with more than half in the 30-to-45-year age group; 20% were over 50. Forty-four were male; three were female. They came from seven states and the District of Columbia. By occupation, they identified themselves as follows:

Electricians	21
Roofers,	8
Bricklayers,	4
Painters/glaziers	4
Insulators/ asbestos wkrs.	6
Pre-apprentice	2
Cement mason	1
Laborer	1
Total	47

All but three were union members. Their construction experience ranged from less than a year to nearly 40 years. Forty-two were born in Colombia, Cuba, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, or Puerto Rico; 22 of the 42 had arrived in the mainland U.S. since 1991.

Seventeen of the 47, or 36%, said they had been injured on the job badly enough to lose work time. No corresponding figures are available for the construction workforce overall.

Effects of language barriers

In response to open-ended questions, most of those interviewed said they faced substantial challenges when trying to understand what they were told at work. As one worker said, “When safety procedures are explained, I don’t understand.” People appear to be less willing to explain things to those with limited English, said some of the Spanish-speaking workers. It is hard to ask questions and communicate with foremen. And, poor English limits promotions.

A 35-year old U.S.-born glazier from Texas explained some of the safety and health problems that occur when construction workers do not know English: “Foremen get frustrated trying to explain to workers what to do or how to do it safely, because they haven’t been trained

or maybe they didn't understand English so they didn't learn how to do it. So the foreman gets frustrated and just tells them to skip that part because they don't understand. They just do it without safety equipment or procedures."

Importance of Spanish- (and English-) language training

Most said that when they took training in English, they did not understand a substantial amount. They also said that, even when they understood what was being said, they did not have the language skills to ask questions or participate in discussions. Only six of the 47 recalled having had the opportunity to take a safety and health course in Spanish before taking the CPWR training. As a group, they found the CPWR brochures, overheads, and Spanish-speaking instructors very helpful; only 4 found the Spanish materials and instructors "not necessary."

Said one worker: "If workers with limited English have a concern or doubt, they have to keep it for themselves because they can't communicate it to others. Like right now, I don't know exactly how many feet the ladder should be placed from the wall."

A Wisconsin roofer with 29 years' experience said he was surprised during the training. "It was the first time I could understand and all that was said was new to me even though I received some training in English." He said that, even though he has improved his English oral language abilities a lot (not as much with writing and reading), with training in Spanish he can "take home 100% of the knowledge given." He said that using translators is not the same, because it is difficult for translators to catch everything and explain it. Translators "only give the idea." Before the training, there were many terms he didn't know.

A 60-year-old Cuban-born electrician, with 23 years of experience in the U.S. said, "Training in our own language is very important. When I don't understand, I can always ask for help. We will get more benefit, and we will prevent more accidents. ...I had bitter situations when trained in English only. It is easier for me because of my years of experience to associate my work with the training and understand. But what about those that are new in the construction work? It is impossible for them to understand training in English and know the difference, for example, between two similar things like generators and transformers."

A 28-year-old bricklayer, born in the U.S., who said he now speaks more English than Spanish, still praised the availability of Spanish materials. "At the end it will also benefit non-Spanish speakers because workers will be better trained and accidents will be prevented. Sometimes many workers are affected because of lack of training of other workers."

Several of the trainees were quick to point out that Spanish-language training should not rule out having Spanish-speaking construction workers learn at least key words in English. "I think training should be bilingual, not only in Spanish," one worker said. "We have to learn English to differentiate signs, warning signs, etc."

A 31-year-old roofer said he has the identical CPWR training materials in Spanish and English. He compares them to better understand the English. He said that he always has the publications on hand and even had them in front of him at the moment of the interview (by telephone).

Said another, "I think we need to learn at least basic English, otherwise there will be problems at the work site. Be trained in Spanish, but learn English also."

Safety and health awareness and working conditions

The 47 who were interviewed were asked seven open-ended questions, to gauge their concerns about safety and health and other workplace issues (44, or 94%, were working union). Forty-one (87%) of those interviewed had concerns about safety and health, safety and health training, and working conditions generally. By contrast, only about half expressed concerns about getting more skill training, and only about 25 to 40% expressed concerns about increasing their wages, getting health insurance or better health insurance, or getting full-time work:

Issue	Numbers responding and % of total:	
	<u>Very great concern</u>	<u>Great /some concern</u>
Safety & health at work	8 (17%)	33 (70%)
Getting enough safety & health training	4 (9%)	32 (68%)
Improving general work conditions	4 (9%)	30 (64%)
Getting more skills training	5 (11%)	21 (45%)
Earning higher wages	5 (11%)	12 (26%)
Obtaining/improving health insurance	7 (15%)	15 (15%)
Getting full-time work	6 (13%)	6 (13%)

Note: Total of 47 interviewed. Percentages are rounded. Fourth category was “not very concerned.”

Responses from those with construction experience outside the United States

Eighteen of the construction workers were born outside the United States and all had worked union on their last U.S. job. Only one had worked union in his/her native country.

Of the 18, all expressed some difficulties adjusting to construction work in the United States. Seventeen of the 18 said they had difficulty because of they were unable to understand English.

Nine said they had difficulty adapting to U.S. construction work, because they had never used PPE. In Cuba, for instance, “safety equipment was hard to get,” said an electrician. There are safety regulations but they are not of any use.

Another Cuban construction worker said, “In Cuba people don’t get safety training. We have to use 7 or 8 senses when working with high voltage. I saved my life many times. Sometimes they told me that the system was not hot and it was. Most workplaces in Cuba do not lock out and tag out... Fall protection is not usually used.”

A 52-year-old roofer, born in Mexico, said he didn’t use any PPE in Mexico and was not aware of the importance of safety. He used to work in bare feet with cement [which can be caustic]. Here, he said, “everything is different.”

A Florida electrician, born in Colombia said, “In Colombia, ... they only care about production. There are not many safety regulations.”

Availability of personal protective equipment. The 18 workers were asked about hard hats, safety glasses, steel-toed shoes, hearing protection, gloves, disposable protection clothing, respirators, and fall protection harnesses. All said hard hats, safety glasses, steel-toed shoes, and gloves had been available on their last jobs in the U.S. Whereas at least 16 of them said they had all necessary personal protective equipment (PPE) available to them on their last U.S. job, fewer than 7 had PPE available when they worked their native countries.

One Cuban worker said, “It was a luxury to have even simple pliers.”

Use of personal protective equipment by the interviewee. All of the 18 reported using hard hats, safety glasses, steel-toed shoes, and gloves on their last jobs. Sixteen said they used hearing protection, disposable protective clothing, respirators, and fall protection harnesses. In their native countries, none had used fall protection harnesses, only one had used respirators or disposable protective clothing, and only two had used hearing protection. Still, in their native countries, between 60 and 80% (11 to 14) had used hard hats, safety glasses, steel-toed shoes, and gloves – many providing them on their own.

Personal protective equipment used by others who worked on the site. No more than two and sometimes none had seen others use PPE in the native countries, but all 18 reported that, in the U.S., most of those around them used PPE. Fifteen, or 80%, said that those around them on their last job generally wore PPE, but none said everyone did. As many as 14 (17%), though, said hearing protection and fall protection harnesses were either not used by those around them or used only sometimes. Over 80% said those around them in their native countries used none of the PPE asked about (hard hat, safety glasses, steel-toed shoes, hearing protection, gloves, disposable protective clothing, respirators, and fall protection harnesses).

Availability and use of fall protection. All who believed they needed fall protection on their last job had used it. All said it was not available in their native countries.

Availability of scaffolds and degree to which they were properly constructed. The 15 who said they needed scaffolds on their last jobs, said the scaffolds were available and constructed properly. They had top and mid rails; the platforms were fully planked; there was

proper access; and the scaffolds were tied off to the building properly. In contrast only one individual said that those scaffold conditions (or any of them) were met in his native country.

Material safety data sheets or other safety information sheets. All but one of the 18 said MSDSs were available at the last work site. And all but one of the 17 who had access to MSDSs, said they had asked for safety information sheets at least once since the training.

Other safety practices. For 20 tool types, all 18 said they had tools that were generally adequate and in good condition at their last construction job. Only four of the 18 workers said these same 20 tools were adequate and in good condition when they were working in their native countries. This was true for hammers, nailers, saws, screwdrivers, and wrenches. For all other tools, only 2 or 3 trainees said those tools had been adequate and in good condition.

Where lockout/tagout was needed, all 18 said they had used the procedures when maintaining and repairing equipment. Only 2 of 15 said they had used lockout/tagout in their native countries when doing maintenance and repair of equipment.

Sixteen said they had received site-specific training on their last U.S. job, but only one had said that was available in the native country.

Comparing union and non-union work experiences

Individuals who had worked union and non-union were in the United States asked to compare their union jobs with non-union jobs in seven categories (*see table 1.*)

The trainees were quick to credit their unions with quality training and making safety and health on the job important. (The interviews were conducted on behalf of CPWR, a union-affiliated program.) When working union, trainees said generally, they had more training, better equipment, better pay, and the right to complain. Here are a few of the comments:

Another worker said, “The benefits of working union are insuperable. We are provided with all equipment. They even give us extension cords and check that they are in good condition. They want to prevent accidents. At non-union work sites I had to take everything, even a hard hat. If an accident occurs they just pay WC [worker’s compensation] and that is it.”

“Differences at union and non-union jobs are like the night and day,” said a third worker. “Non-union companies don’t provide training. They hire one qualified person and four helpers who have no training whatsoever.”

A Cuban-born construction worker said, “No doubt that union jobs care about their workers. Everybody knows it. It is completely different.”

Outcomes of the Training

Additional training

Forty-one of the 47 trainees, about 87%, had taken safety and health training of some kind since their 2001 CPWR 10-hour training. Collectively they took nearly 20 types of courses; some had taken as many as six since the training. Some of the training was part of the apprenticeship programs, but several of the workers had taken OSHA 10. Six had taken OSHA 500, which prepares construction trainers. Fifteen of the 41 had taken scaffold training, eight had confined-space training, and seven had ladder training. Six trainees had taken a one-week OSHA class and four had taken hazardous materials handling. Other courses included cones, equipment and tools, asbestos, respirators, electricity, firefighting, CPR, and first aid.

Changes in awareness and behavior

Those interviewed reported substantial changes in awareness and work practices after receiving the 10-hour CPWR training. Whereas about half (21) of the workers who responded to the question with “yes” or “no” said they used fall protection before the training, all said they had

used fall protection at least once since the training and all had asked for fall protection at least once when it was not available. Whereas only 19 (43%) had fixed a hole or asked a supervisor to fix a hole before training, all said they had done that since training. While only 13 said that before training they made sure scaffolds were constructed correctly before using them, all said that at least once since training they had inspected a scaffold before using it. Only 2% reported reading a material safety data sheet before training, but 42 (93%) said they had since training. Two (7%) had made sure backup horns for on-site vehicles were working before training, but 29 (93%) said they had done this at least once since training. While six (16%) had asked for better lighting before training, all had asked for it at least once since training. Five (13%) had asked for perimeter guarding on roofs before training, but all 38 who worked on roofs had asked since training. While 42 (93%) had carried things on ladders before training, all but one (41) said that that behavior had changed. There was reported improvement in care of tools, trenching safety, and electrical safety. And, all reported having talked with others at the work site and friends who work construction about safety since the training.

The 5 trainees born in the United States (including one born in Puerto Rico) all reported using fall protection before training (in contrast to 16 of the 42 born outside United States). U.S.-born trainees were twice as likely to have fixed a hole (on a roof or platform) or ensured correct construction of a scaffold. But still, none had ever read an MSDS, made sure the backup horn for an on-site vehicle was working, or asked for better lighting.

A 29-year old roofer from Wisconsin said, "I follow all the safety tips I learned in training. I was taught also how to build scaffolds and where to place them. I always check all the tool cables." He went on to say, "before the training, I had some safety instruction but I could not understand everything.... Before the training I used to carry things on ladders: paper rolls, tools, lunch box, insulation, etc. I used to place them on my shoulder and climb. Now I know that I should never carry things on ladders; now I use ropes. Also, before the training I used to think what a waste of time it was to place the safety flags, but now I know the importance of doing it." This individual had become so safety conscious that he complained: "If we do not wear a hard hat the safety people suspend the worker for 3 days, but fall protection equipment is not controlled as much as hard hats. It is an irony."

A 60-year-old Cuban-born electrician in Florida who had worked in the U.S. for 23 years said, "After the training, I am more responsible and careful. I make sure that workers with not much experience know how to deal with dangers. I make them use PPE."

More than one mentioned the importance of personal protective equipment. For instance, "The training helped me a lot and raised my awareness. I now use all kinds of PPE and if it is not available I ask for it. I explain to my friends about what I learned through the training."

Some mentioned planning against other hazards on roofs and at heights. For instance, one said, "After the training I realized how dangerous it is working on a roof and that if I don't work safely I can be one more victim. I identify all the risks before the work starts and also make sure that I have all the PPE needed. Before starting working on a roof, I take more precaution. I check for possible dangers like ice. Sometimes it doesn't look like ice, but it is slippery. My first priority is to keep others and myself from falling. I can prevent accidents if I am cautious and always alert."

They watch out for roof holes. Said one, "To avoid falling through holes or gaps, I cover them with plywood and place signs to prevent others too."

Some said they are more careful around electricity. One said, "I make sure that electrical panels are grounded."

Another said, "I don't touch any electrical cables. I call the electricity contractors who move the cables."

Some try to protect against toxic fume, gas, or dust exposures. "Applying what I learned in training has saved my life many times and also prevented accidents. If there is wind, I always wear a mask like those used by welders to protect my face."

Another noted that shortcuts are dangerous: "Even though I don't speak English very well, I am always telling co-workers about how important it is to place the safety flags, wear hard hats, and wear long-sleeve shirts to protect the skin from being burned with 500-to-600-

degree hot asphalt. I always tell my co-workers about how important it is to not rush people because it is very easy to fall.”

Another mentioned the need to be alert to traffic. “After the training I also realized that it is easy for us to be run over by on-site vehicles, so I always make sure that those vehicles have the backup horn working. Now I got to keep my eyes open on what is going on.”

“Many coworkers have burns on their hands, but I don’t,” said another. “I wash my hands very often and use all the protective equipment that is available. I always try to take good care of myself, even though sometimes it is difficult because I am exposed to most types of weather and I must work around wet concrete. Sometimes I am also exposed to falling objects or back injuries. Without training I think I could not have prevented any injuries. Training taught me to work safely and avoid dangerous situations, to use protective equipment like rubber boots, face respirators, gloves, hard hats, kneepads, and safety goggles. Before doing any job, the training taught me to make sure it is safe to do it; safety is first; my health my priority. I know that what I am doing won’t lead me to injuries or death.”

Understanding of injuries that might have been prevented with training

Twelve of the workers cited examples of injuries – burns, serious electric shocks, and falls – they believed could have been prevented with safety training.

For instance, one individual mentioned a 31-year-old worker who made contact with an energized 277-volt electrical circuit and was almost killed: “He did not lock out/tag out the panels/breakers. He did not die but now he is retarded. I think his joints were injured. He lost his right hand. The other was going to be amputated but at the end they saved it... This accident could have been prevented with more training.”

A roofer said lack of training as well as limited English led to a serious injury. “One Mexican who was working on the roof fell through a hole. They covered a hole with a 3-inch plywood 4-by-8. The worker noticed it and kept walking. The plywood moved and the worker fell through it... He broke many bones and was not able to work for two months... The company gave him instructions but not safety training, and maybe he did not understand it because of his limited English.”

Another referred to a burn related to roofing. “Two years ago, when a crane was taking a kettle of hot asphalt to the roof, the container turned around because of the wind and some of the hot tar fell. The container, I think, was overfilled. There was one worker at the first floor and the hot tar fell on him... the hot tar fell on parts of his body, especially his ear. He was in shock. He lost an ear. We are exposed to many dangers. With or without protection, one should never be under any container or material that is taken to the top floors. Training taught me that one should avoid those situations.”

A 41-year-old glazier from Texas told how “one worker fell from a ladder from the second level. He did not secure the ladder. He used only pressure pincers and placed them only on one side. At some point the ladder came out of place and he fell. He broke his leg, arm, and chin. He lost many months of time at work. He did not have any training in how to set up a ladder to avoid falls. This accident could have been prevented with more training.”

Added another worker, “At work, I have heard the supervisors telling workers to stay behind the warning lines and because of their lack of English they were not able to understand. If training were given in their native language, they will know what a warning line is.” (OSHA defines a warning line as a visible line not less than 6 feet from the edge of a roof.)

Near-misses

Accidents can happen. One expectation of training is that a trained individual might be able to take a bad situation and avert an injury. Former trainees provided such examples. For instance, “Because of training I prevented an accident. I used to carry the buckets of hot tar. One day the handle on the mop car got stuck and the rope got stuck. The can, which was hanging full, fell. If I was not wearing a full mask like the one used by welders, I could have been burned. I learned

how to do my job safely. Also I am grateful that they taught me how to work with scaffolds [and] ladders and where to place them.”

Another former trainee said, “I had a near-miss experience, but because I followed the instruction given during training I prevented injury. I was wearing safety glasses/goggles when the nail hit my face.”

Suggestions for Training

Ways to improve the 10-hour course

The CPWR course included small-group activities led by Spanish-speaking peer trainers, with Spanish-language guides for trainers, participant handouts, and Power Point slides. Parallel materials were available in English.

The most frequent suggestion was to develop videos in Spanish; eleven of those interviewed asked for videos (without any suggestion or prompt from the interviewer).

There were requests for more graphics and statistics in Spanish.

Another suggestion: “Sometimes trainers talk too much and I can’t figure it out. They should tell us what is a violation and why it is a violation.”

There were requests for more hands-on training. One person asked for demonstrations on how to use harnesses.

Many asked for the training to be longer and offered more often.

Many asked for more Spanish-speaking trainers. One person added, “There are so many Hispanic experienced workers who could be trainers.”

Needs for future training

Many asked for refresher training.

There were many suggestions for additional training materials. A construction worker from Wisconsin said it would help him to have brochures or briefings in Spanish every month.

Spanish training for non-Spanish-speaking supervisors was suggested. Examples were to be able to tell fellow workers that it is wrong to hook off or how to get on and off ladders. Supervisors, one worker said, cannot adequately communicate with workers.

Many of the trainees were enthusiastic about the possibility of more Spanish-language training. One worker suggested adding training on cones: how and where to place them.

Said a 26-year-old roofer from Wisconsin, “Since the training the union invited me to be on the union board. I speak fluent English and Spanish. I want to show the necessities of Hispanic workers. I am trying to help union members to set up a Spanish training program. Trainers want to learn Spanish because when they teach Hispanics they don’t understand. They want to improve the training but the only way is to give it in one’s native language... The union doesn’t have any trainers that speak Spanish. Some trainers are learning Spanish but only to initiate a conversation, not related to work... They need to learn occupationally related Spanish.

“More training in our native language is the key.”

A 20-year old general laborer said, “I think that in the future training in one’s own language will be available and when that day comes many accidents and deaths will be prevented.”

Almost all of those interviewed (45 of 47) said they would like more safety and health training:

- More in-depth training. Forty-three individuals wanted more in-depth training, and 39 of these individuals asked for that training in Spanish. Two asked for it in both English and Spanish
- Hazardous materials training. Thirty-seven of the 45 wanting more training, wanted Hazmat training, 34 of them if it was in Spanish.
- Confined space training. Thirty wanted confined-space training, 27 if it were in Spanish and one if it was in both Spanish and English.
- Scaffold training. Thirty-eight wanted scaffold training; 35 of them wanted it if it was in Spanish.
- Respirator training. Thirty-eight wanted respirator training; 34 wanted it if was in Spanish.

- Hazard communication training. Thirty-eight wanted HazCom training; 33 if in Spanish.

Clearly the demand for more-advanced training is high, but is also highly dependent on the language of instruction. Most of those interviewed wanted as much safety and health training as they could get.

A roofer in Wisconsin requested union briefings, as well, in Spanish. He said he goes to all the union meetings. The union hires an English teacher, but he would have to drive an hour to get to class and he is too tired after work.

Conclusions and Recommendations

Research

It is difficult to accurately gauge changes in safety behavior that result from training. There are many necessary conditions, none of which is sufficient alone to effect change in workplace safety. This study does not have a “before” and “after” component.

Equally important, although intensive interviews are beneficial, because they can draw out detailed viewpoints, the numbers interviewed are relatively small, so the results may not adequately reflect the views of the larger population of Spanish-speaking construction workers.

One might try to follow up on this largely qualitative study with more direct quantifiable studies – measuring, for example, injury rates, as a way to evaluate the effects of the training programs. To do so would, however, require inclusion of a much larger number of trainees. Others might do a study to compare outcomes associated with Spanish-language training versus English-language training of Spanish speakers, given the proportion of individuals who said that they had never really understood safety training until they received it in their native language.

One might also consider a study aimed at developing a blended Spanish-English training, where Spanish-speaking workers would receive basic training in Spanish, but also learn key safety and construction words in English, so they can better understand and communicate with co-workers and supervisors who do not know Spanish.

Training

The results indicate enormous value in Spanish-language safety and health training for Hispanic construction workers who understand limited English. For many it was the first time they understood what they were taught. In a number of instances, it was the first time one was comfortable enough to ask a question.

Trainees expressed a desire for more training, longer training, and refresher training. Forty-one of the 47 (nearly 90%) interviewed had taken additional safety and health training in the 18 to 24 months since their 10-hour course.

One can identify injury incidents averted as a result of this 10-hour course.

There was a clear appreciation not only of the training but also for the respect and concern shown to them by their unions and CPWR.

* * *

Train heartily because many people die each year.

– A 29-year-old roofer in Wisconsin

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TABLE 1

**DIFFERENCES BETWEEN UNION AND NON-UNION CONSTRUCTION WORK
AS EXPRESSED BY 38 CONSTRUCTION WORKERS WHO HAVE WORKED BOTH UNION AND NON-UNION**

	UNION										NON-UNION									
	Excellent		Good		Fair		Poor		Non-existing or very poor		Excellent		Good		Fair		Poor		Non-existing or very poor	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Quality and availability of personal protective equipment?	28	73.7	9	23.7	1	2.6	0	0	0	0	0	0	4	10.5	3	7.9	20	52.6	11	28.9
Skill Training?	28	73.7	9	23.7	1	2.6	0	0	0	0	0	0	4	10.5	5	13.2	19	50.0	10	26.3
Safety and Health Training	28	73.7	9	23.7	1	2.6	0	0	0	0	0	0	5	13.2	3	7.9	19	50.0	11	28.9
Tool Maintenance?	27	71.1	10	26.3	1	2.6	0	0	0	0	0	0	5	13.2	3	7.9	20	52.6	10	26.3
Culture of Safety? (able to raise concerns, importance of safety, awareness of safety)	28	73.7	9	23.7	1	2.6	0	0	0	0	0	0	4	10.5	3	7.9	21	55.3	10	26.3
Salary	28	73.7	9	23.7	1	2.6	0	0	0	0	0	0	4	10.5	3	7.9	21	55.3	10	26.3
Benefits? (Health Insurance, pension, vacation, holidays)	29	76.3	8	21.1	1	2.6	0	0	0	0	0	0	3	7.9	5	13.2	18	47.4	12	31.6

Note: Based on 38 workers who have worked both union and non-union in the United States; questions asked by a representative of a union-based program.

Appendix 1. Methodology

An effort was made to interview all individuals who in 2001 completed evaluation surveys on their residential construction safety and health training and who also have Spanish surnames. In addition, some of the classroom surveys were received after the cutoff date for the 2001 evaluation, and, therefore, not included in the count for the 2001 study which predated this one. Thirty-seven of this second group of surveys (who missed the original cutoff) were completed by construction workers with Spanish surnames, and these names were added to those to be interviewed. In the initial evaluation cohort, there were 101 individuals with Spanish surnames. Of this total of 138 individuals to interview, there were 46 wrong or disconnected numbers. The 92 working telephone numbers, yielded 47 interviews, just over 50%. Of the remaining 45 targeted trainees, only 5 refused to participate – either because they did not want to or they had no time. Two said their native language was English, so they were not interviewed. Contact was made with the households of the other 38 individuals, but after multiple attempts we were unable to find these individuals at home. In many of these cases, initial contact had been made and an appointment was set for the actual interview, but for some reason did not occur.

The full survey took approximately one hour – sometimes, as long as two hours. Individuals willing to participate were compensated with \$10, mailed to them in appreciation for the time they were willing to spend with the interviewer. A bilingual researcher and native Spanish speaker, did the interviews. This individual, Maria Lazo, has several years of evaluation experience, nearly all of it in occupational safety and health, and a substantial amount in construction safety and health. She, herself, has taken health and safety training, and she was involved in the analysis of the original cohort of residential construction workers. Ruth Ruttenberg, the principal investigator, did the survey development, data analysis, and report writing.

The interviewer assured each individual, before proceeding with the interview, that there would not be any personal identifiers and that their answers would be completely confidential. In each case, a verbal consent to proceed was requested and obtained before the interview began.

There is a range of geography and experience among the targeted individuals. They resided in seven states and the District of Colombia. Their work experience ranged from one month to nearly 40 years. A draft survey was pilot-tested with a group of Spanish-speaking construction workers not in the cohort. The survey was then reassessed and finalized. The pre-testing of the survey focused on clarity, language level, reliability, and validity.

After the short answer protocol of the survey was completed, the interviewer engaged the interviewee in a broader and less directed discussion about the training, to bring depth to the research. These discussions were a conscious effort to obtain opinion, anecdotes, and outcome measures related to training. In this phase of the interview, the responses of each respondent were unique. The interviewer is experienced in conducting such interviews and emphasized that there were no right or wrong answers, and no judgments made of them personally. While there is always a risk of leading the interviewee, the information obtained in this open-ended format is a well-documented way to identify activities, behaviors, and events that may have been influenced by the training. Identifying these outcomes, in the end, is the best evidence of an effective program.

While it is possible that in the 12 to 18 months since training, some individuals may have forgotten specific details of their training, few are likely to forget the impact of their first safety and health training with materials they could understand. The principal investigator's experience is that follow-up surveys, after two to three years, have usually yielded valuable outcome information.

While there are no baseline data for these trainees, there is the possibility of comparison of this group with the larger sample of residential construction workers with ten-hour training. The trainees with Spanish surnames composed approximately 25% of the total group. In addition, there is documented evidence that “retrospective pre-tests” have strong validity;¹ that is, that individuals after their training, report accurately about their pre-training awareness, knowledge, and experiences.

The collected data were entered into an Access data base and analyzed. Answers to each question were tabulated and several cross tabulations were analyzed as well. Sub-categories such as U.S. vs. immigrant, overseas construction experience, specific trade or union groupings, and years of experience, were analyzed as well. A collection of anecdotes was assembled.

¹ **Personal communication to Ruth Ruttenberg by Phil Berger, University of Kentucky (evaluator for NIEHS's Midwest Consortium Hazmat project).**

APPENDIX 2

SPANISH-SPEAKING WORKERS DISCUSS THEIR SAFETY NEEDS AND EXPERIENCES

RESIDENTIAL CONSTRUCTION EVALUATION CENTER TO PROTECT WORKERS' RIGHTS (ENGLISH TRANSLATION)

Participant Consent Yes No

1. Date:	
2. Age:	
3. Area Code:	
4. Please identify your craft	
General laborer	
Insulator	
Bricklayer	
Carpenter	
Cement mason	
Electrician	
Heavy machinery operator	
Iron worker	
Painter	
Roofer	
Pipe fitter	
Plasterer	
Plumber	
Sheet metal worker	
Truck driver	
Other (please explain)	
5. a) Number of years you have worked in construction: b) Number of years you have worked construction in the U.S.:	

6. Union and how many years you have been a member:	
International Association of Heat and Frost Insulators Asbestos Workers (H.F.I.A.)	
International Association of Bridge, Structural and Ornamental Iron Workers (B.S.O.I.W.)	
International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers, and Helpers (B.B.F.)	
International Brotherhood of Bricklayers and Allied Craftsmen (B.A.C.)	
International Brotherhood of Electrical Workers (I.B.E.W.)	
International Brotherhood of Painters and Allied Trades (I.U.P.A.T.)	
International Brotherhood of Teamsters (I.B.T.)	
International Union of Elevator Construction (I.U.E.C.)	
International Union of Operating Engineers (I.U.O.E.)	
Laborers International Union of North America (L.I.U.N.A.)	
Operative Plasterer and Cement Masons International Association of the United States and Canada (O.P.& C.M.I.A.)	
Sheet Metal Workers International Association (S.M.W.I.A.)	
United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada (U.A.)	
United Brotherhood of Carpenters and Joiners of America (U.B.C.)	
United Union of Roofers, Waterproofers and Allied Workers (R.W.A.W.)	
I do not belong to a union	

7. What training have you had in safety and health, and in what language?	English	Spanish
a) Training before the 10-hour class. Please list _____		
b) Training since the 10-hour class. Please list _____		

8. a) Country of Birth: b) If not the U.S., in what year did you come to the U.S.? _____	
9. If not the U.S., did you work construction in the country of your birth?	Yes ___ No ___
10. Did you work construction in a country other than the U.S. or the country of your birth? Country _____	Yes ___ No ___
11. If yes, what was the last year you worked in construction outside the U.S.?	

If no, please go to question 28.

12. What, if any, difficulties did you have adjusting to construction work in the U.S.?

- a. None
- b. Pace of work was faster
- c. I had trouble understanding instructions in English
- d. I had never used personal protective equipment
- e. I needed to learn new skills
- f. Other (Please explain)

If you worked construction outside the U.S. please compare work in your native or other country with work on your last job

	USA			Native or Other Country		
	Yes	No	Not Sure	Yes	No	Not Sure
13. What personal protective equipment was available?						
Hard hat?						
Safety glasses?						
Steel-toed shoes?						
Hearing protection?						
Gloves?						
Disposable protection clothing?						
Respirator?						
Fall protection harness?						
14. Did you use protective equipment?						
Hard hat?						
Safety glasses?						
Steel-toed shoes?						
Hearing protection?						
Gloves?						
Disposable protection clothing?						
Respirator?						
Fall protection harness?						

	USA			Native or Other Country		
	Yes	No	Not Sure	Yes	No	Not Sure
15. Did most of those around you wear personal protective equipment?						
Hard hat?						
Safety glasses?						
Steel toed shoes?						
Hearing protection?						
Gloves?						
Disposable protection clothing?						
Respirator?						
Fall protection harness?						
16. Did you have fall protection where needed?						
Guard rails?						
Safety nets?						
Harness?						
17. Did you use fall protection?						
Guard rails?						
Safety nets?						
Harness?						
18. Did you have scaffolds where needed?						
Did they have top and mid rails?						
Platforms fully planked?						
Proper access?						
Tied off to building properly?						
19. If you used scaffolds, were they properly constructed?						
20. Were Material Safety Data Sheets or other safety information sheets available?						
21. Did you ever ask to read a Material Safety Data Sheet?						

	USA			Native or Other Country		
	Yes	No	Not Sure	Yes	No	Not Sure
22. Were tools generally adequate and in good condition?						
Abrasive tools						
Chippers						
Chisels						
Drills						
Grinding tools						
Hammers						
Jacks (lever and ratchet, screw and hydraulic)						
Mechanical power transmission apparatus (belts, shafts, gears, rods, pulleys, similar devices)						
Nailers						
Pneumatic tools						
Power presses						
Power tools						
Sanders						
Saws (circular, radial arm, chain, crosscut, ripsaws)						
Screwdrivers						
Shears						
Staplers						
Wire cutters						
Woodworking tools						
Wrenches						
23. Was your last job union?						
24. Did you receive specific training about your work site?						
25. Was there a government safety inspection on your construction site?						
26. Did you lock-out and tag-out when maintaining and repairing equipment?						
27. Other Comments:						

28. Currently, how much concern do you have for:	Very great concern	Great Concern	Some concern	Not very concerned
Your safety and health at work				
Getting enough safety and health training				
Improving working conditions generally				
Getting more skill training				
Obtaining full-time work				
Increasing wages				
Obtaining health insurance or better health insurance				
Other Comments:				

29. Consider the 10-Hour Safety and Health Course: Did you ever ...?	Before Training			After Training		
	Yes	No	?	Yes	No	?
Use fall protection when indicated						
Ask for fall protection if it was not available						
Fix a hole or ask a supervisor to fix a hole to prevent someone from falling through (for example, cover it or place guard rails around it)						
Make sure scaffolds are constructed correctly before using them						
Read an MSDS about a chemical you are concerned about						
Make sure the back-up horn for on-site vehicles is working						
Ask for better lighting						
Ask for perimeter guarding on roofs						
Take better care of your tools						
Carry things on ladders						
Make sure trenches are shored						
Make sure that all plugs on electrical tools or machinery have three prongs and that electrical boxes have GFCIs.						
Talk with others about working safely						
Other Comments:						

30. Have you worked both union and non-union in the U.S.		
a. Yes b. I have only worked union c. I have only worked non-union d. I am not sure		
31. What are the differences in your experience between union and non-union work, in providing...	Non-Union	Union
On a scale with		
1 Excellent		
2 Good		
3 Fair		
4 Poor		
5 Non-existing or very poor		
Quality and availability of personal protective equipment?		
Skill Training?		
Safety and Health Training		
Tool Maintenance?		
Culture of Safety? (able to raise concerns, importance of safety, awareness of safety)		
Salary		
Benefits? (Health Insurance, pension, vacation, holidays) Please describe		
Other:		

32. Is working in an English speaking environment a problem for you?
Yes, a lot ____ Yes, some ____ Not very much ____ Not at all ____
33. Please list 3 specific problems faced by construction workers who have limited English.
1.
2.
3.

34. Please list 3 specific safety and health issues faced by construction workers who have limited English.
1.
2.
3.

35. Had you ever had the opportunity to take a health and safety course in Spanish, before this training?	Yes ____	No ____
--	-----------------	----------------

36. During training did you find the Spanish ____ helpful?	Very Helpful	Helpful	Not Important
Brochures			
Overheads			
Spanish-speaking instructors			
Other Comments:			

37. What other types of materials in Spanish would help you? Please list
38. Even if you speak English well, does training in your native language make a difference?
Yes ____ No ____
39. Why? or why not?
40. Would you have taken this course if it was in English only?
Yes ____ No ____ Not Sure ____
41. List 3 suggestions for improving the course.
1.
2.
3.

42. Other recommendations to improve your training or to improve your safety and health at work:

43. Would you like more safety and health training?

Yes ___ No ___

44. If yes, please check	Yes, if in Spanish	Yes, if in English	No
In depth training (one week/OSHA 500)			
Hazardous materials			
Confined space			
Scaffold safety			
Respirator			
Hazard Communication			

45. Have you personally ever been injured on the job enough to lose work time? Please explain:

46. Do you have a safety story to tell? If you have experienced a safety or health accident that you think more or better training could have prevented, we would like to hear about it. If you have experienced a “near miss” and training helped to prevent injury, we would like to hear about that too.

47. Other Comments:

Thank you very much for your help.

Many people say that Hispanics are like donkeys when working, but we also need to work safely.

Thank you for the training; I learned how to prevent accidents and work with caution.

Thank you for the training. I had never received any materials in my own language before.

I think the Spanish materials were great. I thank the people who gave me the opportunity of being trained in my own language. There is more opportunity to understand everything and prevent accidents. Also, if an accident occurs, we will be better prepared to know our role.

I thank all the people who gave me the opportunity of being trained because I can sustain my family and be safe.

Being trained in our own language is the best gift for us. A thank you for your hard work.

I loved the training. I only wish that in the future all Hispanic workers with limited English would be trained in their own language.

Thank you for the training. You gave us the tools needed to work safely.