

Features

**FROM AGRICULTURAL FIELDS TO URBAN ASPHALT:
THE ROLE OF WORKER EDUCATION TO PROMOTE
CALIFORNIA'S HEAT ILLNESS PREVENTION STANDARD**

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ABSTRACT

This article describes an innovative approach to reach and educate workers and worker advocates about California's outdoor heat illness prevention standard. In 2010, Cal/OSHA initiated a statewide education campaign to reduce heat-related illnesses and fatalities and increase awareness of the standard's requirements. In Southern California, the UCLA Labor Occupational Safety and Health Program (LOSH) focused on three principal strategies of community-based outreach, popular education, and organizational capacity building. Central to the LOSH approach was the integration of health *promotores* into core program planning and training activities and the expansion of campaign activities to a wide variety of rural and urban workers. We describe each of these strategies and analyze the possibilities and constraints of worker education to support implementation of this standard, particularly given the vulnerabilities of the impacted workforce, the often precarious nature of employment arrangements for these workers, and the resource limitations of Cal/OSHA.

Keywords: worker education, government standards, capacity building, health *promotores*

In 2010, the California Division of Occupational Safety and Health (Cal/OSHA), part of the Department of Industrial Relations (DIR), kicked off a statewide

campaign to improve implementation of the state's outdoor heat illness prevention standard. A permanent standard was promulgated in 2006, making California the first state in the nation to protect workers from illnesses and fatalities associated with work activity in hot conditions. The goal of the campaign was to reduce heat-related illness and fatalities and increase knowledge of the standard's requirements. The DIR turned to university and community partners to develop an education and social marketing campaign to raise awareness among workers, employers, and worker advocates, particularly in targeted high-hazard industries such as agriculture and construction, and to promote Cal/OSHA services. The campaign sought to address the particular challenges in implementing this standard in industries with largely low-wage immigrant, non-union workforces.

This article describes the outreach and education approach taken by the UCLA Labor Occupational Safety and Health Program (LOSH) in Southern California, home to over 22 million people and roughly 60 percent of the state's workforce [1]. LOSH emphasized reaching workers who are difficult to access through conventional worksite-based approaches in a number of occupations and industries spread across a wide geographic area—that is, contingent workers without union representation, with language and cultural barriers, with limited knowledge of workers' rights, and often lacking legal immigration documents.

To fulfill the campaign's goals, LOSH adopted a community-based approach using community health promoters or *promotores* to outreach to a variety of organizations whose constituencies include workers from the campaign's target industries. Representatives from these organizations were recruited to become peer trainers to educate workers in their communities. Our approach emphasized popular education and organizational capacity building to enhance organizations' abilities to address occupational health issues and to support workers' actions to prevent heat illness. This article describes that approach within a larger sociopolitical context that disproportionately exposes immigrant workers to the impacts of environmental heat and other workplace hazards while constraining their ability to exercise their rights. We highlight lessons learned regarding the strengths and limitations of education as a tool to enhance the effectiveness of the heat standard. We also describe complementary strategies that expand the scope of the standard to workers excluded from coverage and that address underlying causes of heat illness caused by unequal power relations and employment structures that affect the organization of work.

CALIFORNIA'S REGULATORY APPROACH TO WORK-RELATED HEAT ILLNESS

Heat has long been recognized as an occupational hazard. Heat exposure can cause minor heat cramps and rash as well as heat exhaustion and heat stroke, which can lead to death [2-4]. Heat exposure is of particular concern for outdoor

workers given the seasonal nature of hot weather conditions and the importance of acclimatization. Between 1992 and 2006, for example, an estimated 423 workers in the United States were reported to have died from exposure to environmental heat, with 16 percent of these fatalities among workers in agriculture [5]. Studies suggest that work-related heat hazards disproportionately impact immigrants and minorities [5-7].

Origins of the Heat Illness Prevention Standard

California was the first state in the nation to adopt a standard to protect workers from heat exposure [8, 9].¹ Efforts to establish a heat-related standard in the state can be traced back over three decades. In 1984, members of the Los Angeles Librarians' Guild, Local 2626 of the American Federation of State, County, and Municipal Employees, submitted a petition to Cal/OSHA requesting a heat stress standard for all workers in the state [9]. The petition was triggered by reports of librarians developing symptoms of heat illness while working in local library branches with no air conditioning and poor insulation. Twenty-five other union locals—principally representing manufacturing industries in Southern California—as well as the Los Angeles Committee on Occupational Safety and Health signed on to the petition [9]. After a long period of inaction, the agency took up the issue again in the late 1990s with the creation of an Advisory Committee comprised of Cal/OSHA staff, university and government researchers, unions and worker advocates, and employer representatives. The goal of the committee was to discuss the basic components of a standard and to draft regulatory language for public comment [9]. The standard proposed by the committee in 2002 would have covered all workers affected by heat—both indoors and outdoors—and would have required employers to identify and control conditions likely to produce heat illness. The Standards Board accepted public comments from labor and employer representatives, but no further action was taken.

In 2005, the United Farmworkers (UFW) union and the California Rural Legal Assistance Foundation persuaded state legislators to author and pass Assembly Bill 805, which would have required adoption of a comprehensive standard to prevent heat illness for all workers [10]. Before the bill passed the Senate, a severe heat wave in the state resulting in an estimated eight worker deaths prompted officials to implement an emergency temporary standard for outdoor workers [9]. The emergency standard was made permanent the following year. The standard (California Code of Regulations, Title 8, §3395) requires employers to provide workers with adequate drinking water and shade structures, to allow workers to take rest breaks if needed to recover from the heat,

¹ Washington is the only other state to have subsequently passed a standard to protect workers from heat-related illness.

to develop an emergency response plan for heat illness, and to train workers and supervisors to prevent heat illness.

In the years following passage of the standard, critics charged that it contained too many ambiguities to be effective,² that it placed the onus unfairly on workers to initiate breaks to drink water or recover from heat, and that Cal/OSHA was doing too little to enforce it, even in industries such as agriculture where rates of heat illness remained high. Three farmworkers died in California in 2007—two years after the emergency standard went into effect—and inspectors found more than half of the employers they audited out of compliance with the standard [11]. In 2008 the death of a 17-year-old pregnant agricultural worker from Oaxaca, Mexico, while pruning grapes in a field in Stockton, California, sparked outrage among farmworker advocates and resulted in a lawsuit brought by the American Civil Liberties Union on behalf of the UFW alleging the agency was not doing enough to protect workers from a recognized occupational hazard [12-14].

Statewide Initiative: The Heat Illness Prevention Campaign

The heat illness prevention campaign initiated by Cal/OSHA in 2010 was in response to these critics and to continuing problems with employer compliance. The goal of the statewide campaign was to raise awareness of the heat illness standard among employers, workers, and worker advocates in targeted high-hazard industries such as agriculture and construction, and ultimately to prevent heat illness among all workers in outdoor settings. The campaign sought in part to address the challenges inherent in implementing any new workplace health and safety standard; in this case those challenges were made greater by chronic understaffing at Cal/OSHA and limited resources to adequately protect a large and particularly vulnerable immigrant workforce. The agency has faced severe budget shortages in recent years and maintains too few inspectors to visit the large number of worksites throughout the state [15]. It has one of the lowest ratios of inspectors to workers among all OSHA state plans, and while an estimated 25 percent of the state workforce is immigrants, the agency currently employs only 32 field inspectors who speak a language other than English [16].

The statewide campaign represents a unique government-university-community partnership to reach a largely immigrant workforce. Beginning in the summer of 2010, Cal/OSHA partnered with the UCLA Labor Occupational Safety and Health Program, the UC Berkeley Labor Occupational Health

²The original standard was not specific about when and what kind of shade employers were required to provide nor how to ensure adequate access to shade and potable water. Some ambiguities were resolved in 2010 when Cal/OSHA revised the standard to include trigger temperatures for providing shade and water and clarified worker training requirements [63].

Program (LOHP), and the Western Center for Agricultural Safety and Health at UC Davis to carry out the campaign goals and objectives. In the first year of the project, LOSH and LOHP conducted a needs assessment and developed educational materials and a social marketing campaign targeting worker communities in five languages: English, Spanish, Mixteco, Punjabi, and Hmong. All three university partners trained workers, community members, and employer representatives about employer obligations to provide water, shade, breaks, training and an emergency response plan. The campaign expanded its outreach and educational efforts in the summer of 2011 using many of the same education and social marketing materials developed the previous year.

Education for workers, worker advocates, and community representatives has been a central focus of the statewide campaign. In the section that follows, we consider the opportunities and limitations of education as a means to address worker health concerns, particularly given the larger sociopolitical and workplace contexts in which worker exposure to heat hazards occurs.

ROLE OF OUTREACH AND EDUCATION

On the Ground in Southern California

The five counties of Los Angeles, Orange, Riverside, San Bernardino, and Ventura make up the Los Angeles metropolitan area, a vast urban expanse which, combined with the metropolitan area of San Diego, is home to over 22 million people [17]. Nearly 60 percent of the California workforce is located in the southern part of the state [1]. The region features a diverse population—more than one-third of residents in Los Angeles County are foreign-born, and 56 percent speak a language other than English at home [18]. Southern California supports agricultural communities stretching from Bakersfield to the United States-Mexico border. It also features a number of urban industries whose workers are also covered by the outdoor heat standard, including commercial and residential construction, landscaping, carwash, warehouse, waste hauling, and transportation.

The size and diversity of Southern California pose substantial challenges in reaching workers with information and carrying out inspections and enforcement of state health and safety standards, but the region also presents some notable opportunities. In particular, Southern California is home to an active network of labor and community-based organizations, worker centers, and other worker advocacy groups [19]. In addition, Los Angeles is the birthplace of a number of innovative organizing efforts, including the Justice for Janitors and the homecare workers' campaigns in the 1990s—campaigns that have mobilized low-wage and immigrant workers as the new face of organized labor in the 21st century [20, 21]. In the last few years, Los Angeles has seen the emergence of campaigns in the carwash, warehouse, hotel and waste and recycling

industries, as well as among day laborers, domestic workers, and others. These campaigns seek to improve working conditions among low-wage immigrant workers by building coalitions to organize, conduct research, and promote policy initiatives [22-24].

The Campaign in Southern California

It is within this rich sociopolitical landscape that LOSH has collaborated with labor and community partners to provide education, research, and technical assistance that contribute to improved workplace health and safety conditions. LOSH is a nationally recognized center founded in 1978 to promote safe workplaces through teaching and education, research, and policy advocacy. LOSH built on long-term relationships to develop its approach to outreach and education under the Cal/OSHA heat illness prevention campaign.

LOSH's campaign approach was based on three premises:

1. Effective outreach must include community-based partnerships that build on established relationships of trust and enhance a mutual exchange of resources.
2. Successful worker education incorporates principles of popular or empowerment education that combines knowledge and critical analysis with skills to enable action.
3. Organizational capacity-building among community and worker advocacy groups is key to supporting action by peer trainers and by workers and to mobilizing for more effective health and safety policies.

Community-Based Outreach and the Use of Promotores

The goal of LOSH's outreach efforts was both to reach workers in the traditional high-hazard industries targeted by Cal/OSHA and to extend the campaign to other workers impacted by the standard. Given the geographic size and diversity of Southern California, we explicitly adopted a community-based outreach strategy rather than one focused on specific worksites. This meant building on existing LOSH relationships—with labor unions and community-based organizations—and reaching new organizations that have not historically addressed occupational health. To that end, we relied on a community health promoter model to expand our network of partnerships across the region.

Community health promoters, also known as *promotores*, have extended health promotion programs and health care access among underserved communities in the United States since the 1960s [25]. The health promoter model has been applied to efforts to reduce smoking and substance abuse, prevent the spread of HIV, improve maternal and child health, and encourage healthy eating and exercise [26-31]. *Promotores* have only recently been integrated into occupational health programs, most notably to reach immigrant workers

employed in agriculture, poultry processing and construction [32-37]. These programs incorporate elements of both community-based health promotion models traditionally found in non-occupational areas of public health and of worksite-based peer trainer models from the field of occupational health, usually in union work settings [20, 38, 39]. LOSH adapted from previous experience with both models to craft our outreach and education approach for the heat illness prevention campaign.

LOSH's use of *promotores* for outreach and education did not begin with the heat illness prevention campaign. Over the past several years, LOSH has relied on Spanish-speaking *promotores* to extend our reach to the large Southern California immigrant workforce—largely non-union, often employed in the underground economy and with limited access to occupational health information and resources through employers or unions. These *promotores* have implemented LOSH outreach and education programs at day-labor job centers, at community events (e.g., health fairs), on street corners, and through Mexican and Central American consulates. The heat illness prevention campaign provided an opportunity for three LOSH *promotores* to contribute their outreach and education skills to the campaign and to further develop their expertise in program planning and as facilitators and mentors in Training-of-Trainers (TOT) courses.

The role of *promotores* was critical to reaching the target worker populations in Southern California. All three had previous health promotion experience through other community groups and had participated in health and safety and skills-building courses offered by LOSH. The *promotores* identified worker advocacy and community organizations, recruiting staff and members to participate in one of five TOT courses held throughout Southern California. The *promotores*' places of residence (two in Los Angeles County and one in San Diego County) and their familiarity with and trusted status within their local communities allowed LOSH to substantially expand its partnerships under this campaign.

To achieve the outreach goals of the campaign, LOSH utilized a multi-tiered approach whereby the three LOSH *promotores* identified community and worker leaders from organizations throughout the region to attend a TOT course to become peer trainers; those trainers then used their personal and organizational networks to reach and educate workers in their communities and workplaces. Ultimately, in a two-month period, the *promotores* successfully reached out to 70 community organizations across Southern California and recruited 159 community leaders to attend TOT courses (see Figure 1).

LOSH's community-based outreach strategy was a means to reach workers across a wide range of occupations and industries affected by heat exposure, from agriculture to construction to landscaping to carwash to maintenance to warehouse and beyond (see Table 1). Rather than targeting a single occupation or specific workplaces, our outreach efforts focused on collaborating with a

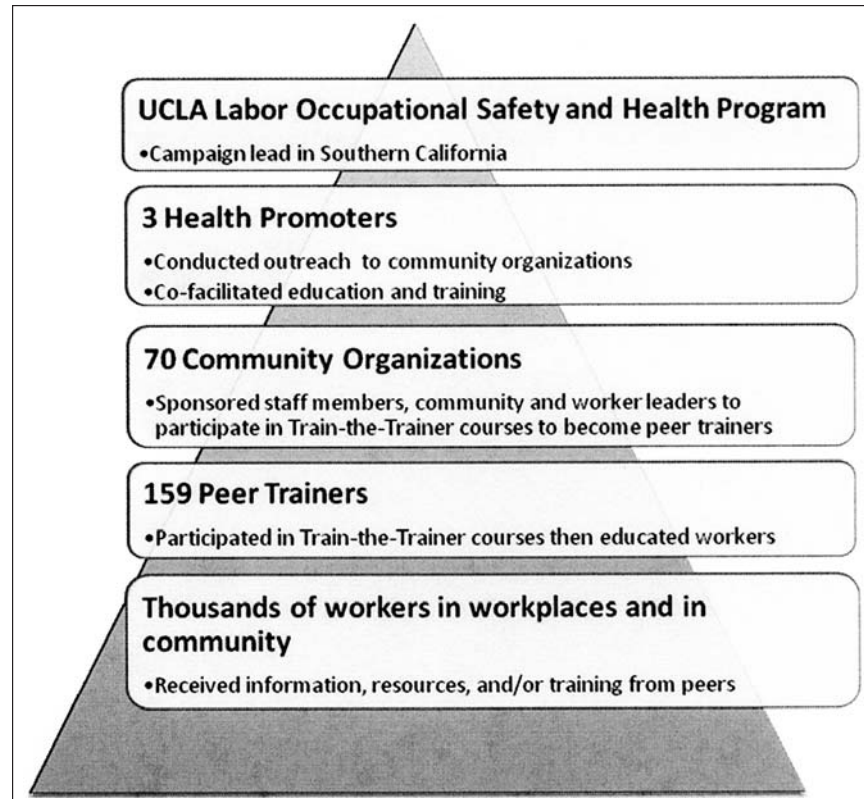


Figure 1. LOSH's multi-tiered approach to outreach.

variety of community and worker-support organizations whose constituencies include workers from the campaign's target industries. For example, one partner key to reaching indigenous agricultural workers was the Mixteco/Indigena Community Organizing Project (MICOP) in Oxnard, California, which holds monthly meetings with agricultural workers and their families from the Mixteco community. (The Mixtec are an indigenous people from the Mexican states of Oaxaca, Guerrero, and Puebla.) The 70 community organizations that sent participants to the TOT courses included worker centers, immigrant service organizations, health care and social service providers, legal organizations, labor unions, and faith-based groups. The majority of these organizations offered services in Spanish; a smaller proportion served indigenous communities as well. These partnerships with diverse community organizations allowed us to reach agricultural workers, a primary focus statewide, as well as various urban-based worker groups in Southern California—carwash

workers, day laborers, and workers who load and unload freight for large warehouse facilities.

The *promotores* played a central role in these outreach efforts, drawing on their personal and professional networks, knowledge of local areas, and on a philosophy of respect for partnerships based on mutual collaboration. One of the *promotores* expressed this philosophy in describing her approach to outreach: “We invited new organizations to participate in the campaign by explaining to them the importance [of heat illness] and the value of mutual collaboration which could initiate a relationship based on learning from each other.” The role of the *promotores* was not limited to outreach, but continued into the educational components of the campaign.

Popular Education

LOSH’s efforts used a Training-of-Trainers model based on core popular or empowerment education principles and methodology:

1. *listening* to workers and worker advocates to ensure that training was relevant to workers’ needs and built on their experiences;
2. *dialogue* that integrated cultural issues with analysis of sociopolitical and economic realities and with technical information about heat; and
3. activities to build confidence and skills to take individual and collective *action* [20, 40-43].

LOSH involved its three *promotores* in designing an education program to fit the specific needs of the peer trainers in the TOT courses and of workers in Southern California. As a result of their input, training sessions were held in familiar community settings in each county. The *promotores* also stressed to LOSH staff the educational and social needs of the targeted groups, adapting activities as appropriate for literacy and education levels [44]. They helped ensure that appropriate support was provided to peer trainers during TOT sessions and in subsequent activities, helping them confront personal challenges related to poverty, childcare needs, and/or immigration status.

Spanish-speaking LOSH staff and the *promotores* co-facilitated five daylong Spanish-language TOT courses during the campaign summer. A total of 159 community leaders and organization representatives participated in the courses to become peer trainers. The course agenda was structured to both educate participants about workplace heat hazards and the Cal/OSHA standard and to prepare them to become peer trainers in their own communities. Participants learned about the causes and effects of heat illness, how to identify and respond to an emergency, the roles and responsibilities of workers and employers under Cal/OSHA regulations, and how workers’ exercising their rights can prevent illness and fatalities. Facilitators also shared a DVD and visual flip-guides that had been developed in the first year of the campaign for use by peer trainers in

Table 1. Characteristics and Geographic Scope of Organizations Participating in LOSH Training-of-Trainers Course

Type of Organization	TOT counties				
	Los Angeles (10 organizations, 23 participants)	San Diego (18 organizations, 29 participants)	Riverside (13 organizations, 34 participants)	Ventura (18 organizations, 36 participants)	San Bernardino (12 organizations, 37 participants)
Education	✓	✓	✓	✓	✓
Employer		✓		✓	
Employment		✓		✓	
Faith-based		✓			✓
Governmental					✓
Health care/clinics	✓	✓	✓	✓	✓
Housing	✓	✓			
Indigenous	✓	✓	✓	✓	
Immigrant services	✓	✓	✓	✓	✓
Legal service	✓	✓	✓	✓	✓
Policy	✓	✓	✓	✓	
Support/social services	✓	✓	✓	✓	✓
Transportation				✓	
Union		✓		✓	
Other	✓	✓	✓	✓	✓

Worker groups									
Agriculture	✓	✓	✓	✓	✓	✓	✓	✓	✓
Carwash	✓								
Construction/day labor	✓	✓	✓	✓	✓	✓	✓	✓	✓
Domestic/household	✓								
Factory				✓	✓	✓	✓	✓	✓
Landscaping	✓								
Service sector				✓	✓	✓	✓	✓	✓
Warehouse									
Other	✓			✓	✓	✓	✓	✓	✓
Population									
Latino	✓			✓	✓	✓	✓	✓	✓
Indigenous (Mixteco, Purépechas, Zapotec)	✓			✓	✓	✓	✓	✓	✓
Other				✓	✓	✓	✓	✓	✓

their communities. Flip-guides in each of the five target languages illustrated campaign messages about the importance of water, rest, and shade and about worker's rights and included information and prompts that peer trainers could use to lead training and facilitate discussions (see Figure 2).

As part of the TOT approach, facilitators modeled effective adult education strategies and gave participants the chance to practice presenting the information to each other in the classroom. At the end of each course, participants received copies of the flip-guides and other campaign materials (e.g., heat prevention factsheet, handout on how to report a problem to Cal/OSHA, the DVD and its facilitator guide, community posters, postcards, and bandanas) for use in education and training with workers in their communities.

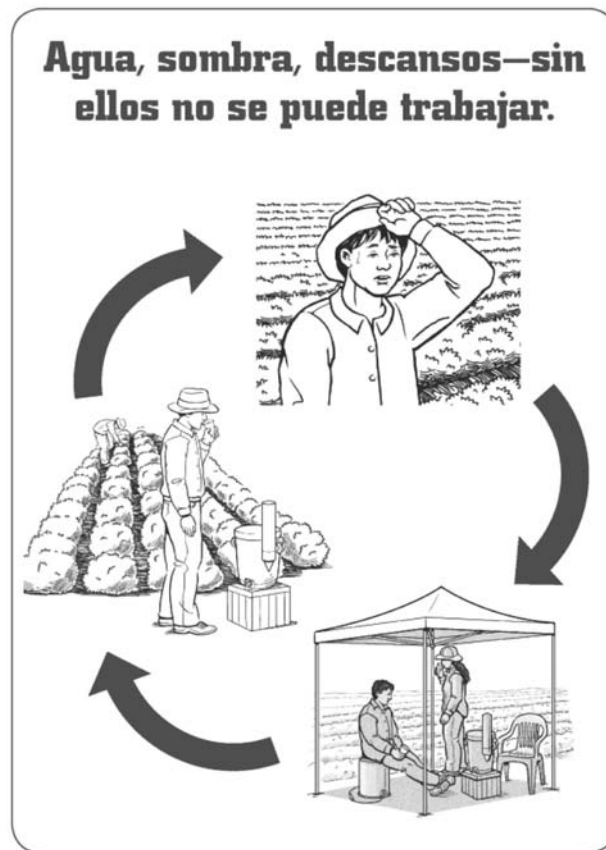


Figure 2. Sample images from heat illness prevention campaign flip-guides.

As noted above, LOSH's approach incorporated fundamental principles of popular education. As part of the "listening" phase, LOSH had conducted focus groups with carwash, day labor, landscape and other workers in the first year of the campaign to determine their experience with heat and their perspectives on the risks of exposure. Results helped inform the campaign's social marketing messages and the TOT curriculum design. In the second year, LOSH and campaign partners interviewed TOT participants from the first year of the campaign to solicit feedback; as a result, TOT sessions were lengthened to integrate more about Cal/OSHA and workers' rights and to give more time for participants to practice using the materials to build their facilitation skills.

Training sessions included extensive dialogue to address cultural issues, including participants' own perceptions about heat. For example, a number of TOT participants had faced excessive heat exposure in their own lives, such as when crossing the United States-Mexico border over land. Many were aware of folk remedies such as salted coffee for dealing with heat illness symptoms. LOSH staff, *promotores*, and peer trainers had to connect, apply, translate, and build on this knowledge and experience in training sessions. In some cases, this meant incorporating participants' personal experiences directly into the curriculum; in other cases, it meant correcting misinformation (e.g., teaching that excessive heat can cause not only discomfort but death, that salted coffee is not advisable for hot environments, etc.). In at least one TOT session, this approach initiated a dialogue about why drinking water is preferable to the potentially risky energy drinks distributed by some employers (see Figure 3).

TOT sessions also included dialogue about power dynamics in the workplace. Often the presentation of technical information about heat hazards was inseparable from larger concerns about work organization and employment status. For example, in discussing the need for water, shade, and rest, participants frequently noted that access to water or the ability to take recovery breaks is constrained by piece-rate payment systems, production quotas, and workers' fears of employer retaliation. Furthermore, those working under informal or temporary employment arrangements may not have a clearly identifiable employer who is responsible for ensuring proper worksite conditions. Thus, TOT facilitators had to address these concerns and acknowledge the practical limitations of the heat illness prevention standard in mitigating underlying causes that exacerbate the hazards workers face.

Finally, TOT courses included activities to build participants' confidence and skills to take individual and collective action. In addition to having an opportunity to practice their training skills and receive feedback, participants completed action plans describing the outreach and education activities they proposed to implement through their organizations and specifying the type of support they would require—including additional assistance from LOSH staff and/or the *promotores*. These action plans helped participants focus on particular goals and establish a direction for future action.



Figure 3. Training-of-Trainers session in Southern California.

Capacity-Building

The third LOSH goal under the campaign was to build the capacity of organizations in the region to support efforts to prevent work-related heat illness and, in the long-term, to address other worker health and safety concerns. Capacity building is important given the huge geographic expanse of the region, the diversity of workers covered by the standard, our own resource limitations, and Cal/OSHA's limited enforcement capacities. Our strategy for capacity building is rooted in the concept of empowerment as a multi-level construct with organizational empowerment as a critical link between individual empowerment and workers' ability to take action to change workplace conditions [45-48]. A framework described by Crisp et al. in 2000 [49] outlines four interrelated approaches to developing organizations' capacity to address health issues:

1. a *top-down approach*, such as changing organization policies or practices;
2. a *bottom-up approach*, such as providing skills to staff;
3. a *partnership approach* to strengthen the relationships and support between organizations; and

4. a *community organizing approach* in which individuals join forces with existing organizations. LOSH efforts under the campaign focused primarily on the second and third approaches.

The TOT courses provided occupational health and safety knowledge and skills to staff members and other representatives of community organizations in a bottom-up approach to capacity building. Participants brought those skills back to their organizations and applied them in subsequent outreach and education activities with constituents in their local communities. Courses included information about the functions of Cal/OSHA (new to many trainees) and the inspection and enforcement process. Knowledge of workers' rights motivated them to share with others, as explained by a peer trainer from one of the TOT sessions:

Esta capacitación me ha abierto los ojos acerca de mis derechos como trabajador. Quiero aprender más para poder compartirlo con mi familia que trabaja en el campo. Mi abuela anduvo con Cesar Chávez y Dolores Huerta. [This training has opened my eyes about my rights as a worker. I want to learn more to share with my family working in the field. My grandmother walked with Cesar Chavez and Dolores Huerta.]

—Feedback from one of the *promotores* to LOSH staff, August 2011

To further build the capacity of TOT participants and their sponsoring organizations, LOSH staff and *promotores* provided ongoing technical assistance and support for peer trainers to implement action plans they developed during the courses. The peer trainers consistently provided positive feedback about the courses and later reported success in reaching thousands of workers throughout the region with information, education, materials, and resources related to outdoor heat and the Cal/OSHA standard. These peer trainers comprise a broad network to reach workers in diverse occupations and across a large geographic area, and were able to implement training quickly to ensure that workers received information during the summer months when heat exposure posed the greatest threat. Peer trainers had the skills required to be flexible in delivering training to diverse groups in different education settings—from tailgate training to informal chats (*platicas*) in day laborer community job centers to workshops at large community forums coordinated by indigenous farmworker groups.

The diversity of participants in the TOT courses and the popular education approach used (“everyone teaches, everyone learns”) not only enhanced the capacity of individual peer trainers, but also facilitated relationships between organizations in the same region. Dialogue and sharing among diverse participants with expertise in different areas had some immediate benefits, as illustrated in feedback from one of the *promotores* after facilitating a TOT:

En el grupo tuvimos algunos participantes que conocían mucho del tema ya que eran supervisores de grandes empresas dedicadas a la agricultura, transportación o construcción. Conocían muy bien los detalles de la ley CCR

[Title 8] § 3395 y las modificaciones recientes. Incluso nos proporcionaron el plan de emergencia por escrito que una empresa de ellos tiene, y como proceder en caso de enfermedades causadas por el calor. Fue un grupo muy diverso jardineros, promotores, educadores, clínicas, etc. [In this group, we had some participants who knew much about the topic because they were supervisors of large firms engaged in agriculture, transportation, or construction. They knew very well the details of the CCR [Title 8] § 3395 law and its recent updates. They were even able to provide us with a written emergency plan that one of their companies has in place on how to proceed in case of illness caused by heat. It was a very diverse group comprised of gardeners, developers, educators, clinicians, and so on.]

— Feedback from one of the *promotores* to LOSH staff, August 2011

LOSH activities have also focused on enhancing Cal/OSHA's organizational capacity to respond more effectively to workers. In 2010, LOSH conducted a survey of Cal/OSHA compliance officers throughout the state to identify challenges related to enforcing the standard. We then collaborated with DIR and Cal/OSHA on a webinar to ensure consistent enforcement across the state and to discuss strategies to communicate with affected workers and other challenges confronting compliance officers. In the current year of the campaign, Cal/OSHA staff members from local district offices were invited to participate in each TOT course, thereby facilitating further regional partnerships between community organizations and the agency.

Finally, LOSH trained staff and volunteers of a hotline that provides services to the Latino worker community. The program is sponsored by an alliance of government agencies, consulates, and nonprofit organizations in greater Los Angeles; in cases where callers report violations of state health and safety or wage and hour laws, volunteers forward reports to the appropriate government agency. As part of the heat campaign, the hotline number was disseminated for workers to call with questions about heat exposure and the standard. Our training helped volunteers become more knowledgeable about workplace heat hazards and worker rights under the law. Reports from program staff at the end of the summer indicate that at least two heat-related calls from the summer resulted in formal reports to Cal/OSHA for follow-up and investigation.

Evidence of the success of these capacity-building efforts is demonstrated by several organizations that integrated heat-related concerns into campaigns to improve conditions for workers. Following participation in TOT sessions and related LOSH outreach and education events, worker leaders from campaigns in the carwash, warehouse, and waste and recycling industries filed Cal/OSHA complaints that included evidence of violations of the heat illness prevention standard, with resulting citations in the carwash and warehouse industries, where inspections have been completed. Peer trainers who participated in TOT sessions helped plan and facilitate workshops on heat and other workplace hazards at the first Latino Worker Health & Safety Forum, cosponsored by the

Mexican Consulate as part of the Consulate's annual labor rights week every September. The forum created a space for peer trainers to share creative training approaches; for example, carwash worker trainers demonstrated a skit they had created to illustrate heat hazards and workers' rights. It also facilitated dialogue among workers, worker advocates, and government agency staff and led to an agreement to hold quarterly meetings with Cal/OSHA representatives to discuss how the agency can be more responsive to immigrant workers and how worker advocacy groups can enhance the agency's enforcement capacity by identifying violations and submitting well-documented complaints.

The network of organizations and peer trainers developed through these capacity-building activities lays a foundation for future outreach, education and enforcement activities in subsequent years of the campaign to strengthen implementation of the heat standard. These capacity-building efforts also have broader implications. For example, understanding the Cal/OSHA regulatory system and developing relationships with Cal/OSHA staff may lead community organizations to address a range of health and safety concerns and become involved in political action to strengthen Cal/OSHA enforcement and expand the scope of the heat standard to cover all workers.

EDUCATION TO SUPPORT WORKPLACE HEALTH AND SAFETY STANDARDS

LOSH's campaign activities in Southern California have been successful in reaching a large number of affected workers with education and resources in both rural and urban areas. Results of our activities, however, raise a number of important questions about the role of worker education as a strategy for supporting effective implementation of workplace health and safety standards. These questions are particularly salient given the vulnerabilities faced by workers most directly impacted by the standard, the often precarious employment arrangements under which they work, and the substantial resource limitations of Cal/OSHA. This final section considers some lessons learned about the opportunities and limitations of education as a way to protect workers from occupational hazards. We discuss implications for education and regulatory approaches in Southern California and beyond and highlight the importance of building the capacity of worker advocacy groups to improve workplace health and safety conditions.

Strengths and Constraints of Worker Education

Education proved important for increasing worker knowledge of heat hazards and their rights and for building the skills and confidence of peer trainers. Our experiences are consistent with other popular education programs in occupational safety and health that empower *promotores* and peer trainers from the

target populations to reach and educate workers and family members [34-36, 50]. But our experience also revealed some notable limitations in relying on worker education alone to support effective implementation of a standard. The LOSH campaign activities took place within and were informed by a sociopolitical and economic context that presents obstacles to the effectiveness of the heat standard and to education as a successful strategy to implement it.

To consider these limitations, useful comparisons can be drawn with efforts to develop education programs following the promulgation of OSHA's Hazard Communication standard in 1983 (and similar local Right to Know policies) and the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard in 1989. Education programs to implement the training mandates of these standards were often developed in the context of labor-management collaboration to improve workplace health and safety. Evaluation of Right to Know and HAZWOPER education programs highlighted the importance of a standard that could be used as a tool most effectively in a context of management and union support for worker action and joint development of—and sometimes joint participation in—education programs [39, 51-54]. In the case of California's heat illness prevention standard, the largely non-union work settings where the standard applies exclude the possibility of labor-management collaboration to support implementation and limit worker input and involvement in worksite-based heat prevention programs.³

In addition, in some industries where workers are covered by this standard, contingent work arrangements have meant that workers often have no clear employer or don't know who is responsible for providing protective measures. At the same time, piece-rate wage structures in agriculture and other industries have meant that pressures from employers to meet strict production quotas and/or workers' own desires to earn as much as possible conflict with the need to take breaks to recover from the heat. Peer trainers in TOT sessions reported that some agricultural workers are reluctant to drink water during their shifts for fear of having to take additional restroom breaks. The negative incentives inherent in the piece-rate system shift the burden for health and safety protections onto workers and undermine implementation of appropriate heat illness prevention measures. One peer trainer expressed the dilemma that many workers face: "We as workers want our rights to be respected, but it is difficult when you have to survive day to day and you cannot exercise your rights because of the fear

³ Union density has declined considerably throughout the United States in the decades since the Hazard Communication and HAZWOPER standards were promulgated. From 1973 to 2007, private sector union membership declined from 34 percent to 8 percent for men and from 16 percent to 6 percent among women [64]. And even more highly unionized public sector settings, such as those in which the New York and New Jersey Right to Know education programs were implemented, have subsequently been subject to attack by state initiatives such as those in Wisconsin and Ohio.

of losing the only possible source of weekly income” (feedback from one of the *promotores* to LOSH staff, September 2011).

The existence of the heat illness prevention standard and collaboration with community groups allowed us to incorporate a stronger foundation into our education programs to support worker action—in contrast to worker education programs implemented in contexts where no standards are in place [34]—but the sociopolitical realities for many of the workers impacted by the standard and the power dynamics that these workers face each day on the job put limitations on how far education can go. A peer trainer from San Diego described some of the challenges he faced in carrying out his educational efforts in a workplace setting controlled by *los rancheros*:

Debemos ser muy cautos con los rancheros y lo que distribuimos, si es que queremos que nos sigan permitiendo ingresar a los ranchos y hablar con los trabajadores. Por eso motivo nos hemos limitado al material que habla de prevención, síntomas y tratamiento. El relativo al reglamentos, penalidades y obligaciones de los patrones, preferimos repartirlos fuera de los ranchos por razones obvias. [We have to be very cautious with *los rancheros* and what we distribute if we want them to continue to allow us to enter the ranches to speak with the workers. For that reason, we have limited the [education] materials that we distribute to those that focus on heat illness prevention, symptoms and treatment. In terms of regulations, fines and obligations of *los patrones*, we prefer to distribute them outside the ranches for obvious reasons.]

—E-mail communication with peer trainer, July 2010

Safe work practices to avoid heat illness seem straightforward (e.g., drinking water frequently, taking rest breaks in the shade, and recognizing and responding to early symptoms), but a variety of factors at multiple levels constrain their adoption. In addition to the negative incentives of the piece-rate system, low-wage and non-English-speaking workers share an increased risk of heat illness due to factors common to the immigrant experience: limited knowledge of their legal rights, lack of resource materials in their native language or at the appropriate literacy level, and economic demands to support family members in their native countries [55]. Many are migrant workers not working permanently for a single employer or at a single worksite; they fear employer reprisals in the form of job loss or potential deportation and have a basic—and often not unfounded—mistrust of government entities. Employer threats to exploit workers’ lack of immigration documents, new state laws that undermine immigrant workers’ basic civil rights, and an unprecedented level of deportations in recent years all create a climate of fear that undermines the campaign’s goal to “develop a ‘community norm’ that views heat illness as a serious issue which requires action in the workplace and community.” Meanwhile, discrimination and the economic downturn are likely to dampen workers’ willingness to advocate for themselves and encourage some employers to exploit workers’

fears. LOSH's popular education approach went beyond a focus on safe work practices to integrate dialogue about the multiple constraints workers face in adopting these practices, and capacity-building activities were designed to build organizational support for workers to take action to prevent heat illness [56, 57].

Finally, implementation of a workplace health standard requires mechanisms to ensure the standard "has teeth." In this sociopolitical context of limited union representation and vulnerability to employer reprisals, workers are especially dependent on government agencies. However, in a political and economic climate of attacks on government agencies and regulations and of cuts in resources for enforcement, popular education approaches can potentially be disempowering if workers have been educated to use their rights, but Cal/OSHA's limited resources constrain their ability to respond [49]. It is in this context that capacity building is especially critical. LOSH efforts include assisting workers and community-based organizations to use Cal/OSHA effectively; that is, to enable Cal/OSHA to better target and conduct efficient inspections with input from workers and to build support for a stronger agency that is more responsive to immigrant workers. Systematic assessment of the impact of these education and capacity-building efforts will require us to focus on innovative evaluation approaches in the coming year that draw from concepts of community and worker empowerment [46, 56, 58, 59].

Strengthening the Regulatory Framework: The Role of Worker Advocates

Given these myriad challenges, LOSH's empowerment education and capacity-building efforts with organizations in the region have been especially important. By developing the knowledge and skills of staff and members and supporting organizations to address workplace heat-related concerns among their constituents, we are laying the groundwork for sustained community capacity to prevent not only heat illness but potentially other relevant worker health issues as well [49]. These challenges also highlight the importance of building stronger partnerships between community/worker advocacy groups, Cal/OSHA, and employers who are invested in worker health and safety to join forces to confront those who exploit workers.

Labor unions have historically played a critical role in advocating for worker health and safety for their own members, through collective bargaining and representation, and for the entire workforce, by pushing for protective standards to cover all workers [10]. Absent union representation for much of the workforce affected by outdoor heat, community-based worker advocacy groups have stepped in with creative strategies to give workers a voice and, in so doing, have expanded Cal/OSHA's capacity to identify violations of the standard and improve enforcement. Two examples in California highlight creative and organizational strategies to address some of the constraints of the current government

regulatory approach and the sociopolitical context of the non-union immigrant workforce at risk of heat illness, as detailed here.

In 2004, the California Rural Legal Assistance Foundation (CRLA) negotiated an innovative protocol with Cal/OSHA to serve as a worker representative organization for “the transfer of information and the response to . . . alleged occupational safety and health violations” at agricultural worksites [60]. This protocol represents a critical collaboration between a government agency and a worker-advocacy organization. The protocol allows Cal/OSHA compliance officers to consider evidence gathered by CRLA in assessing whether employers are in violation of Cal/OSHA standards. This is an important step to overcome enforcement constraints the agency faces in responding to violations in the agricultural industry, particularly given the transitory nature of employment which limits compliance officers’ ability to personally document violations and the fact that immigrant workers in the industry often fear job loss or deportation if they report unsafe conditions.

In 2009, the International Longshore and Warehouse Workers’ Union (ILWU) negotiated language in their labor-management contract with Rite-Aid warehouse owners in a desert area of Los Angeles County to include heat protections for *indoor* workers. The contract includes innovative language that provides for worker training and controls such as water at more protective action levels than those mandated in Cal/OSHA’s standard [61]. It also addresses an important underlying cause of heat illness: production standards that place demands on workers that can exacerbate heat exposure and related symptoms. This innovative approach requires union involvement in methods to measure production and to determine engineered production standards, and allows for review of potential disciplinary action [62].

These initiatives represent creative efforts to expand the regulatory framework in ways that advance worker protection from heat for two distinct groups of workers: non-union immigrant farmworkers and unionized indoor workers. Lessons learned from these initiatives may prove useful to other unions and worker advocacy groups as they build much needed capacity to support immigrant workers who lack the protection of union representation and to support unionized workers who face hazards without standards to protect them.

IMPLICATIONS AND RECOMMENDATIONS

As a university partner in Cal/OSHA’s heat illness prevention campaign, LOSH developed a worker outreach and education program to support implementation of Cal/OSHA’s heat illness prevention standard in high-hazard industries in Southern California. Our strategies of *promotora*-led community-based outreach, popular education of peer trainers, and organizational capacity-building allowed LOSH to successfully meet campaign objectives and to extend the scope of campaign activities beyond the initial targeted occupations to a

wide variety of rural and urban workers impacted by the standard—effectively extending the campaign’s reach from agricultural fields to urban asphalt.

As federal OSHA kicks off its own nationwide heat illness prevention campaign, lessons from the California experience should be taken into account. High-quality and accessible materials and worker education are vital to increase awareness of heat as a health hazard, but such efforts alone are not sufficient. The existence of a standard in California and Cal/OSHA’s commitment to supporting implementation of that standard, particularly for workers in high-hazard industries, have served as a vital foundation for this campaign. The impacts of federal OSHA efforts are likely to be more limited in the absence of a regulatory framework that mandates an effective workplace-based heat illness protection program.

Even in California, however, where the current standard serves as a necessary tool to prevent heat illness and fatalities, more can be done. Without proper enforcement, the standard is likely to pose little threat to non-compliant employers, and without a comprehensive scope of coverage, indoor workers exposed to heat continue to go unprotected by the state’s regulatory framework. Such gaps demand organizational capacity building and partnerships among advocacy groups to support workers in exercising their rights and to encourage broader participation in the policy arena. The results of collaboration with Southern California campaigns in carwash, warehouse, waste and recycling, and other industries demonstrate the ways that a worker education and peer trainer model can serve as a tool to build organizational capacity to address heat hazards through strategies to improve conditions at specific worksites, and by building momentum for more protective standards and stronger enforcement efforts that can have effects well beyond this region.

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