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LEARNING TO TAKE ACTION: THE GOALS OF HEALTH AND SAFETY TRAINING

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Abstract

Worker health and safety training is an important part of occupational health and safety programs. In the United States, governments, unions, employers, university programs, and health and safety advocacy organizations make training available. This article considers training effectiveness research conducted and supported by the National Institute for Occupational Safety and Health (NIOSH), and some done in collaboration with the Institute for Work and Health (Canada). Differing perspectives regarding the purpose of worker health and safety training are reviewed and critiqued. We assert that a focus on changing the working behaviors of workers exposed to hazardous conditions is less appropriate and scientifically rigorous than a focus on helping workers establish the power to reduce and eliminate workplace hazards. For training to lead to a decrease in morbidities and fatalities related to hazardous exposures, it needs to be integrated with workers' attainment of such power.

Keywords

worker health and safety training; evaluation research; worker power

This issue of *New Solutions* is focused on worker health and safety training. It comes 17 years after a special section on health and safety training in *New Solutions*. Two other important journals released special issues on worker health and safety training in the 1990s, setting a strong foundation for future practice and research: the *American Journal of Industrial Medicine (AJIM)*, with the special issue “Empowerment Approaches to Worker Health and Safety Education” (1992), and *Occupational Medicine: State of the Art Reviews*, with “Occupational Health and Safety Training” (1994). This issue of *New Solutions* also comes out in the 25th anniversary year of the Worker Education and Training Program (WETP) of the National Institute of Environmental Health Sciences (NIEHS) and the 15th anniversary of the U.S. Occupational Health and Safety Administration (OSHA) Susan Harwood Training Grant Program (a revival of the OSHA New Directions training grant program that began in 1978). Looking back on all of these publications and years of practice in worker health and safety training provides an opportunity to examine lessons learned as we strive for more effective ways to improve working conditions.

Let us step back for a moment and reflect on the purpose of worker health and safety training. Occupational health practice—and common sense—prioritize removing hazards entirely as the best solution for preventing hazardous workplace exposures. When hazards cannot be removed, controlling them to maximally prevent exposures is the next most desirable approach. Worker training is not a control for preventing hazardous exposures, but is an important mechanism for bringing workers' knowledge of work processes into the decision-making process about establishing healthy and safe workplaces. In practice, it is often provided when tasks require the use of personal protective equipment (PPE), to help optimize the protection potential of the PPE being used. Of course, training is an important vehicle for improving workers' understanding of workplace hazards and the health and safety risks they pose.

Work remains hazardous in many settings. In the United States, OSHA and comparable occupational health and safety protection agencies at the state and even local levels are underfunded, lack the capacity for strong enforcement of regulations—or even promulgating regulations—and generally are hindered from engaging in sufficient workplace health protection activities [1, 2]. Emerging technologies are applied in production facilities in the absence of research that establishes a body of evidence regarding the potential harm to exposed workers. Currently these include work with nanotechnologies, biotechnologies, and robotics, for example. The structures of work and national economies have changed considerably since the 1970s, and the proportion of workers in precarious employment settings steadily increases in high-income countries [3]. Trade unions, through which workers can counter employers' economic, social, and political power in the workplace and promote workplace health and safety measures, represent only 11.8 percent of the U.S. workforce [4]. This is about one-third of the percentage of workers represented when labor was able to get the U.S. Congress to enact the Coal Mine Health and Safety Act of 1969 and the Occupational Safety and Health Act of 1970. For these and a host of other reasons, eliminating workplace hazards and exposures that lead to injury, illness, and death remains challenging.

What is the role and function of worker health and safety training when hazards remain in the workplace, be they physical, chemical, biological, radiological, or social/organizational? Many believe that training should transmit knowledge and skills so workers can identify hazards, change attitudes, and adopt safe work behaviors to avoid exposure to these hazards. These goals do not recognize the potential of worker training to help workers build the power to get hazards removed from the workplace. An empowerment perspective prioritizes workers' role in removing or controlling hazards. To achieve that goal, health and safety training must be designed and conducted in ways that teach workers how to identify hazards as well as how to engage effectively in collective action to move employers, the government, and even their union if they belong to one, to remove or maximally control workplace hazards. In so doing, workers can engage in activity to end working conditions and exposures that increase their risk of suffering injury, illness, and even death from their jobs. Many of the articles in the three 1990s journal issues on worker health and safety training set forth the principles and modes of practice for this orientation to training, often referred to as empowerment education.

Nina Wallerstein and Merri Weinger guest-edited the special issue of the *AJIM*, and they provided a definition of education for empowerment, emphasizing that the goal of training is to support workers in being able to take actions to advance workplace health and safety.

Education for empowerment can be summarized as an approach to learning that is participatory, is based on real-life experiences, incorporates dialogue between and among educators and workers, critically analyzes the organizational and system-wide causes for problems, and has the goals of worker action and empowerment [5].

The journal issue included discussions of training programs and efforts designed to fulfill workers' "right to know" (RTK) under state and local legislations, as well as the OSHA Hazard Communication standard. Some of the articles about RTK training also focused on helping workers take action to diminish the risks they came to understand through the training [6–11]. Two articles introduced the use of risk or hazard mapping [12, 13]. These were foundational pieces that provided examples for later training about the health and safety risks that result from poor ergonomic design (body maps) or from stressful workplace organization. Almost all of the articles discussed the strength of using participatory training approaches to help workers learn, as well as the importance in some cases of involving workers in developing the training program [14–19]. Most of these efforts required substantial preparation and planning and often were supported with funding from government agencies (federal and/or state) or union health and safety trust funds, though some did receive management support and funding. On the other hand, eight noted that a lack of management support was a significant barrier to implementation of health and safety measures after training had been conducted [6–11, 17, 19]. Nina Wallerstein noted that training needed to be designed with consideration for the range of literacy skills within the workforce and that an increasing number of immigrant workers in hazardous occupations needed training in their own language [20].

Several of the articles in the 1995 *New Solutions* issue describe the critical role of worker trainers in the NIEHS WETP. A worker-to-worker peer training approach supports collective learning through dialogue, problem posing, and problem solving and sometimes may empower workers with skills and confidence to be heard by employers and union officials, and within society. The introductory piece noted that worker trainers at a national trainers' exchange conference reported that these modes of training provide workers "with a greater understanding of hazards on the job" and the "confidence to dare to make complaints" [21].

Three of the articles in that issue of *New Solutions* discuss union-based training programs supported by the NIEHS WETP and other federal government training grant programs that successfully use empowerment education approaches and a worker-to-worker peer training approach [22–24]. Three other articles discuss innovative participatory approaches that explore training methods aimed at the learning styles and skills of workers, including risk mapping and the use of storytelling and games [25–27]. The challenges that workers face in their desire and efforts to remove or greatly reduce workplace hazards are addressed in all of the articles, which also point to the ways that the training helps workers make progress in those goals.

In 2010 NIOSH collaborated with the Institute for Work and Health (Canada) to update the review of training literature published in 1998. A team led by Lynda Robson sought to review only randomized controlled studies in order to discover whether training effectively led to workplace injury and illness prevention. The authors discussed the limited capacity of occupational health and safety (OHS) training to achieve these goals. We have put in italics key points we want to discuss below.

While the *ultimate goal of OHS training is the prevention or reduction of injury, disease and death*, these outcomes are often difficult to study, requiring long periods of time and extensive resources. Therefore, OHS training research usually focuses on proxy outcomes such as workers' behaviour or their statements of intentions. These may be considered intermediate steps toward achieving the long-term goals. Historically, it has been difficult to conduct the type of research that clearly shows the value and effectiveness of OHS training. Partly, this situation may exist because *the ultimate effectiveness of training is likely dependent on factors external to the training, such as trainee readiness, management commitment, appropriate resources, nature of the organization's safety climate, and systematic monitoring and feedback*. In short, for training to be effective, it is likely that *a worker must be empowered and enabled to perform according to the training content*. Another challenge is that other unrelated factors in a workplace, such as a labor dispute or a change in a production process, may have an impact on the same outcomes as training [42, p. 2; emphasis added].

Training goals need to include improving workers' understanding of: the specific hazards in their work environment; the morbidity and mortality risks posed by exposure to these hazards; the political, economic, and social contexts of work that determine the level of risk deemed acceptable for workers; and the extent to which workers participate in decision-making about the acceptability of these risks. An important goal is to support and advance workers' ability to take action to reduce and eliminate these workplace hazards so that they avoid injury, illness, and mortality. As succinctly stated by Becker and Morawetz in a training evaluation report, an important goal of training is "to improve the efficacy of workers who attempt to make workplace change" [43].

Robson et al., and NIOSH, have ignored the political economy of the work environment. They do not seek to explore training as an intervention to change the root causes of workplace injuries and illnesses—and thereby assume that untrained workers are the root cause, or mistakenly assume that the root causes can be ignored and their impacts overridden if workers learn how to modify behavior to stay safe in hazardous work environments. Consequently, they omitted many research articles that assess the effectiveness of training with this orientation.

In the quoted section above, Robson et al. acknowledge many factors that can limit the effectiveness of health and safety training in achieving injury and illness reduction goals, and leave out a critical factor—the elephant in the room—the workplace hazards. This flies directly in the face of the industrial hygiene hierarchy of controls, which instructs that workplace hazards need to be removed or maximally controlled. They further note that the earlier review by Cohen and Colligan found "evidence suggesting that management support

was critical to effective safety training” [42, p. 2]. The workplace is owned by the employer who has the power (and the legal obligation) to establish a healthy and safe workplace. When employers fail to strongly support removal and reduction of workplace hazards, they leave workers, who lack the power to make these changes, to face the resulting direct health and safety risks and morbidity and mortality consequences.

The prevention of worker injury, disease, and death should be the ultimate goal of health and safety regulation, enforcement actions, and workplace programs. It cannot, however, be the ultimate goal or even the proximal goal of training, and it is incorrect to use it as such in evaluation research. Given workers’ lack of control over the work environment, which is owned by the employer, and all the other factors Robson et al. listed, how can we expect that training could reduce these adverse outcomes? Training is a component of a comprehensive workplace health and safety program that can advance the goal of reducing, or even better, preventing injury, illness, and death, but it is much too limited in its scope and function to achieve these outcomes. Of course, training about safe and healthy work practices and how to use protection mechanisms helps workers avoid workplace-related morbidity and mortality; but a belief that changed worker behavior, or “performance” as stated in the report, can lead to these positive outcomes can delude one into thinking that training can be the intervention that brings about these intended outcomes.

If we are truly interested in having health and safety training bring about the prevention of workplace morbidity and mortality, then an important goal would be to promote collective action by workers to successfully achieve management concessions to remove or control workplace hazards, and/or to obtain protective action by government through legislation, regulation, executive orders, investigation, and enforcement. Even when workers are not successful in these attempts, if training provides them with the necessary tools to attempt these actions, then is not the attempt an important ultimate outcome that can demonstrate training effectiveness? How, though, could a viewpoint that training can be ultimately effective in reducing injury and illness be regarded as scientifically rigorous?

So long as workplace hazards remain in the workplace and workers lack the power to either refuse to work in hazardous conditions or to take control of removing or significantly reducing these hazards, we should not expect to find that training workers to work safely in the presence of the hazards can lead to a decrease in injuries, illnesses, and deaths related to exposure to these hazards.

NIOSH and Robson et al. have limited their assessment of training evaluation research to randomized controlled studies. They have selected a set of articles that include strong and interesting research. For the most part, they have ignored the literature reporting evaluations of empowerment-oriented health and safety training, as if it is irrelevant due to the perception of inappropriate outcome measures or designs that cannot soundly demonstrate that the outcomes measured resulted from the training. That is a reasonable criticism of the evaluation research design, but certainly not grounds to discount important work that demonstrates that a particular approach to training provided workers the necessary support to take action to improve workplace health and safety conditions—often against substantial odds.

ARTICLES IN THIS SPECIAL ISSUE

The contributors to this special issue of *New Solutions* responded to a call for papers which was not restricted to empowerment-oriented health and safety training evaluations. Nonetheless, each article aims to support worker action. Throughout these articles we find themes of the need for trust in the workplace, the imbalance of power between workers and managers—in and outside of the workplace—and the empowerment of workers and their communities to strengthen the enforcement of their rights and improve their working and living conditions.

In the *Voices* piece, Canadian labor educator D’Arcy Martin provides a framework for functioning in the union structure: the staircase, the web, and the channel. The staircase represents the electoral structure, the web is the connector, and in the channel are those with a specific subject matter focus. Being “on the web of unions” is the way he describes himself. This means drawing connections amongst people of like mind to build collective power by inviting people to learn together. He goes on to discuss the true dedication and commitment of those operating in the channel, for instance those who dedicate their careers to improving worker health and safety. This issue of *New Solutions* is made up of articles written by individuals working in the channel—whether they are working directly for unions or not. People who have to “work against the grain constantly,” but who draw energy from doing the grassroots work they do, even though they know that the paradigm shift that will prevent workers from becoming injured or sick is still a long way off.

In “Creative Mistrust,” Levenstein and Rosenberg depict the environment of the U.S. Department of Energy, where government-owned and -regulated and contractor-operated facilities have cultivated an environment in which the workers trust neither the corporations that employ them nor the government. For a generally stable, older workforce, who have lived through years of secrecy and lies, little is to be taken at face value. Yet without trust and meaningful worker involvement, when fear of reprisal leaves hazards unreported and workers are blamed for their own injuries, is it any surprise that hazardous conditions remain? In this instance, training for workers must include strategies for how to raise health and safety concerns while having a healthy skepticism about management. The concepts presented here hark back to issues raised in Colligan’s article, “The Training Ethic and the Ethics of Training.”

The Riley et al. article provides a framework for capacity-building through community-based outreach and popular education, demonstrated through their efforts to promote California’s heat illness prevention standard. It shows a way to help empower workers who traditionally have been difficult to reach—contingent workers without union representation. Developing the knowledge and skills of staff and members of community organizations, along with continuing support of those organizations to address workplace heat-related concerns, lays a foundation that may translate to addressing other workplace safety and health concerns. The project used community health promoters or *promotores* to outreach to a variety of organizations. This approach and others like it are increasingly important as the workforce trends away from the traditional employment contract to more contingent employment, made up of immigrant workers without union representation.

Both the McQuiston et al. and Anderson et al. articles show programs that make a concerted effort to expand workers' influence within a worksite by aiming to ensure maximum worker involvement and control over workplace safety—trying to shift or at least equalize the power dynamic within the worksites. The Anderson et al. article shows a Utility Workers Union of America (UWUA) program that incorporates a systems-of-safety approach to identify hazards through hazard mapping, targeting the identified hazards for elimination. The program brought labor and management together, resulting in better communication and some safety improvements. While much was accomplished, there is still lingering mistrust and concerns among workers regarding retaliation, and, of course, to the extent that management did not buy in, the inherent power differential between labor and management continues.

The McQuiston et al. article presents a United Steelworkers (USW) program where workers are site-based program leaders, peer trainers, and incident and near-miss investigators. Once root causes of an incident or hazard are identified, these trained workers make recommendations for mitigating the hazards using the highest system of safety possible. The program strives to shift the focus away from behavior-based safety and instead takes a proactive approach that tracks the number of hazards identified and corrected, rather than relying on lagging measures of injuries and illnesses. Again, this program shows that while the union can control a program, it still does not control the workplace. McQuiston et al. found that the program works best where labor-management relationships are strong. That said, they have been able to expand the program from the oil and chemical sectors to other manufacturing sectors represented by the union. Though there are varying degrees of success based on a variety of factors, both this model and the model presented by Anderson et al. demonstrate the effort that workers are able to commit, and are interested in committing, to ensure their facilities' safety when they are given the tools to do so.

The Oschner et al. article shows a community-based participatory research project to train immigrant Latino day laborers to be safety liaisons. This program shows how safety leaders can be developed among immigrant day laborers when working with worker centers. These safety liaisons played a critical role on their worksites in helping identify hazards and bringing them to the attention of supervisors—often with promising results. Here again, trust plays an issue, and without it, only so much can be done to improve safety. Interestingly, in this case OSHA learned to trust that safety liaison reporting of issues was credible, and the agency appreciated the help in identifying dangerous situations. Yet even when the safety liaisons are afraid of retaliation from employers, they are still able to recognize unsafe conditions, speak to coworkers about those conditions, and recruit co-workers to join in meetings at the worker council—building a movement of those concerned about safety.

DeSouza et al. explore new ways to reach immigrant populations. Individual and group interviews and pictograms were used to evaluate Latino day laborers' knowledge level, attitudes, and behavior changes. Here again, a community-based organization facilitated a training program run by peer-trainers. They determined that moving day-laborers from increased basic knowledge to changes in attitudes or behaviors at a worksite is a long-term project. In both the DeSouza et al. and Oschner et al. articles, training for immigrant construction workers helped the workers understand that they don't have to accept

workplace injury and illness as part of the job and to see what aspects of the jobs caused these problems.

Obviously we always want to know if our training programs are effective in achieving our goals. But if countervailing forces in the workplace and society and the economy at large present insurmountable barriers to implementing what is learned in training, then is the training to be deemed a failure and a waste of time? What will it take to overcome and eliminate those barriers? It has always taken progressive coalitions of advocates for workers' rights and protection to make these changes. The greatest changes, such as getting in place national laws to establish OSHA, NIOSH, the Mine Safety and Health Administration (MSHA), the Environmental Protection Agency (EPA), and the U.S. Chemical Safety Board (CSB), have required a strong labor movement as a key player in those coalitions. One can be cynical and say that the evidence shows that these measures have failed, but that is to deny the evidence that we are in a long-term effort to make work healthy, safe, and based on new values. No single set of victories is the end of the effort. Each of these establishes a new foundation upon which we build new measures. Worker health and safety training can be an important component of making the transition to healthy and safe workplaces. The articles presented in this issue of *New Solutions* contribute to the evidence that worker education must focus on empowerment for collective action to remove workplace hazards. They provide evidence of the current creative and successful efforts that build on the efforts presented in the sets of articles published in the 1990s. We hope that this collection supports the ongoing dialogue regarding effective training approaches for strengthening workers' capacity to eliminate workplace health and safety hazards and thereby prevent occupational injuries, illnesses, and fatalities.

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NOTES

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