**National Institute of
Environmental Health Sciences**
Worker Training Program

Worker Training Program
COVID-19 Training
Needs Assessment

OCTOBER 2020

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Executive Summary

As a result of the COVID-19 pandemic, the grantees of the National Institute of Environmental Health Sciences (NIEHS) Worker Training Program (WTP) found themselves in a situation that represents a massive change to the way that critical health and safety information is delivered. In spring 2020, NIEHS WTP commissioned the National Clearinghouse for Worker Health and Safety Training (National Clearinghouse) to conduct a needs assessment to understand how grantees managed to safely transition worker health and safety training under physical distancing and infection control requirements, and what their concerns, challenges, and needs were. Additionally, the Clearinghouse assessed how grantees adapted training methods as individuals returned to work within the pandemic setting and explored where grantees may require further programmatic or technical assistance.

Reaching Audiences

Challenges

- Technology can become a barrier for some attendees to participate in online trainings.
- Some populations can be hard to reach due to increased work schedules or may not be working at all.
- Other at-risk, vulnerable populations, such as immigrant workers, are also very hard to reach.
- People may sign up but do not attend trainings.

Best Practices

- Social media platforms (e.g., Facebook Live, WhatsApp, YouTube, etc.) can be useful tools to reach out to populations and share essential information.
- Trainings can be recorded and shared with participants and others.
- Participants who do not have strong internet bandwidth should be allowed and encouraged to attend from less traditional spaces.
- Trainers and organizations should test the training platform used on the types of devices that the trainees use and develop instructions accordingly.
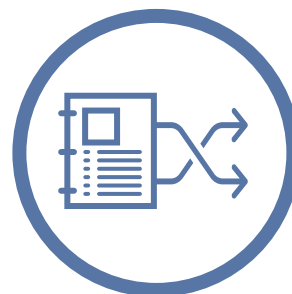
Virtual Learning: Adapting Curricula for Online Learning

Challenges

- Converting a curriculum into an online format is time consuming.
- Curricula has to be constantly updated due to the changing science and guidance.
- Some in-person activities cannot be replicated online.

Best Practices

- As curricula are being adapted for an online format, recreate all the parts of a training development process.
- Briefings should be held after the training.
- Directions for activities to be accomplished by breakouts need to be updated.
- Longer courses should be broken into short modules.

Virtual Training: Preparing Organizations and Trainers for Online Learning

Challenges

- Some trainers are not comfortable with online training.
- Technology fluency varied greatly among trainers within organizations.
- There is a steep learning curve in learning a new system.
- Trainers may also lack the technology to adequately teach a class.
- Lack of comfort on new topics, especially on COVID-19, made training challenging for trainers.
- More staff is needed to run and support a virtual training.

Best Practices

- Organizations should use platforms that the trainers are comfortable with, if any.
- Organizations and trainers should take advantage of experienced users of the platform, IT support desks, and tutorial videos.
- Organizations should investigate and standardize security measures for online training.
- Trainers who have little to no experience conducting online training should watch, shadow, or "co-train" another online training before taking on the lead training role.
- Practice, practice, practice.
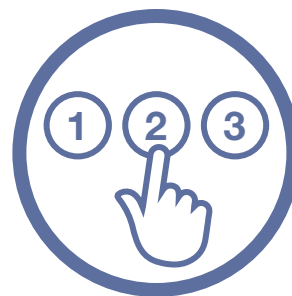
Virtual Learning: Preparing Participants

Challenges

- The lack of technology or access to reliable bandwidth hinders attendee participation.
- Learning curve to use the virtual platforms is steep.
- Online classroom etiquette may be unfamiliar to attendees.

Best Practices

- To better prepare attendees before training, technology requirements, classroom rules and expectations, and other special instructions should be sent to attendees prior to the class.
- Trainers should provide a short overview of expectations and instructions prior to each class.
- Trainers should encourage attendees to log-in early to ensure that they are not late if they run into technological issues while signing in. This time could also be used to practice the platform or ask technical/logistic questions without delaying the start of a formal course.
- Give the option to mail out paper copies of forms prior to the class.
- All participants should be provided with a set of classroom etiquette/rules before the start of the class.

Virtual Learning: During Training

Challenges

- Delivering training content and supporting logistical questions is time consuming and challenging during synchronous training.
- Virtual training can turn into a one-way lecture.
- Keeping the focus of participants can be challenging.
- Online courses longer than one hour can wear on the student and trainers.
- Hands-on activities can be harder to accomplish in an online platform.
- Trainers and attendees miss out on the less formal elements of training such as casual discussion, informal getting-to-know-you discussions, and friendships.
- Test result validation for online courses is a challenge, particularly when required to get agency approval, such as OSHA courses.

Best Practices

- Have at least two trainers or hosts for each training.
- Provide contact information for a person to reach out to in the event of an emergency or tech issues.
- Breaks should be provided for training that are two hours or longer.
- Trainers need to provide even more explicit instructions during training.
- Take advantage of features that the platform offers to actively engage the audience.
- Be creative in the use of other tools and resources to engage the audience.

In-Person Trainings

Challenges

- Safety protocols are set by the external training facility or site.
- Trainees do not always adhere to safety protocols established by the training site.
- Overall safety of trainers and trainees is still a major concern.
- Training spaces are limited and are restrictive for training class sizes and frequency.
- PPE is a limiting factor.
- Trainer travel remains restricted and they are not able to travel to locations to provide in-person training.

Current Best Practices

- Develop an in-person training guidance to reduce COVID-19 exposure.
- Communicate with the trainers and trainees about their concerns and plans.
- Designate a person to be the COVID-19 Safety Advisor.
- Self-assessments should be a part of the precautionary standard taken by training facilities.
- Precautionary standards should be taken to limit exposure.
- Consider non-traditional training spaces.
- Consider a blended or hybrid model of training.

Other Concerns and Comments

- Trainers are concerned about meeting annual credential requirements or training hours.
- All grantees of the Ebola Biosafety and Infectious Disease Response Training Program noted that the program made the transition to COVID-19 training relatively easy.
- Some grantees expressed fear that online training and/or asynchronous training will continue and replace hands-on, in person training.
- Many grantees have noted that NIEHS funding has helped them continue to carry out training despite the current situation.

The needs assessment observed the following key findings:

- Trainers and organizations have risen to the occasion, taken the leap, and have adopted digital technology to successfully continue sharing critical information to impacted workers, including new audiences previously unreached by grantees.
- For those considering and preparing for in-person training, it is of upmost importance to consider all implications and necessary requirements and to ensure the safety of trainers and trainees.
- Despite the rapid and forced transition, grantees are delivering courses that adhere to all minimum standard criteria as outlined in chapter 10.5 of the Minimum Criteria and following the intention of the criteria where a goal can't be 100% completed. Trainers and training organizations are implementing best practices in adult education and implementing most of the Minimum Criteria (as they are able) despite the unpredictable and unprecedented circumstances.
- Grantees expressed challenges in meeting Minimum Criteria standards for trainer certification and proficiency assessments (particularly those for PPE and hands-on activities). These activities have limited course delivery and challenges will continue and worsen the longer that trainers and trainees are out of the classroom and not meeting face-to-face.

Introduction

On March 11, 2020, the World Health Organization (WHO) characterized coronavirus disease 2019 (COVID-19) as a pandemic. The increase in community spread of COVID-19 in the U.S in late January and early February put the whole nation on hold, as people were asked to stay at home and socially distance to slow infection rates. While many are able to continue to work from home until transmission slows, some workers, such as health care workers, construction workers, grocery workers, and others, continue to perform essential work to serve others and are at risk of exposure. Now more than ever, these essential workers need to be properly informed of the dangers of COVID-19 and how to best protect themselves from getting infected. Additionally, various sectors are returning to their workplaces as states ease restrictions.

The grantees of the National Institute of Environmental Health Sciences (NIEHS) Worker Training Program (WTP) play a vital role in providing health and safety training to protect the lives of these workers and their families. Although WTP grantees have also been impacted by the current situation, they have been working diligently to ensure that workers are provided with the information needed to protect themselves from COVID-19, the disease caused by the SARS-CoV-2 virus.. That said, the situation WTP grantees found themselves in during 2020 represents a massive change to the way that critical safety and health information is delivered during a pandemic that has unprecedented health implications.

The NIEHS and National Clearinghouse Response

In response to the safety and health threats that emerged in 2020 from SARS-CoV-2, the WTP has been tracking information about COVID-19 as it pertains to protecting workers involved in emergency response, essential, and cleanup activities performed in the U.S. In March of 2020, WTP received $10 million to support their worker training activities under the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020.

The National Clearinghouse for Worker Safety and Health Training (National Clearinghouse) creates training tools to aid in the development of awareness-level courses or materials. These tools provide health and safety guidance to workers in industries with the potential for exposure to COVID-19. The Clearinghouse also worked with Vivid Learning Systems to create an online asynchronous version of the training, as well as a Shareable Content Object Reference Model (SCORM) package that can be used by grantees and others to upload to their own learning platform.

WTP issued a supplemental funding announcement called the Notice of Special Interest (NOSI) on the Coronavirus and Infectious Disease Response Training. The purpose of this was to support the conduct of worker-based training to prevent and reduce exposure of hospital employees, emergency first responders, and other workers who are at risk of exposure to SARS-CoV-2 through their work duties.[1] Specifically, the notice called for applicants to:

- Provide support for worker-based training to prevent and reduce exposure for hospital employees,

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1   https://grants.nih.gov/grants/guide/notice-files/NOT-ES-20-017.html

emergency first responders, and other essential workers who face risk of exposure through their work duties.

- Aid development and deployment of advanced training technologies for distance and online learning to expeditiously train and protect infectious disease responders during the emerging COVID-19 pandemic.
- Facilitate distance-education and interactive learning experiences, which can provide engagement and help maintain contact with learners and frontline response workers.

A total of 14 awards were made from this NOSI. Additionally, all 17 of the Hazardous Waster Worker Training Program grantees also received COVID-19 specific funding to support training in their 2020-2021 program year.

In spring 2020, NIEHS WTP commissioned the National Clearinghouse to conduct a needs assessment to better understand how grantees managed to safely transition worker health and safety training under physical distancing and infection control requirements, and what their concerns, challenges, and needs are. Additionally, the Clearinghouse assessed how grantees adapted training methods as individuals returned to work within the pandemic setting and explored where grantees may require further programmatic or technical assistance.

Methodology

To accomplish this needs assessment, the Clearinghouse used a multi-step approach. First, a phone interview with the grantees was conducted in late May/early June. Topics discussed during this interview included:

- Worker populations being reached
- Training topics
- Technology platforms and interactive tools used to reach audiences
- Train-the-trainer efforts
- Best practices and challenges in training
- Best practices and challenges to reach vulnerable or hard to reach populations
- Data collection and post-course evaluations
- Questions received regarding COVID-19

A follow-up email was sent out in August to gauge how much has changed since the first interview. Grantees were asked about new courses and new protocols, if any. A follow-up interview was conducted at the request of the grantees or if there were significant changes reported.

Delivering Effective Training During COVID-19

Since 1987, WTP grantees have been developing and delivering high quality training programs geared toward the adult learner, grounded in the "Minimum Criteria for Worker Health and Safety Training for Hazard Waste Operations and Emergency Response" (also known as Minimum Criteria). The Minimum Criteria emphasizes the principles of adult education (section 8), establishes minimum criteria for designing training programs (section 9), establishes quality control requirements for training programs (section 10), provides generic guidelines for training curriculum (section 11), and requires annual quality control audits and certification that the training programs comply with the guidance.

One of the key guiding principles of the Minimum Criteria is peer-to-peer training with hands-on activities as the most effective model for worker training. This guidance recommends that hands-on training should fill at least one-third of the training program hours. That said, while WTP has accepted online learning and integration of technology-enhanced training and embraced the concept of blended learning, the guidance continues to emphasize hands-on, participatory training as it offers the best environment and experience for adult learning.

At the fall 2017 WTP Awardee meeting, the Minimum Criteria document was updated and important changes were made to address the use of technology in training. Technology use is noted in discussions of training design (section 9) and quality (section 10). Some criteria and recommendations applicable to distance learning during COVID-19 include:

- For online-learning classes, opportunities for interactive questions and discussion with an instructor or another knowledgeable person should be provided during the time allotted for course completion.
- Technology-enhanced learning tools need to be used diligently, and in a way that enhances the learning experience while considering the technology literacy of the trainees. Some suggested criteria for technology-enhanced activities include:
  - Providing easy-to-follow instructions to facilitate the registration process and course completion.
  - Evaluating the computer literacy levels of trainees (if required); ensure instructors are qualified and capable of offering extra help to trainees.
  - Providing advanced instruction and pre-course requirements to help bring all trainees up to the required technology literacy level (e.g., pre-course video instruction or presentation).
  - Considering and attempting to maximize the interaction of participants, including communicating questions and answers and encouraging participant-to-participant dialogue.
  - Providing contact information on a landing or homepage to provide general help for learners (e.g., forgotten password, course not running properly).

The restrictions brought on by the COVID-19 pandemic forced the grantees to revisit the way they provide training, as their curricula and training are based on a peer-to-peer model with hands-on activities that were not suited for physical distancing or infection control measures required under COVID-19. Most grantees put a pause on the hands-on, in-person components of trainings that were being delivered during early 2020. The very

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few grantees that continued to provide hands-on training during the early pandemic stages had to develop further restrictions and reconfigure activities to consider physical distancing and infection control. Most grantees were forced to suddenly explore and roll out virtual platforms for ongoing safety and health training and, in alignment with WTP's mandate, new training specific to COVID-19 in the workplace.

In early 2020 WTP grantees rose to the occasion, quickly transitioning existing training online while launching new COVID-19-specific information sessions in the middle of a pandemic.

Providing Urgently Needed COVID-19 Information

Grantees have been instrumental in providing COVID-19 related information to members of their organizations, institutions, unions, and new and old training populations. New audiences that have been receiving COVID-19 training include businesses that were starting to open, and workers who may come in contact with or are at risk

of exposure, including funeral directors, retail workers, health care workers, casino workers, tattoo artists, homeless shelter workers, insurance compensation firm agents, and local government public servants. Grantees have also reached out to representatives of various industries that may come in contact with COVID-19. For example, the University of Texas Health Science Center at Houston (UTHealth) of the Texas-Utah Consortium for Hazardous Waste Worker Education and Training began hosting a weekly webinar series for workers, community members, local businesses, and other audiences to help them better understand and operationalize Centers for Disease Control and Prevention (CDC) guidance for their specific needs. The Deep South Center for Environmental Justice (DSCEJ) reached out to the city of New Orleans to reach out to contractors and sanitation workers.

Grantees have been instrumental in providing awareness-level information and guidance to their training populations and communities about COVID-19 and infection control methods. Most COVID-19 related

trainings are conducted in a virtual format, using both asynchronous and synchronous methods.

In addition to new external audiences, grantees expressed gaining a "new" audience internally within their own institution or organization as they have become the experts who can help them address questions related to COVID-19. Grantees have conducted COVID-19 training to staff within their own organizations and institutions as well as building managers and maintenance staff. Trainers from The New England Consortium (TNEC)-Civil Service Employees Association provided training and guidance to their own university staff members returning to research laboratories and the UTHealth team provided training to UT students moving into classrooms for student teaching in the fall. Grantees from union organizations have provided training and information on COVID-19 to members that they traditionally do not train. For instance, the International Brotherhood of Teamsters (IBT) have been developing factsheets for correctional facility workers, food processing workers, medical supply waste workers, wastewater workers, and workers within the health care division of IBT. Health care members represented by the United Steel Workers (USW) have also reached out to the USW Tony Mazzocchi Center for training. The United Auto Workers (UAW) conducted COVID-19 trainings for regional representatives, who they had not trained before, which led to a regional town hall meeting.

The USW have also proposed a trainer mentorship program to ensure worker trainers are aware of the most recent and accurate information about COVID-19. This mentorship program will allow worker trainers the opportunity to enhance trainers by supplementing their knowledge with new skills and information about the virus; provide trainers with "soft" skills about how to better engage learners and therefore improve learning; identify where and how curriculum needs to be improved and updated; and supplement classroom training with informal "real time" opportunities to reinforce information and new skills that apply classroom learning to improve working conditions.

Grantees, such as the International Association of Fire Fighters (IAFF) and Alabama Fire College (AFC), also expressed that transitioning to online training opened opportunities for other training audiences, such as participants from locations that they had not reached before social distancing, including a remote participant from Hawaii. Online training has also allowed for the flexibility of breaking courses into different modules that can be provided over multiple days, which has allowed custom scheduling to meet the needs of busy participants.

Native Americans are still a hard-to-reach population as most of the training centers and colleges are still closed due to the pandemic. Other challenges faced by Native American communities include technology barriers, such as access to Wi-Fi, internet bandwidth, and equipment. That said, some grantees have developed creative methods to reach Native American communities. AFC made its courses available in newsletters to its partners, Native American Fish and Wildlife Society and United South and Eastern Tribes. Arizona State University, part of the Western Region Universities Consortium (WRUC), has been recording training on flash drives and sending it to the trainees.

COVID-19 Concerns

COVID-19 is an evolving disease and information is constantly changing. Grantees have expressed the challenge of trying to keep training up-to-date as protocols and guidance are revised frequently. Grantee trainers and trainees also have major concerns regarding the type of personal protective equipment (PPE), face masks, and disinfection methods to use, especially for those who are returning to work. Trainers often have to correct misinformation shared by trainees during class. This is indicative of the myriad of information (and misinformation) that exists and the difficulty of sorting through it. Another concern raised by grantees is the issue of heat, as workers may be less likely to wear masks or wear them inappropriately if they are impacted by heat stress.

Transitioning to Online Training

As COVID-19 began to spread at an alarming rate in the U.S. in March, grantees began to take several precautions to protect their workers, trainers, and trainees, including working from home, stopping all travel, and halting in-person training. Most grantees began assessing tools and needs to transition to online training.

Training Format and Platform

At the time of the first interview, some grantees had more experience conducting online training than others. Some grantees, especially those associated with academic institutions, have virtual components of trainings, either synchronous, asynchronous, or both, already built into

their curricula or had immediate access to institutional licenses for webinar technology and "in-house" information technology (IT) support. However, other grantees had to evaluate available platforms and tools, purchase licenses, and learn new software with little prior experience.

The platforms most used by grantees for synchronous online learning are Zoom and WebEx, though some grantees have used Facebook Live for hard-to-reach audiences. Online learning management platforms and tools used to engage audiences varied among grantees. Some of the most used online learning management systems (usually already provided by the institution) include Canvas, Moodle, and Google Classrooms. Quiz and

activity platforms most used include Socrative, Quizlet, and Kahoot. Social media has also been used by grantees to connect with hard-to-reach populations. WRUC noted that their community-based promotoras use WhatsApp to communicate about COVID-19 with hard-to-reach audiences that only have mobile phone access. The DSCEJ is working on producing training videos that can be accessed on YouTube by essential workers, such as those in the delivery sector, to ensure that they can access them at any time.

Very few grantee partners, such as Wind of the Spirit and Make the Road New York, have begun (or continued) in-person training at the end of May and early June.. Department of Energy (DOE) legacy sites began opening training at the end of May, hence some grantees, such as the International Union of Operating Engineers, began in-person training at the sites. Grantees who have begun in-person training mostly follow their own protocols to protect trainers and trainees, including, but not limited to social distancing and disinfection. Most grantees have struggled with starting in-person training due to travel restrictions, lack of training spaces and locations, and most importantly, the concern of the health and safety of trainers and trainees.

Courses Provided and Audiences Reached

At the time of the first interview, most grantees noted that their regular Hazardous Waste Operations and Emergency Response (HAZWOPER) and Occupational Safety and Health Administration (OSHA) trainings, especially the courses that were 40 or more hours, were put on pause, as they struggled to find ways to accomplish the hands-on and in-person portion of the training safely. Few grantees, such as OAI, Inc., were able to conduct only part of the 40-hour HAZWOPER (non-hands-on portion) via virtual format. UAW conducted one OSHA 30-hour course that was completed online and was taught by a retired trainer who was certified to teach the course online. While very few grantees, like the New Jersey/New York Hazardous

Other courses that the grantees were able to provide include:
- Disaster related
- Mold remediation
- Disaster site worker
- Flood and hurricane preparedness
- Safety training for disaster volunteers
- Mental health and resiliency
- Opioids and substance use
- Drug and alcohol awareness
- Opioids in the workplace
- HAZWOPER and refreshers
- 8-hour HAZWOPER refresher
- 40-hour HAZWOPER training
- 24-hour HAZWOPER

Materials Worker Training Center and WRUC, were able to provide OSHA courses, most grantees were only starting to get OSHA approval for virtual classes in late July.

Most NIEHS Environmental Career Worker Training Program (ECWTP) classes that had launched prior to March were able to complete the course session. OAI, Inc.'s ECWTP courses have always had an asynchronous online component that could be accessed at any time, and WRUC was able to complete the ECWTP sessions virtually as well. WRUC was able to complete several refreshers, as well as OSHA 10-hour training, heat awareness, and wildfire smoke awareness.

Despite the rapid and somewhat unforeseen need to transition to online training, most grantees reported that their training populations remained the same as prior to the pandemic, including construction workers, maritime port workers, worker groups, immigrant organizations, safety and health professionals, community members, etc.

Major Findings: Best Practices and Lessons Learned

The transition of safety and health training to a virtual platform proved to be challenging for the grantees. Not only is moving to a virtual platform a change to the logistics and planning of a training, it also changes the way training is conducted by the trainers and perceived by the student. Intensive preparations are necessary to ensure that the trainers are ready to provide training virtually and that training is effective. Creative methods to actively engage with trainees must be explored and employed. Trainee demographics and course evaluations must still be accurately collected. The following section describes the challenges faced by grantees and best practices and lessons learned on the transition to and preparation for online training for organizations, trainers, and trainees; reaching users; engaging the audience; data collection and evaluation; and conducting in-person training.

Reaching Audiences

Transitioning to an online platform has allowed participation from audiences that the grantees normally do not reach, such as trainees from other states or in remote locations. However, this shift in format has also made training attendance challenging for other trainees. This section details the challenges faced by grantees and best practices as they attempt to make training easily accessible to their training populations.

Challenges

- **Technology can become a barrier for some attendees to participate in online trainings.** One of the major challenges for online training participation noted by all grantees is that some trainees do not have access to the necessary technology to effectively participate in virtual trainings. Synchronous online training requires participants to have a stable internet connection and a computer (or at the minimum a smart phone or tablet), preferably with a camera. For those participants who live in remote areas, such as Native Americans or those living in rural areas, stable and strong internet connection is often not available. Participants using smart phones are also limited in the features used during training and may not get the full training experience.

- **Some populations can be hard to reach due to increased work schedules or may not be working at all.** COVID-19 has disrupted work schedules for many workers, and may have also added obligations at home (e.g., childcare) for families. Workers may not have time to attend training due to limited availability for scheduled trainings and changing workplace demands, particularly for industries deemed essential.

- **Other at-risk, vulnerable populations, such as immigrant workers, are also very hard to reach.** These populations typically do not have access to a home internet connection or equipment to connect to the trainings or do not have time to do a long training. They also may have to prioritize paying monthly bills, such as rent and utilities over paying for mobile phone service.

- **People may sign up but do not attend trainings.** "No shows" have also been one of the issues raised by grantees. Having a smaller than expected group of trainees can disrupt the training plan and format, as trainers may have planned for activities for larger groups, such as breakout groups.

Best Practices

- **Social media platforms (e.g., Facebook Live, WhatsApp, YouTube, etc.) can be useful tools to reach out to populations and share essential information.** Almost all populations are connected to one or more forms of social media. While there may not be a formal training established by using these mediums, important information such as safety and health protocols regarding COVID-19, can still be shared on these platforms. As mentioned earlier, WRUC's promotoras use WhatsApp as a means to conduct assessments and share COVID-19 related information and have brief conversations. It was noted that this can be a time-consuming process. The National Council for Occupational Safety and Health (NCOSH) has also provided training via Facebook Live to reach a wider audience.

- **Trainings can be recorded and shared with participants and others.** Recorded training videos can be a good refresher for those who took the class, as well as provide information for those who were not able to attend the meeting due to technology or scheduling issues. That said, a contact person should also be provided in case the viewer has any questions about the training.

- **Participants who do not have strong internet bandwidth should be allowed and encouraged to attend from less traditional spaces, such as places with free Wi-Fi.** Grantees have noted that trainees have had to seek out other sources to get internet to participate in trainings, such as a parking lot outside of a local coffee shop. While this may not be ideal, especially for courses that are longer than one hour, it could be the only way that trainees can participate.

- **Trainers and organizations should test the training platform used on the types of devices that the trainees use and set the policy accordingly.** As mentioned earlier, mobile devices or tablets may limit attendee participation during training. By understanding what the trainees see on their side of the devices, trainers can better adjust their training, such as formatting the slides, use of videos and frequency of use, and type of activities.

Virtual Learning: Adapting Curricula for Online Learning

The transition from in-person to online training has been challenging to grantees, as the curricula must be modified so that it can be taught in the online format.

Challenges

- **Converting a curriculum into an online format is time consuming.** Most curricula will need to be adapted and redesigned to be used in an online format. Many grantees have had to revisit their curriculum and training plans, especially those that have hands-on activities, to adapt for a virtual platform to ensure that it can be delivered in an effective manner.

- **Curricula also had to be constantly updated due to the changing science and guidance.** As guidance changed and science evolved, trainers often had to re-educate themselves on the new information and update their presentations and curricula to reflect these changes.

- **Some in-person activities cannot be replicated online.** Important activities, like participants donning and doffing PPE, cannot be replicated by watching a video online.

Best Practices

- **As curricula are being adapted for an online format, recreate all the parts of a training development process.** Trainers should be included as part of the course adaptation team to discuss training plans and engagement activities.

- **Briefings should be held after the training to go over lessons learned and best practices.** Trainers and others in the organization should have a discussion following the training to discuss what worked, what did not, and what can be improved.

- **Directions for activities to be accomplished by breakouts need to be updated.** Anything a trainer would normally say out loud during an activity, such as amount of time for the activity, needs to be written and provided in advance of the activity.

- **Longer courses should be broken into short modules.** This reduces trainer and participant virtual learning fatigue. This also allows time for the modules to be rehearsed and tested and curricula changes to be made if necessary. Breaking courses down also allows courses to be offered at times convenient for those participants who are still working.

Virtual Training: Preparing Organizations and Trainers for Online Learning

While many trainers have participated in webinars and virtual trainings, very few had prior experience with being the host or presenters/trainers of an online training. Preparation and practice can make a difference in how well an online training is received. Below are some of the challenges and best practices provided by grantees in preparing for online learning.

Challenges

- **Some trainers are not comfortable with online training and do not believe that virtual training can be effective.** These trainers believe that the traditional in-personal training is more effective and is the only way to conduct training effectively. These trainers have not conducted online training and chose to step away from training during COVID-19.

- **Technology fluency varied greatly among trainers within organizations.** Some grantee trainers, especially those from academic institutions, such as New Jersey/New York Hazardous Materials Worker Training Center and WRUC, have had experience providing online training and are familiar with platforms used within the organization. However, even in those organizations some trainers, especially the younger generation trainers, have more experience and are more comfortable using online platforms.

- **There is a steep learning curve in learning a new system.** While all the platforms share similar functions, such as allowing for video capabilities and chat, the way they operate differs. Security settings were changing frequently in early 2020 and features change with each new update. Learning any platform takes a lot of time and practice, and not everyone learns at the same pace.

- **Trainers may also lack the technology to adequately teach a class.** Many trainers found that, like attendees, they lacked the technology or bandwidth to teach from home. Some courses may require more technological equipment, such as additional screens, to effectively teach the class and a strong internet connection and webcam. For instance, the International Chemical Workers Union Council (ICWUC) teaches a plume class that would benefit if both trainers and trainees have additional screens, one to look at the plume software, and one to participate on the online platform.

- **Lack of comfort on new materials, especially on COVID-19, made training challenging for trainers.** Many trainers felt unprepared to teach COVID-19

health and safety material, particularly because information and the safety protocols were frequently changing. It was hard to keep up with not only the wealth of information and science, but also the number of sources.

- **More staff is needed to run and support a virtual training.** Grantees have noted that in order to run an effective virtual training, at the very minimum, there should be at least two staff online, the trainer, and another person to help facilitate the chat and questions. However, other staff may be needed to better support the logistical and technological side of an online platform, such as an IT staff member who is familiar with the technology and equipment, or an expert on the web platform who can help troubleshoot technology issues during the training.

Best Practices

- **Organizations should use platforms that the trainers are comfortable with, if any.** As mentioned earlier, learning to use a new platform can take a lot of time and resources. By using platforms that the trainers are already familiar with, even if it's as a participant of the platform, trainers may feel more comfortable using it for training.

- **Organizations and trainers should take advantage of experienced users of the platform, IT support desks, and tutorial videos to learn more about what the platform can do to help make training more efficient and engaging.** Many grantees are relying on the technical support provided either by their experienced users or institutions to provide brief trainings to their trainers. Informal rehearsals, Q&A sessions, and discussions with experienced users, even if not formally IT support, were noted as one of the best ways to learn a platform.

- **Organizations should investigate and standardize security measures for online training.** (e.g., waiting rooms, registration process) for each platform. Security measures prevent unauthorized participants from interrupting the training and creating havoc.

- **Trainers who have little to no experience conducting online training should watch, shadow, or "co-train" another online training before taking on the lead training role.** Grantees such as ICWUC and The Center for Construction Research and Training (CPWR) are starting to provide weekly training for their trainers to learn about tips and tricks on using platforms and how to actively engage participants.

- **Practice, practice, practice.** Trainers should practice using the platform and the different tools used during the training prior to the actual training to familiarize themselves with the technology.

Virtual Learning: Preparing Participants

Just as trainers need to prepare for online training, participants should also be prepared to attend class.

Challenges

- **The lack of technology or access to reliable bandwidth hinders attendee participation.** As noted earlier, trainees may not be able to participate if they do not have reliable bandwidth or the right equipment. They may become discouraged if they keep dropping off calls or if they cannot actively engage during trainings.

- **Learning curve to use the virtual platforms is steep.** While some participants may be more tech savvy than others, those who do not have experience with virtual platforms may need some time to navigate the platform. They may have issues with audio or mic connection and may be less likely to take advantage of the full features of the platform, such as chat or participate in polls.

- **Online classroom etiquette may be unfamiliar to attendees.** Although most attendees may be participating in training in the comfort of their own

homes, the same in-person classroom rules apply to an online class.

Best Practices

- **To better prepare attendees before training, technology requirements, classroom rules and expectations, and other special instructions should be sent to attendees prior to the class.** This way students will have a chance to test out their equipment and review rules before class starts so they are not surprised the day of the training.
- **Trainers should provide a short overview of expectations and instructions prior to each class as a refresher as well so that everyone is on the same page.** For instance, how participants should submit questions or comments and to be mindful of distractions.
- **Trainers should encourage attendees to log-in early to ensure that they are not late if they run into technological issues while signing in.** This time could also be used to practice the platform or ask technical or logistical questions without delaying the start of a formal course.
- **If there are forms that the participants need to fill out in person, give the option to mail out paper copies of forms prior to the class.** Participants who do not have printers or software can have access to the form.
- **All participants should be provided with a set of classroom etiquette and rules before the start of the class.** For instance, all comments, even if it is via a chat box, should be respected and should not be offensive. Let attendees know the chat is monitored, and participants will be removed from the session if rules are broken. Attendees should not wear anything offensive that can be seen via camera or have anything in the background that is inappropriate.

Virtual Learning: During Training

All grantees admitted that online training required a new set of skills to effectively transmit the information to participants. This section describes the challenges trainers faced during training and best practices on how to better engage their audience.

Challenges

- **Delivering training content and supporting logistical questions is time consuming and challenging during a synchronous training.** Logistical and technology questions can be complicated and take a long time to answer and explain.
- **Virtual training can turn into a one-way lecture.** Actively engaging the participants during an online class requires a different set of skills and activities and is challenging, especially you cannot see your audiences' faces and reactions. Hands-on and other visual activities may need to be modified or substituted to accomplish online.
- **Keeping the focus of participants can be challenging.** Participants can easily be distracted by their surroundings. A less interactive class can also not capture the participants' attention.
- **Online courses longer than one hour can wear on the student and trainers, and staring at a screen for over one hour can also be straining for the eyes.**
- **Hands-on activities can be harder to accomplish in an online platform.** Certain hands-on activities, especially the ones that require students to don and doff equipment cannot be realized through an online format.
- **Trainers and attendees miss out on the less formal elements of training such as casual discussion,**

informal getting-to-know-you discussions, and friendships.

- **Test result validation for online courses is a challenge, particularly when required to get agency approval, such as OSHA courses.**

Best Practices

- **Have at least two trainers and hosts for each training.** While one trainer is focused on presenting the content, the other trainer can focus on moderating the chat and answering logistical questions. CPWR has implemented a practice of having two trainers online to provide the actual training and moderating discussions, plus a logistical support person answering IT questions and troubleshooting platform issues.

- **Provide an "emergency" contact information to trainees.** Provide an emergency number or email address to trainees in case they drop off Zoom or are having any other technical difficulties. IAFF instituted this successfully early in the pandemic.

- **Breaks should be provided for training that are two hours or longer.** This will give participants and trainers a chance to stretch and maybe rest their eyes from the screen. The current practice, as suggested by multiple grantees, is a 10-15 minute break for every hour of training.

- **Trainers need to provide even more explicit instructions during training, especially for breakout sessions.** During an in-person training, some instructions or reminders may be stated out loud; these same instructions will need to be provided ahead of time. Trainers are encouraged to write down all instructions that they usually say out loud in class, such as breakout time limits, so that they can remember to say them upfront and provide a copy to each breakout.

- **Take advantage of features that the platform offers to actively engage the audience.** Almost all grantees noted that they use the chat feature of their selected platform to encourage discussion and questions. Other tools used by grantees include breakout groups, polls, "raise hands," and camera. Nova Southeastern

University instituted polls following breaks to make sure that attendees return from break, and to make sure that they are paying attention in class. CPWR trainers are using Zoom's whiteboard function to teach hazard mapping, where participants can mark on their screens where they think the hazards are wrong.

- **Be creative in the use of other tools and resources to engage the audience.** There are free apps that can be used to create engaging activities and digital tools provide new options not previously available in person. WRUC asks participants to download the NIOSH Sound Level Meter (SLM) app so that they can measure a sound in their house and then report back. Green Door Initiative sent PPE to the homes of the trainees so that the trainees can practice donning and doffing on camera. Another grantee suggested participants find a policy, video, news article, etc., relevant to the course and post the weblink in the chat for a discussion. The Community College Consortium for Health and Safety Training (CCCHST) is incorporating a virtual augmented reality simulation into their training that requires no additional equipment.

In-Person Trainings

As mentioned previously, in-person trainings remain suspended for most grantees, as of October 2020. There are a couple of grantees who have continued or started in-person training, including IAFF, World Cares Centers, and Wind of the Spirit (both with the New Jersey/New York Hazardous Materials Worker Training Center), DSCEJ, TNEC, Midwest Consortium, Alabama Fire College, and National Partnership for Environmental Technology Education (PETE). Some DOE legacy management sites have resumed limited in-person training starting end of May. In-person training has proven to be challenging

especially given the current social distancing and infection control protocols.

Challenges

- **Safety protocols are set by the external training facility or site.** For most training facilities that are not owned by the grantee organization, such as DOE contractor sites, or local union-owned training facilities, safety protocols are usually developed by the site owners and managers. Unfortunately, grantees are not usually heavily involved in the planning process, and safety protocols may be different even between buildings.

- **Trainees do not always adhere to safety protocols established by training site.** Social distancing is not easy to enforce despite established ground rules. Trainees can get complacent and gather in breakrooms.

- **Overall safety of trainers and trainees is still a major concern.** Most training sites take trainer and trainee temperatures, and some provide PPE as a safety precaution. However, there are inconsistent policies about who takes temperatures, policies for contact

tracing, and follow up should someone in the class later test positive.

- **Training spaces are limited and are limiting training class sizes and frequency.** Acquiring training center space that is a large enough to conduct training with physical distancing has been a challenge.

- **PPE is a limiting factor.** There is still a PPE shortage and many grantees have a limited quantity of PPE for use of training without having to ask participants to share. Disinfection practices and drying time lead to multiple day breaks between trainings or very small training cohorts.

- **Trainer travel remains restricted for those organizations that do not have local trainers, and they are not able to travel to locations to provide in-person training.** DOE grantees are concerned that DOE sites may turn elsewhere to find trainers if WTP grantee trainers cannot participate in sessions.

Current Best Practices

- **Develop in-person training guidance to reduce risks of COVID-19 exposure.** Training centers and training organizations should develop guidance that broadly

describes protective measure responsibilities for all stakeholders involved in the training, including the hosting facility, trainers, and training participants. Some of the grantees who have created such policies include the Midwest Consortium, IAFF, and CPWR.

- **Communicate with the trainers and trainees about their concerns and plans.** Training centers should hold discussions with the trainers and trainees about the safety and health protocols and precautions and build these suggestions into the operations plan. Communicating the guidance to everyone early can help set expectations.
- **Designate a person to be the COVID-19 safety advisor, who can help address trainer and trainee concerns and enforce rules.** This frees the trainer from also being the rule enforcer.
- **Self-assessments should be a part of the precautionary standard taken by training facilities.** Examples of these include filling out forms about physical health and possible contact with at-risk populations and temperature checks.
- **Precautionary standards should be taken to limit exposure, such as use of face masks and face shields, social distancing, not sharing equipment**

or materials, disinfecting frequently, having no or limiting handouts, etc. When needed, plan courses to allow time for PPE disinfection and drying. The Laborers' International Union of North America Training and Education Fund (LIUNA) has protocols for training sites that include the elimination of onsite lodging, water stations, and lunchrooms, and having lunchboxes delivered. They assigned one person to focus on cleaning and do what they can to lessen chances of close contact, including providing face shields, half face respirators, and other PPE (depending on what they have onsite). The Texas-Utah consortium has gone a step further and includes a physician in-person plan development and review.

- **Consider non-traditional training spaces.** Proposed approaches include using non-traditional spaces for training, such as a firehouse garage or truck bay. The DSCEJ used a blended approach to conduct HAZWOPER training, including conducting the hands-on portion of the training in an outdoor space. It is also important to allow flexibility for hands on activities, including more hands-on sessions with fewer participants.
- **Consider a blended or hybrid model of training that includes online training for the classroom portion of the training and in-person for hands-on activities.**

Other Concerns and Comments

- **Trainers are concerned about meeting annual credential requirements or training hours.** Grantees, such as PETE, have had to cancel all of their trainer development conferences this year due to the pandemic.

- **All grantees of the Ebola Biosafety and Infectious Disease Response Training Program have noted that the program made the transition to COVID-19 training relatively easy.** Grantees adapted their infection control trainings to the COVID-19 situation.

- **Some grantees expressed fear that online training and/or asynchronous training will continue and replace hands-on, in person training.** Online training is less expensive and less time consuming than in-person training. Many grantees have noted that NIEHS funding has helped them continue to carry out training despite the current situation. For instance, AFC noted that NIEHS funding has helped them carry out the training safely because they have resources to fully equip a class with PPE so that trainees don't have to share equipment. The DSCEJ noted that the administrative flexibility authorized by NIEHS has allowed them to redirect funds toward training; funds that would have been used for traveling to meetings is being used to make training more accessible to community members and workers, including producing training videos and purchasing technology equipment.

Conclusion

Overall, grantees have embraced the need for and transition of training to an online platform and trainees have provided positive feedback on the online trainings. Grantees continue to deliver high-quality training and meet as many minimum criteria as possible given the unprecedented times, and many plan to continue to provide virtual or blended trainings in the long-term. Trainees have reported positive experiences with online training and trainers have adapted and embraced this rapid change in training delivery.

As a result of the needs assessment, six themes were identified as possible topics for a series of trainer development webinars:

- Engaging training participants virtually – strategies and tips
- Helping participants and trainers in using online technology and learning platforms
- Returning to the training classroom - Policy, protocols, and logistics
- COVID 202: Interpretation of charts and graphs, COVID myths, etc.
- Hard to reach audiences - successes, creative solutions and lessons learned
- Evaluation, testing, and data collection – challenges and solutions

Due to timing constraints, three trainer development webinars were conducted to better prepare trainers for training under the current pandemic situation. WTP grantees and consortia members shared challenges, solutions, demonstrations, and lessons learned in delivering engaging health and safety training in the COVID-19 era. These webinars focused on different topics that were raised during the first phase of the

WTP COVID-19 needs assessment: online training basics, engagement in a virtual classroom, and back in the classroom safety. Brief details about the webinars, including panelists members can be found in Appendix A. The recordings of the webinars can be found on the NIEHS WTP COVID-19 Webinars page.

Key findings from the needs assessment are listed below.

- Trainers and organizations have risen to the occasion, taken the leap, and have adopted digital technology to successfully continue sharing critical information to impacted workers, including new audiences previously unreached by grantees.
- For those considering and preparing for in-person training, it is of upmost importance to consider all implications and necessary requirements and to ensure the safety of trainers and trainees.
- Despite the rapid and forced transition, grantees are delivering courses that adhere to all minimum standard criteria as outlined in section 10.5 of the Minimum Criteria and following the intention of the criteria where a goal can't be 100% completed. Trainers and training organizations are implementing best practices in adult education and implementing most of the minimum criteria (as they are able) despite the unpredictable and unprecedented circumstances.
- Grantees expressed challenges in meeting Minimum Criteria standards for trainer certification and proficiency assessments (particularly those for PPE and hands on activities). These activities have limited course delivery and challenges will continue and worsen the longer that trainers and trainees are out of the classroom and not meeting face-to-face.

Appendix A

Setting Up Online Training - Practices and Platforms (September 3, 2020)

Grantees engaged in a facilitated dialogue regarding the lessons learned and best practices of various virtual platforms. Attendees also participated in a brief session on tips and tricks of using Zoom.

Panelists

- **Arturo Archila,** Training Coordinator, The Labor Institute
- **David Coffey,** Training Manager, The New England Consortium-Civil Service Employees Association
- **Eugenia Cole-Russell,** Project Manager/ Director of Training, Nova Southeastern University
- **Ashlee Fitch,** Principal Investigator and Director, United Steelworkers Tony Mazzochi Center
- **Shari Glines-Allen,** Instructor, International Chemical Workers Union Council Center for Worker Health and Safety Education
- **Debora Gonzales,** National Day Laborer Organizing Network
- **Nadia Marin,** National Day Laborer Organizing Network
- **Mitchel Rosen,** Principal Investigator, New Jersey/ New York Hazardous Materials Worker Training Center and Director, Center for Public Health Workforce Development, Rutgers University
- **Tom Sundly,** Trainer, CPWR – The Center for Construction Research and Training

Tools for Creative Engagement on Virtual Platforms (September 10, 2020)

Presenters during this webinar shared ideas and creative ways to engage participants in virtual health and safety training. Attendees participated in demonstrations that include software and apps as well as webinar tools and activities for any online training platform.

Panelists

- **Lois Harrison,** Program Director, University of Minnesota/Midwest Consortium (MWC)
- **Luis Vazquez,** Education Coordinator, International Chemical Workers Union Council (ICWUC) Center for Worker Health and Safety Education
- **Kevin Riley,** Principal Investigator, University of California Los Angeles-Labor Occupational Safety and Health Program (UCLA-LOSH)/Western Region Universities Consortium
- **Yodit Semu,** Environmental Career Worker Training Program Coordinator, UCLA-LOSH/WRUC

In-Person Training under COVID-19: Protocols and Practices (September 18, 2020)

Presenters of this webinar covered the basics of safely holding in-person training during the COVID-19 pandemic. Policies from organizations currently delivering in-person training were discussed and trainers who were in the classroom shared lessons learned to help attendees understand and plan for the in-person experience.

Panelists

- **David Coffey,** Training Manager, The New England Consortium-Civil Service Employees Association
- **Elizabeth Del Re,** Principal Investigator, International Association of Fire Fighters
- **Kim Dunn,** Technical Training Director, Deep South Center for Environmental Justice
- **John Hanson,** Trainer, Lakeshore Technical College/Midwest Consortium for Hazardous Waste Worker Training
- **Tony Jimenez,** Program Manager, HAMMER Federal Training Center

Response: Trainer Development Webinars

NIEHS WTP Training Best Practices in the Times of COVID-19 Webinar Series

Provided a forum to share challenges, solutions, demonstrations, and lessons learned in delivering engaging health and safety training in the COVID era.

- Call 1: Setting up online training - Practices & Platforms
- Call 2: Tools for Creative Engagement on Virtual Platforms
- Call 3: In-Person Training under COVID-19: Protocols and Practices

**National Institute of
Environmental Health Sciences**
Worker Training Program