On September 5, 2008, three workers died and two more suffered severe brain injuries when they were exposed to hydrogen sulphide (H2S) and carbon dioxide (CO2) gases at a mushroom composting facility in Langley, British Columbia. Two workers and a supervisor were trying to clear a blocked pipe in a shed. The shed enclosed the work space and exiting the shed required workers to climb a ladder. The workers' efforts to clear the blocked pipe caused H2S and CO2 to flow from the pipe into the shed, thereby displacing oxygen with these heavier gases. One worker collapsed immediately. While the second worker assisted the collapsed worker, the supervisor climbed out of the shed to call for help. Over the next few minutes, three more workers entered the shed to assist the collapsed worker. The hazardous atmosphere affected each of these workers. When paramedics arrived, they suspected a hazardous atmosphere in the confined space and decided it was not safe to enter the shed. While they waited for fire-rescue crews to arrive with breathing apparatus, the paramedics pre-vented even more workers from entering the shed. Fire-rescue eventually extracted the bodies of Ut Tran, Jimmy Chan, and Ham Pham from the shed. Two other rescued workers were transported to hospital and diagnosed with severe brain damage. The supervisor, who was only momentarily exposed to the gases, received medical treatment and was released.

Learning Objectives

After reading this chapter, you will be able to:

- Explain the purposes of health and safety training.
- Identify and explain the steps in developing health and safety training.
- Identify their own beliefs about learning and assess the implications for training.
- Explain the main components of an emergency plan.
On September 5, 2008, three workers died and two more suffered severe brain injuries when they were exposed to hydrogen sulphide (H₂S) and carbon dioxide (CO₂) gases at a mushroom composting facility in Langley, British Columbia. Two workers and a supervisor were trying to clear a blocked pipe in a shed. The shed enclosed the work space and exiting the shed required workers to climb a ladder.

The workers’ efforts to clear the blocked pipe caused H₂S and CO₂ to flow from the pipe into the shed, thereby displacing oxygen with these heavier gases. One worker collapsed immediately. While the second worker assisted the collapsed worker, the supervisor climbed out of the shed to call for help. Over the next few minutes, three more workers entered the shed to assist the collapsed worker. The hazardous atmosphere affected each of these workers.¹

When paramedics arrived, they suspected a hazardous atmosphere in the confined space and decided it was not safe to enter the shed. While they waited for fire-rescue crews to arrive with breathing apparatus, the paramedics prevented even more workers from entering the shed. Fire-rescue eventually extracted the bodies of Ut Tran, Jimmy Chan, and Ham Pham from the shed. Two other rescued workers were transported to hospital and diagnosed with severe brain damage. The supervisor, who was only momentarily exposed to the gases, received medical treatment and was released.
The WorkSafeBC investigation into this incident identified numerous design and operational errors that contributed to the workers’ injuries. Of particular note was that none of the three interrelated businesses operating on the site had hazard recognition, assessment, and control plans in place and there was no monitoring of worker exposures to hazardous gases. Workers had no awareness of or training about the hazards posed by confined spaces or hazardous atmospheres and no access to personal protective equipment. There was also no emergency plan. According to WorkSafeBC:

Studies have shown that over 60% of confined space deaths occur among would-be rescuers. Rescue plans and proper training for rescuers must therefore be in place to prevent well-intentioned but untrained workers from entering confined spaces to assist workers in distress and becoming victims themselves.²

Further compounding this issue was that the owner and the workers spoke little English and thus had difficulty communicating with various trades workers (who could have identified the hazards for them) and rescue personnel. Following this incident, WorkSafeBC launched an inspection blitz of similar mushroom farms. Some farms took up to two-and-a-half years to develop the required safety plans to protect workers from hazardous gases. Inspections of other mushroom farms—with slightly different hazards—found that at least 6 of 40 farms did not have adequate plans in place four years after being directed to develop them.³

This incident identifies the importance of training and emergency preparedness in minimizing the risks posed and harm caused by workplace hazards. While it would have been better to eliminate (or otherwise control) the conditions that killed and injured the mushroom-farm workers, informing workers about the hazards and what to do in case of emergency could have prevented these injuries. This chapter begins by examining health and safety training in the workplace. It then looks at what learning theory can tell us about designing effective training programs. Finally, we tackle the issue of emergency preparedness in the workplace.

HEALTH AND SAFETY TRAINING

One way to control workplace hazards is to provide workers with health and safety training. Training entails providing workers with the knowledge, skills,
or behaviours to reduce the risk of a workplace injury. Training is most effective at preventing injuries when the risk of injury is caused (or exacerbated) by a lack of knowledge or skill. Conversely, training will be less effective if the risk of injury is caused by some other factor or if workers are prevented or discouraged from applying the training by some aspect of the job.

There are many forms of OHS training. If you think back to jobs you or family and friends have held, you might well have been given an orientation during your first few days. This might have covered such basic information as the location of the washrooms, fire exits, and some hazards specific to the job. This was a rudimentary (and somewhat inadequate) form of safety training. Some workplaces may offer more thorough safety orientations to new workers that address workplace hazards, emergency procedures, PPE training, policies (e.g., how to report injuries and near misses), and job-specific OHS skills (e.g., robbery prevention, fire suppression). Training on how to use equipment and other job-related orientation can also enhance workplace safety. Governments can also provide various kinds of broad safety education, such as Alberta’s “Bloody Lucky” campaign discussed in Box 8.1.

Legislation may also compel employers to provide certain kinds of training. For example, if a workplace exposes workers to hazardous materials, workers must be educated about the nature of the hazard(s) and trained in how to work with the product(s) in a safe manner (including responding to spills and emergencies) through WHMIS (described in Chapter 2). This means that WHMIS training may be mandatory for some workers and that the specifics of the training will vary between worksites (or even within one worksite over time) as the hazardous materials change.

Legislation may also require mandatory first-aid training. For example, Ontario requires all employers subject to the Workplace Safety and Insurance Act to provide mandatory first-aid equipment, facilities, and trained workers in each workplace. The degree of training required depends upon the number of workers in the workplace. Nova Scotia’s Occupational Health and Safety First Aid Regulations place additional obligations on employers when workers are employed in remote locations (i.e., locations farther than 30 minutes of surface travel away from an emergency-care facility that is open during the hours of work).
Box 8.1 Public safety awareness campaigns

Governments sometimes provide OHS training. For example, students are often exposed to basic OHS information in high school courses. Governments also engage in broader efforts to educate the public about their workplace safety rights. For example, in 2008, Alberta launched its “Bloody Lucky” safety awareness campaign, which featured a series of graphic safety videos aimed at young workers.4

This campaign was attacked by both conservative politicians—who found it too gruesome—and by labour groups, who saw the videos as blaming workers for their injuries. The Bloody Lucky campaign clearly foregrounds the role of workers in workplace injuries, while obscuring the role of employers in designing unsafe work and failing to identify and control obvious hazards.5

For example, in one video a worker in a shoe store climbs a rickety ladder wearing high heels, overreaches to get at some poorly stacked stock, falls backward shattering a light fixture, and then hits the ground. The message is that the worker was acting unsafely, and the emphasis of the video is on the proximate (i.e., immediate) cause of the worker’s injuries, such as poor shoe choice, climbing an unsafe ladder, and reaching too far. The root (i.e., fundamental) causes of the injury (e.g., unsafe ladder, poor stock arrangement, unguarded light fixture) are ignored.

A very similar video from Ontario uses the injured worker’s questions to focus viewers’ attention on the root cause of the incident: the hazards that the employer is obligated to identify and control.6 The underlying message about who is responsible for workplace safety in the two videos is very different, with Alberta’s videos clearly blaming the careless workers for their injuries.

Research on other youth-focused government OHS training suggests that such training tends to impart knowledge about health and safety rather than assisting young workers to develop the self-advocacy skills necessary for them to assert their rights.7 Other research suggests that youth-oriented safety training may also gloss over the difficulty teens face in navigating conflicts between job demands and safety rules.8
The goal of most safety training is ensuring that work is performed safely in the workplace. For this reason, training tends to focus on developing worker skills and behaviours that prevent incidents. Training can, however, focus on educating workers about their rights at work, including their right to information and their right to refuse unsafe work. That form of training is usually not in the interest of employers, who prefer to focus on modifying worker behaviour via skills and knowledge training. Unions and other worker organizations often incorporate rights education into their safety training courses. This difference is one of the characteristics that distinguish union safety education from employer safety training. Combining safety knowledge with worker rights can be an effective way increase safety in the workplace as workers gain both safety knowledge and insights into how to advocate for themselves. Box 8.2 examines how union safety training can affect workers’ health.

**Box 8.2 Effectiveness of union safety training**

In the 1990s, the public transit department in Medicine Hat, Alberta, introduced a fleet of buses fuelled by methanol. At the time, methanol was a popular alternative fuel source. The fuel lowered emissions, but the engines proved to be finicky and required extensive maintenance and repairs. The employer provided no PPE for mechanics, who often inhaled methanol fumes as they worked on engines. Shortly after the introduction of the methanol buses, a number of mechanics began getting sick, complaining of chronic fatigue, pain, mental fuzziness, and other health effects. For some workers, the symptoms were severe enough that they were required to stop working.

No one had an explanation for the onset of the illnesses and the employer denied any work-related connection. A number of months later, a handful of mechanics attended a weekend-long OHS course organized by their union. In the course, they were taught the basics of OHS activism—how to identify hazards, where to find information about hazards, and how to conduct independent research. They came back demanding to see MSDSs for methanol and began researching the health effects of methanol exposure, which can be significant. From this information, the ill workers filed WCB claims and the workers demanded action from the employer to control exposure to methanol.
The WCB claims were rejected and briefly subject to a high-profile court challenge attempting to permit the workers to sue their employer. The challenge failed, but the employer implemented controls over methanol exposure and a few years later abandoned the methanol bus experiment. The example demonstrates that independent training and education, in particular that provided by unions, can provide important tools for workers to advocate for their OHS rights. It also shows, once again, the challenges to having non-traditional occupational illnesses recognized by the WCB.

Broadly speaking, there is good research evidence that OHS training can change workers’ safety behaviour. There is also encouraging evidence that OHS training positively affects workers’ knowledge and attitudes. That said, there is no conclusive evidence that OHS training has a meaningful effect on workplace injury rates. More striking is that the rate of OHS training in Canada appears to be low, with only 1 in 5 workers reporting health and safety training during their first year of work with a new employer.

This evidence suggests that assertions that training is an effective way to make workplaces safer may not be true. When faced with such an assertion, it is useful to consider who is making that claim and how it may be in their interest. For example, Alberta farm workers were long excluded from the ambit of OHS legislation because of concerns about the cost of implementing OHS programming on farms. When faced with criticism about the number of workplace injuries on farms, farm industry organizations repeatedly argued for safety training, despite compelling evidence from Saskatchewan that safety training had no effect on farm injury rates. In this case, farmers were using training-as-a-panacea as a way to evade what they feared would be costly regulation. Farm workers—often precariously employed and racialized workers—bore the cost of the lack of regulation in the form of heightened risk of workplace injuries.

**Learning Theory**

*Learning*—the process wherein we acquire knowledge and skills that can lead to behavioural change—is an important outcome of training. As we saw in the
discussion of social construction in Chapter 1, our behaviours are often shaped by our assumptions about the world. OHS training is no different: we each have a theory (albeit perhaps incomplete and poorly articulated) about how “best” to teach others. Over time, educational theorists have identified several different approaches to training. These learning theories are conceptual frameworks that describe how learners absorb, process, and retain information. These descriptions of learning often contain prescriptions about how to teach. Two learning theories that are broadly used to structure OHS training are behaviourism and social cognition.

**Behaviourism** asserts that attaching rewards and punishments to specific worker actions can shape how workers behave. In effect, workers can be conditioned to act in desired ways via positive and negative reinforcement. **Positive reinforcement** is essentially rewarding a worker when the worker demonstrates a desired behaviour in order to elicit further instances of the desired behaviour. **Negative reinforcement** is removing some sort of undesirable stimulus (such as no longer yelling at the worker) when a worker demonstrates a desired behaviour. (Negative reinforcement is different from punishment, wherein undesired behaviour results in sanctions.) Over time, behaviourism asserts, workers begin to exhibit the desired behaviour even when there is no more positive or negative reinforcement.13

The value of behaviourism is that it draws our attention to the fact that rewards and punishment affect learning and that this effect occurs both during and after the training process. For example, we might train workers to always walk around a vehicle to look for hazards or dangerous conditions prior to entering the vehicle and starting it up. This training may require positive reinforcement (e.g., praise) or punishment (e.g., discipline if the worker is observed not doing a walk-around). More importantly, behaviorism tells us that, if workers who act in accordance with their training are mocked by co-workers or hassled by their supervisor for holding up the delivery process, it is unlikely that the workers will continue to do vehicular walk-arounds. This suggests that training may need to also address workplace cultural practices if we want the training to be effective.

**Social cognition theory** asserts that learning occurs through observation and imitation and thus through formal and informal interactions with others. The social learning process typically begins by workers observing how others act and the consequences of those actions. Workers may then emulate safety
behaviours that appear successful for others, assuming the worker has the confidence and skill necessary to perform these actions. Box 8.3 highlights the time and support that are sometimes necessary for workers to successfully emulate safety behaviours and the need for workers to adapt such behaviours to the continually changing demands of work.

Social cognition theory also suggests workers are often able to manage their own safety behaviours through self-monitoring, self-evaluation, and self-rewarding. This belief in worker self-regulation stands in contrast to the external regulation emphasized in behaviourism. Behaviourism’s emphasis on external regulation of workers’ behaviours (i.e., workers cannot be trusted to act safely) sometimes harkens back to the negative views of workers embodied in the careless worker myth that we read about in Chapter 1.

**Box 8.3 Training versus learning**

Much of the literature about OHS training focuses on how and what to teach workers. Focusing the attention of safety trainers on how best to transmit information to workers in order to shape their attitudes or behaviours obscures research that suggests workers learn health and safety skills by performing activities (rather than via lectures or online tutorials).

A recent study of OHS training among Quebec apprentices found that young workers learned how to work safely while doing their jobs. But the strategies they employed (and indeed, could employ) depended on the circumstances of their job. For example, sometimes safety rules conflicted with productivity demands. In this situation, young workers learned to work as safely as they could while still meeting productivity requirements. Their degree of compliance with OHS rules depended upon how much “space” the workers had to comply with OHS practices. Workers were frequently forced to develop new work strategies to cope with competing demands while minimizing their risk of injury.

The study also found that even supposedly simple workplace tasks required time for workers to become skilled at them and able to perform them safely. One-time demonstrations of skills were generally not sufficient for workers to be able to replicate those tasks.
Further, trainers often omitted information that the trainers deemed to be common sense. Such omissions pose significant hazards for new workers, who may be unfamiliar with job materials and processes. Finally, new workers frequently were not shown how specific job tasks fit into the overall production process or alternative ways to complete work (which would expand their repertoire of safe work behaviours).

An important implication of this study is that, in developing safety training, it is important to be cognizant that learning about OHS is a process that extends beyond training and requires workers to develop OHS strategies that are effective in their workplaces. This suggests that ongoing attention to safety training of new workers is necessary. How these lessons can be reconciled with the finding that only 1 in 5 workers receive any OHS training during their first year with an employer is unclear.

More generally, learning theories draw our attention to the fact that training is not done to employees, but rather requires their participation. Consequently, the effectiveness of training is enhanced when it is developed with workers’ interests and preferences in mind. For example, an organization may provide WHMIS training primarily to comply with legislative requirements. Workers may be more engaged by the training if it is presented as a way to reduce their risk of injury from hazardous materials and is delivered using training methods that are both practical and interesting.

Skilled trainers also recognize that workers may have both vocational (i.e., job-related) and non-vocational goals when participating in training. Some workers may see training as a way to advance their careers or interact socially with co-workers, or simply as a novel experience. Creating room for workers to meet their non-vocational goals may increase their engagement with the job-related material. One way to better address the needs of workers is to involve workers in the development of the OHS training they must take.

As in other aspects of OHS, competing workplace interests shape training. Employers are conscious of productivity and the cost of training, and so they will prefer training that delivers the information quickly, inexpensively, and with minimal impact on production or service delivery. As noted above, workers’
interests in training are more varied. Union-sponsored safety education is normally the only alternative source of OHS training available to workers.

DEVELOPING TRAINING PROGRAMS

*Instructional design* is a process of systematically developing training to meet particular goals and objectives. Figure 8.1 provides an overview of the process. The process begins by conducting a *needs assessment* to determine what kind of training is required to meet organizational goals. *Organizational goals* for health and safety training often include meeting legislative requirements or seeking to reduce injury rates, enhancing (or remediating!) the organization’s reputation for safety, or qualifying for workers’ compensation premium rebates. Employers seek to meet these goals by changing workers’ knowledge, skills, or behaviours via training.

Identifying specific organizational goals often clarifies who needs to be trained and the nature of the training that is required. Continuing with the example started in the last section, an organization seeking to meet its obligation to provide WHMIS training would train those workers who will work with hazardous materials. The content of the training will be shaped by which hazardous materials were used in the workplace and the selected control strategies. Whether a workplace would retrain workers who had previously received training might depend upon the nature of the hazard (which may have changed over time), the control strategies adopted (e.g., some PPE may require workers to undergo periodic retraining), and the additional cost (if any) of the retraining.

The question of cost reminds us that a needs assessment is not an entirely technical undertaking. What training is needed is not always perfectly clear, and those responsible for designing training can legitimately choose among different training options. For example, do workers with no responsibility for containing chemical spills require this training? This discretion over how to train is exercised in a particular economic and political context. As we saw in Chapter 1, employers in capitalist economies are influenced by the profit imperative either directly or indirectly (in the case of public and non-profit sectors), which often causes them to seek to minimize labour costs (which include the cost of training). This often means that a needs assessment entails a cost-benefit analysis of the training, which may shape the kind of training employers choose to provide.
Once the broad organizational goals of training have been identified, our attention then shifts to planning the training program, including developing the specific training objectives and methods and selecting trainers. *Training objectives* typically identify what the worker is expected to know or be able to do at the end of the training and establish some level of acceptable post-training performance. Training objectives may also help employers identify materials (e.g., MSDSs, PPE, administrative procedures) required for workers to apply the training in the workplace. Carrying on with the earlier WHMIS training example, workers might be expected to identify the ways in which each type of hazardous material can cause harm and be able to perform any physical skills associated with the control strategy adopted for each hazard (e.g., monitoring ambient levels of a gas). They might also be expected to always comply with the control strategies when working with the materials after the training and face periodic evaluation of their compliance and potential sanction for non-compliance.

After the training objectives have been established, it becomes necessary to determine what *training methods* will be used to accomplish the objectives. Most of us have sat through classroom-based training at some point, and online training is becoming increasingly common because its cost is relatively low and it can be offered when it is convenient to the learner. As noted in Box 8.3, lecture- or demonstration-style training may not be the most effective way to
teach OHS skills and procedures. Experiential training (e.g., hands-on training or real-world simulations) may be more effective. It may also take more than a single demonstration or opportunity to practice for workers to become proficient at OHS skills and then integrate them into their work practices.

The final step in planning the training program is to select the trainer. Training may be provided by staff members or contracted to an outside provider. This decision is often based upon the required expertise (e.g., being licensed to provide training for particular kinds of equipment) and the cost. A common pitfall in OHS training is selecting a provider (who often has a pre-packaged program) before determining the training objectives and methods. This approach may reduce the effectiveness of the training, as usually training is not a one-size-fits-all proposition.

Techniques of delivering training are beyond the scope of this book, although the discussion above provides some examples of different delivery strategies. After the training has been delivered, it is important to evaluate the effectiveness of the training. There are four types of training outcomes that can be assessed and listed in ascending order of measurement difficulty:

- **Reaction**: Trainees’ satisfaction with the training venue, content, and activities is easy to assess (e.g., using a questionnaire). This information may be used to improve participants’ subjective experience of future training events but does little to assess the degree to which the training has met the training objectives.

- **Learning**: It is possible to measure the knowledge and skills trainees gained from the training through testing (e.g., multiple-choice quizzes, demonstrations). These measures are useful at measuring short-term outcomes of training. Learning outcomes can also be assessed partway through a longer training program in order to identify which aspects of the training require reinforcement or additional practice.

- **Behaviour**: OHS training often seeks to alter trainees’ behaviour, so measuring behavioural change in the workplace over time may be a useful assessment. This can be done through observation or by reference to indicators of desired behaviours (e.g., monitoring workers’ level of exposure to radiation). Box 8.4 examines a popular approach to safety training focused on behavioural measures.
• Results: The purpose of training may be to affect overall organizational performance (e.g., lower injury rates). When assessing such outcomes, it is important to be mindful of non-training factors that may affect organizational results and that a positive outcome may not be due to the training itself.

Box 8.4 Behaviour-based safety systems

Training is often said to be an effective means of reducing the incidence of workplace injury. For example, training workers to work safely is a key component of behaviour-based safety (BBS), a popular approach to OHS among employers. BBS views the workplace as a venue of measurable behaviour that can be properly shaped to prevent injuries. As its name implies, BBS draws heavily on a behaviourist view of learning and focuses on modifying worker behaviour via training-reinforced positive and negative feedback. For example, safety metrics (e.g., number of days without a time-loss injury) may be publicly posted and linked to rewards (e.g., cash bonuses or workplace events such as free pizza lunches). Such rewards certainly can shape worker behaviour. As we saw in Chapter 1, it is unclear, however, if these rewards cause workers to work more safely or simply alter their injury-reporting behaviours.

BBS focuses attention on observable behaviours, most of which are performed by workers. This approach tends to narrow the scope of safety inquiry, neglecting root causes of injuries and factors directly within employer control. In this way, BBS constructs injuries as the result of worker incompetence, inattentiveness, and carelessness, often (and incorrectly) claiming that up to 90% of injuries are caused by unsafe acts. Ignored in this approach to incident prevention are factors that are harder to observe, such as the (un)availability of safety equipment, unsafe production processes and job designs, pressure to work faster, and the employer failing to remedy known hazards.

Moreover, the solutions that flow from BBS tend to focus on modifying worker behaviour (via less effective forms of hazard control, such as administrative controls, PPE, and worker training) rather than
remedying the hazardous condition through elimination, substitution, or engineering controls. In this way, BBS leads to an entrenchment of a workplace culture of blaming the worker for mishaps. The United Steelworkers of America have provided a trenchant critique of BBS, showing that it facilitates greater management control over workers while providing “no mechanism for the workers to discipline management” for inadequate safety protection.18

BBS is a concrete example of how the different views of employers and workers about injury prevention can play out in the workplace. When conducting a needs assessment, it is important for OHS practitioners to be cognizant of the political context in which the training is occurring. This contextual awareness may also help identify the potential for worker resistance to the content or format of training based upon their workplace interests.

Assessment activities are often determined during the design phase. This approach tends to most closely align assessment with the training objectives and ensure assessment is appropriate for the chosen training method. Concluding the WHMIS example, if the organizational goal is meeting (and being seen to meet) legislative requirements around hazardous materials, this goal can be met by demonstrating that workers received the training. Assessing workers’ learning and behaviour might tell both the employer and the workers important things about the effectiveness of the training at imparting knowledge and skills and altering behaviour. That said, cost considerations might affect the degree to which the achievement of training objectives get measured.

**EMERGENCY PREPAREDNESS**

*Emergencies* are sudden events that pose a hazard to workers’ health and safety and require immediate action. Obvious examples include weather or transportation events such as the 2013 flood in Calgary, Alberta, or the tanker-car explosion in Lac-Mégantic, Quebec. Fortunately, most emergencies are of a much smaller scale. The release of hazardous gases at the Burnaby mushroom farm is an example. The workers had no warning that they would
be exposed to a powerful chemical hazard in a confined space, and the exposure rapidly incapacitated, injured, and killed them. While preventing such events is ideal, emergency plans can significantly mitigate the harm caused by emergencies.¹⁹

Like all HRAC activities, emergency planning begins by evaluating what hazards might trigger an emergency in the workplace. Emergencies can be caused by hazards specific to the workplace (e.g., a leak of dangerous chemicals in a hardware store) or by events outside the workplace (e.g., the risk of retail workers becoming ill during an outbreak of the flu). Once the most likely causes of an emergency at a workplace have been identified, it is necessary to consider how each cause would affect the workplace and how the underlying hazards can be controlled.

This process can lead to the development of one or more emergency plans that outline the steps necessary to respond effectively to the emergency. The details of these plans will differ based upon the nature of the hazard: a chemical spill obviously requires a different set of responses than a pandemic (see Box 8.5). There are three major phases to any emergency plan:

- Activation: It is necessary for someone to recognize that an emergency is occurring, activate the emergency plan, and communicate the emergency to workers and any relevant authorities or other affected persons. An activation protocol may identify the circumstances that create an emergency (e.g., triggering events or circumstances) and the steps to commence the emergency response.

- Evacuation, rescue, or shelter: Emergencies may require the evacuation of some or all workers. Evacuation routes (including alternative routes), muster points, and a means of determining whether an evacuation is complete are important components of an emergency plan. Depending upon the circumstances, an evacuation plan may also direct the shutdown of certain work processes and the treatment or further evacuation of injured workers. Some hazards—such as chemical hazards in confined spaces—may require specialized rescue skills or equipment in order to evacuate workers before further harm occurs. Other hazards—such as extreme weather—may require workers to take shelter on site.
• Ongoing management: A protocol for managing an ongoing emergency is helpful once the initial phase of the emergency has passed. While we tend to think of emergencies as single dramatic events, an emergency may entail an ongoing set of events such as the pandemic discussed in Box 8.5. Ongoing management might include plans to secure equipment and information, ensuring there is a means of communicating with staff and for staff to communicate with their families, a media relations plan, the provision of assistance to help employees cope with their reactions to the event, and a business-resumption plan.

Emergency planning can be much more complicated when the worksite changes frequently (e.g., in construction) or is mobile (e.g., in oil-and-gas exploration). Knowing there is an emergency and developing evacuation protocols is much more difficult when facing constantly shifting circumstances.

Emergency planning is linked to safety training because all workers need to know what to do and where to go in the event of an emergency. Emergency responders (people assigned to respond to the emergency) require additional levels of training to spot hazards and engage an effective response (e.g., evacuate injured workers, stop a gas leak). Part of emergency preparedness is a comprehensive training plan for each worker at the level they require it.

Box 8.5 OHS implications of pandemics

A pandemic is the sudden outbreak of a disease that affects a large portion of the population due to a lack of natural immunity. A pandemic has significant implications for OHS, particularly in the health-care and service sectors. Not only can workers contract the illness in their workplace, but a widespread pandemic can create new hazards. For example, staff may need to perform tasks they are unfamiliar with or untrained for as other workers fail to report due to illness, fear, or being required to care for others.

Thinking a bit more broadly, equipment and materials may become scarce due to demand or logistics problems. Utilities (e.g., water, power) may be also become unreliable due to high levels of worker absenteeism. Quarantine procedures might significantly affect the
availability of workers, while high demand might limit access to emergency and medical services. Such issues may create a series of cascading OHS hazards in the workplace.

Severe Acute Respiratory Syndrome (SARS) provides a useful case study. In late 2002, a patient in China’s Guangdong province fell ill with an atypical case of pneumonia. Additional cases appeared in the following months, and the disease was spread to Hong Kong by a health-care worker who attended a family wedding in February 2003. One of the dozen people affected in Hong Kong was a 78-year-old woman who returned home to Toronto, Ontario, and became the Canadian index case (the first case that indicates the existence of an outbreak).

The woman died and a family member who provided care for her was hospitalized, resulting in the disease spreading to other patients and staff. In the end, there were up to six generations of disease transmission, and health-care workers comprised 43% of those who fell ill with SARS. There were 44 SARS-related deaths in Canada and over 400 people became ill, while 25,000 people were quarantined. Globally, the death toll was 916, approximately 11% of all who fell ill with SARS.

This emergency required significant changes to normal patient-handling protocols in the health-care system. Despite enacting emergency protocols to contain the pandemic, some workers who fell ill with SARS also experienced long-term physical health consequences as a result of the disease (or its treatment). Others, including health-care workers, experienced post-traumatic stress. The SARS experience resulted in the widespread introduction of pandemic plans in the Canadian public sector. Comprehensive data is lacking, but practitioners estimate that fewer than 10% of private-sector organizations have pandemic plans.

SUMMARY

Health and safety training can play an important role in reducing the number and severity of workplace injuries. The five workers who were injured or killed at the Langley mushroom farm in 2008 were harmed because they were
exposed to uncontrolled hazards. While controlling these hazards through elimination, substitution, or engineering controls would have been the best way to prevent this incident, informing the workers about the well-known risks associated with manure composting and enclosed spaces and providing them with the training and equipment necessary to do the work safely might have also prevented it. Even if a hazard is controlled through engineering controls, there is still a need to ensure workers understand the nature of the hazards that could exist if the engineering control failed. Indeed, even providing the workers with basic training about their workplace rights and the hazard recognition process might have prevented the incident or reduced its consequences.

In this case, the employer appeared ignorant of the hazards in the workplace and therefore did not see any reason to provide training. Circumstances like these—where the employer may be unqualified to run their business in a safe manner—is one of the reasons that all Canadian jurisdictions have OHS inspection programs. Had the employer been made aware of the hazard and its obligations to control the hazard, it is possible that these workers would still be alive. Similarly, if the employer had an emergency response plan, it is possible that some of these workers would have avoided injury when attempting to rescue their colleagues.

Discussion Questions

- What purpose(s) does health and safety training serve?
- Identify five different instances of health and safety training that you have experienced or have heard about. Which do you think is most important and why?
- Why might you include workers in the development of OHS training? Why might you want to exclude them?
- If you were developing OHS training, would you lean toward behaviourism or social cognition theory? Explain your choice.
- What are the major components of an emergency preparedness plan? Which is the most important from the perspective of workers?
EXERCISE

Go online and find the WorkSafeBC Incident Investigation Report for the mushroom farm deaths detailed at the beginning of this chapter. WorkSafeBC also provided an animated video recreation of the incident that you may wish to view. After familiarizing yourself with the facts of this incident, complete the following tasks:

1. Identify two types of training that the employers could have provided to these workers that might have altered the outcome of this incident. In 200 words, explain why you selected each type of training and how you believe it would have altered the course of this incident.

2. Go online and identify a provider of each kind of training in your area.

3. Identify two non-training ways (i.e., controls) by which this incident could have been prevented. In 200 words, discuss whether you think these controls would have been more or less effective in altering the outcome of this incident than providing training and why you think this.

NOTES


2 Ibid., p. 45.


4 The Bloody Lucky campaign remains available online at www.bloodylucky.ca. An alternative link is http://www.youtube.com/watch?v=ok5CFOOGzE8

6 You can see this video here: http://www.youtube.com/watch?v=0Haa4QImf4o&list=PLBE242CF787FoBfO&index=1.
9 Case summarized from Wilson v. Medicine Hat (City of), 2000 ABCA 247, and from files compiled by one of the co-authors.
14 Ibid.
19 A good introduction to emergency planning in Canada is available here: http://www.ccohs.ca/pandemic/pdf/Business_continuity.pdf
21 This report was located here: http://www.worksafebc.com/news_room/news_releases/assets/nr_11_25_11/IIR2008095610260.pdf
22 This video was located here: http://www2.worksafebc.com/Publications/Multimedia/Videos.asp?ReportID=36644&_ga=1.146528498.73131700.1391040249