

LESSON 1

An Introduction to Worker Safety



Description:

Students are introduced to the issue of worker safety through a discussion about workplace injuries and hazards and a disability exercise.

Learner Outcomes:

Students will be able to do the following:

1. Give examples of workplace injuries and illnesses.
2. Define the term “workplace hazard.”
3. Perceive that worker safety is an important issue for adolescents, because many of them are or soon will be working.
4. Perceive that workplace injuries or illnesses could affect them personally or those close to them.

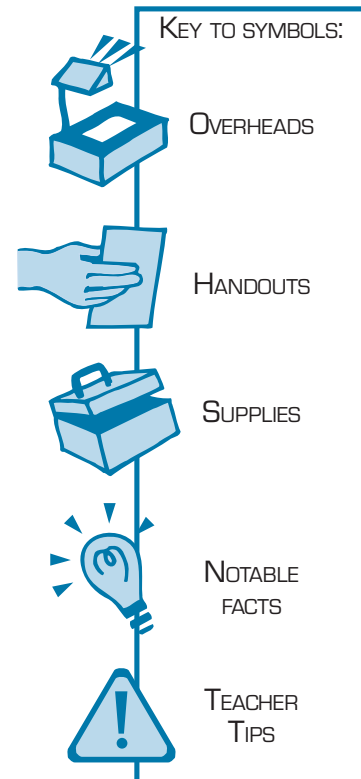
5. Perceive that worker safety is important, because they could become injured or ill from workplace hazards and because some of those injuries or illnesses could cause permanent impairments.

Key Concepts:

1. Workplace safety is an important issue for all workers.
2. Workers may become **permanently** impaired by workplace injuries or illnesses.
3. A workplace hazard is anything at work that can harm a person — physically or mentally.

Fact:

Virtually all Americans have held regular jobs by the time they reach 20 years of age. Work is the leading cause of injury for teens age 17 or older.¹ Injuries are common; almost 10% of working teenagers are injured at work each year.



Materials

Needed:

- Overhead 1.1 (one overhead per class; class examples will be used in Lessons 2 and 3)
- Letter to parents/teachers
- Disability props (e.g., ear plugs, athletic tape, face make-up or nose and scar wax, arm slings, crutches, or wheelchair)
- Scissors
- “Performance Criteria and Checklist” handout (one per student)
- “Injury Scenarios” sheet
- “My Experience With A Workplace Disability” handout (one per student)
- Workplace hazard fact sheets (one set per student)

Preparation Needed:

1. Read through the “Introduction To Worker Safety Issues” section on pages vii-x in this curriculum. **You may want to share the information in this introduction with students during your class discussion.**
2. Make copies of the handouts (one per student).
3. Make copies of the workplace hazard fact sheets (one set per student). You may want to make classroom sets rather than individual sets.
4. Read through the workplace hazard fact sheets, so you are familiar with the categories of hazards and the examples within each category.
5. Set up the overhead projector and overhead.
6. Inform school staff of the disability exercise, since it may impact them in other classes. A prepared letter of explanation is included in this lesson. It can be distributed to other teachers, sent home with students to describe the exercise to their parents, or both.
7. Prepare the disability exercise materials, including cutting the tape into pieces of the correct size. You can order athletic tape and inexpensive ear plugs from school supply catalogs. Ask your school nurse for arm slings, crutches, or wheelchairs. Ask your drama department for the face makeup.

Directions:

Life After An Injury — Part I:

Simulated Disability Experience (10 minutes)

Begin this exercise right after the students enter the classroom to allow students in-class time to experience their disabilities. As with any newly disabled person, it may take the students time to adjust to their disabilities. To mirror life, students should not choose what disabilities they are given.

1. Explain:
In order to help you understand what it might feel like to experience a serious and permanent work injury, I would like each of you to participate in a little experiment.

I am going to give each of you a simulated disability. It may be a loss of hearing. It may be an amputated thumb on your dominant hand. It may be an amputated arm, a broken leg, or a scar on your face.

TEACHER TIP:

Assign disabilities to students the day before. Then set up stations at which students can pick up their disabilities when they first arrive at school.



I want to challenge each of you to wear this “disability” until you go to sleep tonight. Your parents and other teachers know what we are doing.

During the day, be aware of what you can and cannot do, what you think or feel about the situation, how you might need to adapt your activities, and how people react to you. We will discuss your experiences in our next class. It may seem uncomfortable or embarrassing, but imagine if you really did have this disability. You would be experiencing the very same feelings.

2. Give each student in the room one of the following: ear plugs; a piece of 12-inch athletic tape to tape down the thumb of their dominant hand; face make-up (scar and nose wax) to mold a disfigurement or make a scar on their face; or other items you may be able to borrow from your school nurse, such as arm slings, crutches, or wheelchairs.
3. Explain:
I have given something to each of you.



EAR PLUGS, TAPE, MAKE-UP,
OTHER ITEMS

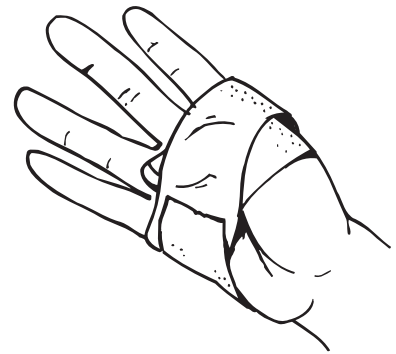
a. **For those with ear plugs**, squish each ear plug so the end going in your ear is smaller. Pull the ear backward and gently insert one ear plug into each ear. The ear plug should be lodged in place without hurting.

b. **For those with thumb tape**, tape the thumb on your dominant hand (the hand you write or eat with). Stretch the thumb toward your palm. Tape your thumb in place so that it cannot move but is still comfortable.

c. **For those with arm slings, crutches, or wheelchairs**, please see me for special instructions.

(Consult with your school nurse for specialized instructions and safeguards.)

d. **For the facial disfigurement**, make a scar or some kind of mark on your face with a portion of the nose and scar wax or the face make-up.



Have only one or two people per class do this example. Other kinds of scar-making material can be substituted for the scar and nose wax, if you are unable to obtain this product. You may choose to buy a ready-made scar, or you might have another idea about how to construct a facial disfigurement. Creativity is encouraged in this exercise.

Add any other disabilities you can think of. Make sure you do not ask students to do anything that could put them at risk of injury.

Injury in the Workplace Discussion

(30 minutes)



“PERFORMANCE CRITERIA
AND CHECKLIST” HANDOUT

1. Give each student a copy of the “Performance Criteria and Checklist.” Explain to the students that their participation in the next five class sessions will be graded using the criteria outlined on this form. Read through the form and answer any questions students may have about the tasks or the quality of work expected.

Students can keep track of their progress by placing an X in the left-hand column as they complete each task. **Take time at the end of each class period to have students check off tasks they completed that day.** At the end of the unit, teachers should review each student’s work and place an X or grade next to each task that he or she has completed.

2. Have each student get out a piece of paper and a pencil or pen. Say: **Write down three careers you are interested in and three things you enjoy doing in your free time.**
3. Ask a few students to share what they wrote. After each student shares, ask him or her what would happen to their career aspirations or free time pursuits, if they were seriously and permanently injured. For example, if they broke their back and were paralyzed or lost an arm, leg, or thumb on their dominant hand.

Students may say they would continue pursuing these things. Briefly discuss the hurdles they would have to overcome to be able to continue pursuing these things.

4. Explain:
None of us ever expects to be injured in this way. But if we were, it could change our lives. We might still pursue our dreams and past times, but the pursuit would be much more difficult.

For the next five (or nine) class periods, we are going to be talking about a very important topic—staying safe at work. Believe it or not, it is fairly common for people to be injured at work. In fact, one out of ten teenagers gets hurt at work every year. If our whole class were working, that would mean _____ (insert a number representing 10% of your class) of you could get hurt this year.

That percentage is high. Some of those injuries are really serious. Some teens even die. For those of you who are working, this is an important topic for you now. For those of you who aren’t working yet, these classes will provide you with information to be safer at work in the future. What

we are going to be learning could protect you from being seriously hurt or killed!

Most of you have career goals. Each of you enjoys doing a lot of fun things in your free time. A serious work injury could put an end to those pursuits or make them extremely difficult to pursue. We want to do all we can to make sure that doesn't happen.

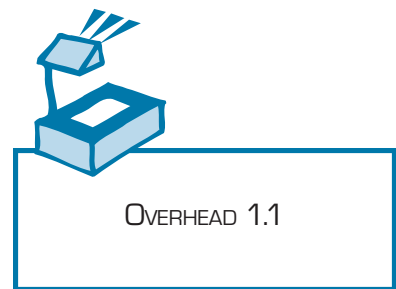
5. Explain:

Let's spend a few minutes talking about the work experiences you or others you know have had.

- How many of you have ever worked?
- What jobs have you had?
- How many of you plan to work in the near future?
- How many of you have brothers or sisters who work?
- Do you know someone who became injured or ill because of work?

6. Write students' examples of workplace injuries or illnesses in the left column on Overhead 1.1. Cover up the right column for now. Make a separate overhead for each class period. The following are questions you can ask to promote more discussion of the injury events, if necessary:

- How did the injury or illness happen?
- What was the result of this injury or illness?
- Was the injury or illness temporary or permanent?
- How did this person's life change (even temporarily)?
- How would you feel, if you were in the same situation?
- Do you think an injury or illness such as this one is common?
- Do you think an injury or illness such as this one could happen to you?



7. The goal of this discussion and your questions is to help students realize that worker safety is an important issue for them personally. Take enough class time to allow your students to talk about as many examples as possible.

Your role is to draw as many students as possible into the discussion. This discussion sets the stage for students developing a personal interest in worker safety and health.

If students do not have examples of their own, use the scenarios provided at the end of this lesson or news stories involving teen work injuries. You do not need to use both the scenarios and student examples.



A workplace hazard is anything at work that can harm us—physically or mentally.



WORKPLACE HAZARD FACTS
HANDOUTS

8. Ask:
Based on these examples, do you think worker safety is an important issue? Why? Why not?

Allow two or three students to express their view.

9. Explain:
Some people may think workplace injuries and illnesses happen because people do “stupid” things. They are sure they would never do the same. The fact is, we **all** make mistakes. All of us, no matter how intelligent we are, make mistakes. We **all** could get injured at work.

To prevent injuries, we need to make the workplace safe, not rely on people to always act safely. The first step in making the workplace safe is to identify the hazards that are there.

Introduction to Workplace Hazards (10 minutes)

1. Explain:
The examples of workplace injuries or illnesses we just discussed all involved “workplace hazards.”

Write the following definition on the board:

- *A workplace hazard is anything at work that can harm us—physically or mentally.*

A workplace hazard is the thing that **caused an injury, not the injury itself**. For example, a burn on your arm is not the hazard. It is the hot oil or hot oven that caused the burn. A broken arm is not the hazard. It is the elevation or height from which you fell.

Special Note: Students have a tendency to identify the hazard as the event. They may state that the “fall” is the hazard instead of the “height,” which is the real hazard. Reviewing these examples before the class session will help you feel prepared and comfortable discussing the hazard situations with your students.

2. Give each student a set of the workplace hazard fact sheets.

Say:

Here are some examples of different types of hazards. Take a few minutes to read through them.

Allow students five minutes to read through the fact sheets. You may want to discuss some of the “Did You Know??” examples with your students. Additional information about these hazards can be found in the educational resources listed in the back portion of this curriculum.

3. Explain:

Hazards exist in most jobs. To prevent injuries, it is very important that we know what hazards to look for in the workplace. Next session, we will talk more about how to identify hazards in a workplace.

4. Have students read through their “Performance Criteria and Checklist” and check those Lesson 1 activities they completed today.



“PERFORMANCE CRITERIA AND CHECKLIST”
AND
“MY EXPERIENCE WITH A WORKPLACE DISABILITY”
HANDOUTS

Taking It Home:

Have students complete the following homework assignment. Give each student a copy of the “My Experience With A Workplace Disability” hand-out or write the assignment on a chalkboard.

Explain:

Write a two- to three-paragraph essay discussing your experience wearing the ear plugs, arm sling, taped down thumb, crutches, wheelchair, or scar on your face. Focus on how you felt, what you thought, and what you could and could not do.

Also, describe how this disability would affect the three careers and three free time activities you listed at the beginning of the class period. Be prepared to discuss and hand in your essay during the next session.

Footnotes:

¹ Brooks, D.R., Davis, L.K., and S.S. Gallagher. “Work-related Injuries Among Massachusetts Children: A Study Based On Emergency Department Data.” *American Journal of Industrial Medicine* 24 (1993): 313-324.

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Overhead 1.1

Workplace Injury
Or Illness Examples

Hazards Causing
The Injury/Illness

Class Period: _____

Date

Dear Parent/Teacher:

Students in my class are learning about the importance of worker safety. Most teenagers are or soon will be involved in the working world. Unfortunately, work-related injuries are common among adolescents. Some of these injuries can result in permanent injury, disfigurement, or even death.

We are teaching students about worker safety to help them become more aware of hazards in the workplace and how injuries or illnesses from those hazards can be prevented.

To increase students' appreciation for worker safety, they are being asked to participate in a day-long exercise that will simulate the experience of living with a physical impairment due to a work injury. These simulated impairments include: hearing loss (wearing earplugs); arm amputations (wearing arm slings); thumb amputations (immobilizing thumbs with tape); or facial disfigurements (wearing fake scars).

Students will be asked to "wear" these physical impairments throughout the whole day on (Add date here) so as to gain an appreciation for the long-term impact work-related injuries may have on their lives.

This exercise may limit students' participation somewhat in other classes or duties at home. We are asking for your cooperation in this exercise. We hope this day of inconvenience will provide long-term benefits of increased student awareness of the consequences of work-related injury.

We appreciate your willingness to allow your student(s) to participate in this exercise. Discussion of students' feelings and the personal challenges associated with having a disability is encouraged. If you have any concerns or questions, please contact me.

Sincerely,

Name
Teaching Position
School
Phone Number

Name: _____ Class Period: _____

Performance Criteria and Checklist

Place a check mark in the appropriate box when the criterion is met. Corresponding lessons are listed in ().

Student Checklist	Performance Criteria	Teacher Checklist
	1. Accurately defines what a hazard is. (1 and 2)	
	2. Identifies common hazards found in the workplace. (1, 2, 4)	
	3. Creates a hazard map that is accurate and thorough. (2 and 4)	
	4. Writes clearly and in an organized and thorough manner. (1, 3, 4)	
	5. Participates fully in class discussions. (1, 2, 3, 4, and 5)	
	6. Participates fully in small group projects. Completes equal amounts of work and interacts respectfully with other group members. (2 and 4)	
	7. Prepares thorough, organized, and creative class presentations. (5)	
The following decision-making criteria should be met when developing safety action plans:		
	8. Accurately identifies the major hazards in a simulated workplace. (1, 2, and 4)	
	9. Develops a logical list of preventative steps to deal with at least four of these hazards. (3 and 4)	
	10. Identifies and prioritizes a logical list of criteria for choosing these preventative steps. (4)	
	11. Clearly explains how criteria were used to select the order of preventative steps. (4 and 5)	

Injury Scenarios

To be used if students do not come up with examples. These events actually took place in Minnesota.

Case # 1: A 12-year-old farm boy was injured when he came in contact with the shaft of an auger while loading corn. His arm was broken and his right thumb was severed, resulting in amputation and extensive blood loss. He was hospitalized for eleven days and had three surgeries in an attempt to save his thumb. He is back in school, but, because he is right-handed, has had to adapt to writing with four fingers.

Case # 2: A 17-year-old was working at a construction site. He was riding on the side of a bulldozer being driven by another 17-year-old. As the equipment was going over an old railroad bridge, the bridge collapsed. The bulldozer fell into the creek below and the 17-year-old passenger, who was caught beneath it, drowned. The driver watched helplessly as his friend died. It is illegal for 17-year-olds to be working at construction sites.

Case # 3: A 16-year-old girl was working at a local grocery store. After packing an especially heavy order, she was asked to carry the groceries out to the car. As she was lifting the bags from the carrying cart into the trunk of the car, she felt a pull in her lower back. When she stood up she realized she had strained her back.

Case # 4: An 18-year-old boy was snowblowing the church driveway when the snowblower became clogged with wet snow. He was using his right hand to unclog it when the blade caught his glove and pulled his hand in. His index and middle fingers were amputated to the first joint.

Case # 5: A 13-year-old was killed while helping his father remove corn from a grain bin. The boy climbed to the roof of the bin and opened the cover. He sat on the roof ladder watching the corn being removed.

After fifteen minutes, the boy's father noticed his son was no longer on the ladder. He climbed the ladder to look in the bin but did not see his son. When he returned to the ground, he saw a tennis shoe come out the discharge opening. He stopped the auger and went for help. The boy was removed from the bin but later died.

Case # 6: An 18-year-old girl was cleaning the blade of a meat slicer. The scrubbing pad slipped, and her hand went under the blade. She severely cut her right thumb.

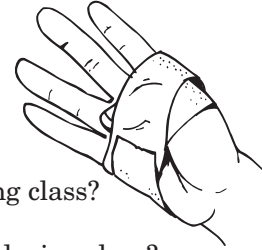
Case # 7: A 17-year-old boy was helping paint the barn on his family's farm. He was on a ladder 12 feet above the ground. As he was reaching to paint a spot, his foot slipped and he fell to the ground. The boy severed his spine and was paralyzed from the waist down. He is now learning to adjust to life in a wheelchair.

Case # 8: A 16-year-old girl was working at a fast food restaurant. She was asked to filter some hot oil. She was carrying it outside, when her foot slipped on the greasy floor and the oil spilled, burning her right arm and leg.

My Experience With A Workplace Disability




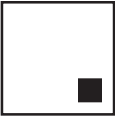



Write a two- to three-paragraph essay below discussing your experience with a simulated disability. Focus on answering the following questions:

- How did you feel having the disability?
- What couldn't you do?
- What could you do but differently than usual?
- How would this disability affect the three career choices you listed during class?
- How would this disability affect the three free time activities you listed during class?



Workplace Physical Hazard Facts

Workplace physical hazards cause injuries or illnesses by transferring energy between objects and workers.






	Type of Physical Hazard	Examples	Did You Know??
	Elevations or Heights —Any situation in which a person may fall or have objects fall on them.	Ladder Elevated walkway Walkway over a pit Stairs Boxes on a high shelf	If you fall three feet and hit your head, it will cause injuries similar to running as fast as you can into a brick wall.
	Slippery Surfaces —Wet or oily surfaces can cause falls.	Wet floor Waxed floor Oily/greasy floor	Strains and sprains are some of the most common injuries among construction workers. Falls due to unstable footing, holes, and falls from scaffolding and ladders are very common.
	Electricity —Electrocution can result when a person comes in contact with an electrical current, either indoors or outdoors.	Electrical wire Electrical outlet Lightning Batteries Electrical equipment	Electrical injuries may not look immediately serious. However, as the electricity passes through a person's body, it causes extensive internal injuries. These injuries gradually may get worse after the electrocution.
	Confined Spaces —Any space with limited openings and poor ventilation may cause harm due to toxic gases or lack of oxygen.	Grain bin Manure pit Underground pipe	You can lose consciousness in a manure pit within a few breaths and have brain damage within two minutes.
	Noise —Loud noises can damage a person's hearing suddenly or gradually over time.	Tractor engine Explosives Loud music Machinery Power tools	At first, loud noises may cause only a temporary loss in hearing. This effect may last up to a full day. Continued exposure to loud noises can result in permanent hearing loss.
	Sharp Objects —Any sharp object that is operated or held in the hand(s) can cause cuts or even amputations.	Power saw Meat slicer Box cutter Knife	Each year, almost 15,000 American workers lose at least one finger.
	Moving Parts —Moving parts, both slow and fast, can cause bodily harm, such as amputation or crushing.	Power takeoff Engine parts Drill Auger	If you become entangled in a power takeoff rotating at 1000 rpm, over five feet of clothing can become entangled in less than one second!

Workplace Physical Hazard Facts (continued)

Type of Physical Hazard	Examples	Did You Know???
	<p>Repetitive Motions— Computer keyboard Assembly lines</p>	<p>Physical injuries, such as carpal tunnel syndrome, may develop as a result of repetitive motions, even though the motions seem easy.</p>
	<p>Heavy Loads—Loads that are too heavy or that are lifted improperly may cause back or neck injuries.</p>	<p>Back strains are the most common work injury. However, many workers also have chronic knee or shoulder problems.</p>
	<p>Heavy Machinery—A person can be run over, rolled on, or crushed by large machinery.</p>	<p>An average of six to nine Minnesota farmers die each year in accidents involving large machinery.</p>
	<p>Heat—Any hot surface or overexposure to sunlight may cause burns and dehydration.</p>	<p>A healthy worker can lose over 16 pounds of sweat in an eight-hour workday. This sweating can easily cause heat stress.</p>
	<p>Cold—Overexposure to cold or being trapped in a cold place may cause frostbite, hypothermia, and, potentially, death.</p>	<p>When you are cold, your body automatically decreases the amount of blood going to your skin. This decrease in blood flow to the skin keeps your inner body temperature higher by limiting heat loss. An inner body temperature of 95 degrees or less is a true emergency.</p>
	<p>Weapons—Weapons may be misused, causing injury to self and others. Workplaces may be robbed by people using weapons.</p>	<p>The United States leads the industrialized world in rates of firearm deaths among children. In 1997, the Federal Centers for Disease Control and Prevention reported that 86 percent of firearm deaths among children less than 15 years old occurred in the U.S.</p>
	<p>Miscellaneous—Any other physical objects that can cause injury or illness.</p>	<p>Accidental exposures to x-rays are numerous and often involve extremely high exposures to small portions of the body. Most accidental exposures happen during non-routine uses, such as when equipment is partially disassembled or shield covers had been removed.</p>




Workplace Chemical Hazard Facts

Workplace chemical hazards are chemicals that may cause injury or illness to workers if they are inhaled, swallowed, or absorbed through the skin. Chemicals may also cause explosions.

	Form of Chemical Hazard	Examples	Did You Know??
	Solid —Any chemical found in a solid form.	Dry Paint	Dry paint may contain lead. It tastes sweet and is sometimes eaten by small children. Ingestion of lead paint may cause brain damage.
	Dusts —Dusts are tiny particles of solids. You may be exposed to dust from materials that are already in dust form, or from work processes that create dust.	Bags of cement Glass fibers Asbestos Some herbicides	Under certain conditions, dusts can explode (for example, in a silo or flour mill). During the 1960's, asbestos had over 3,000 uses. Today, asbestos is known to cause lung cancer.
	Liquid —Any chemical found in a liquid form at room temperature. Liquid chemicals may cause poisoning by ingestion, inhalation, or absorption.	Fertilizers Herbicides Pesticides Paints Cleaners	Pesticides are used to kill animals, and, so, can be very poisonous to humans.
	Vapors —Vapors are tiny drops of liquid that are suspended in the air. Vapors from some chemicals may irritate the eyes and skin.	Cleaners Paints Pesticides	Some paints may contain lead or mercury. Both of these may affect small children more than adults. Both may cause brain damage.
	Gases —Some chemicals are in gas form when they are at room temperature. Other solid or liquid chemicals become gases when they are heated.	Aerosols Carbon monoxide Vehicle fumes Grain silo gases Hydrogen sulfide	Hydrogen sulfide gas from manure pits may cause a person to become unconscious in as few as two breaths. A few breaths more will cause death. Never enter a manure pit without proper protective equipment!

Workplace Biological Hazard Facts

Workplace biological hazards are living things or their byproducts that may cause injury or illness to workers.

	Type of Biological Hazard	Examples	Did You Know???
	Animals —A variety of injuries and illnesses can be caused by physical contact with an animal or its byproducts (such as its wastes).	Bites Skin contact Dander Manure Manure pits	An estimated 10-20% of individuals working with rodents, rabbits, cats, and other animals may eventually develop allergies and asthma.
	Humans —A variety of illnesses may be passed from one person to another through contact with the infected person's bodily fluids.	Blood Saliva Mucus Human waste	One drop of HIV- or hepatitis-infected blood in a needle, if it pricks a health care worker, may transmit disease.
	Plants —A variety of illnesses may be caused by contact with plants or portions of plants.	Grain dust Moldy hay Pollen	Dusts from moldy hay or other types of mold may cause an acute illness that acts like the flu. This illness may last several weeks.