



Career and Technical Education Health and Safety Education Guide



Randy I. Dorn
State Superintendent of
Public Instruction

August 2009

Office of Superintendent of Public Instruction
Old Capitol Building
P.O. Box 47200
Olympia, WA 98504-7200

For more information about the contents
of this document, please contact:
Robyn Buck, OSPI
E-mail: robyn.buck@k12.wa.us
Phone: 360.725.0417

To order more copies of this document,
please call 1-888-59-LEARN (1-888-595-3276)
or visit our Web site at <http://www.k12.wa.us/publications>

Please refer to the document number below for quicker service:
09-0022

This document is available online at:
www.careerandcollegeready.com

This material is available in alternative format upon request.
Contact the Resource Center at (888) 595-3276, TTY (360) 664-3631.

Career and Technical Education Health and Safety Education Guide

Prepared by:
Robyn Buck, Program Supervisor, Health Science

Career and Technical Education
Office of Superintendent of Public Instruction
Betty Klattenhoff, Director

Randy I. Dorn
Superintendent of Public Instruction

Ken Kanikeberg
Chief of Staff

August 2009

TABLE OF CONTENTS

ACCIDENT PREVENTION AND GENERAL SAFETY	1
ELECTRICAL SAFETY	4
ERGONOMICS	7
FIRE SAFETY	10
HAZARDOUS MATERIALS	13
PREVENTING SLIPS, TRIPS AND FALLS	18
UNIVERSAL PRECAUTIONS, BLOODBORNE PATHOGENS AND OPIM'S	22

*This document provides basic safety information (with sample quizzes for instructor use) to be used with **all CTE students**, in **all clusters** and **pathways**.*

*This general safety guide provides a **minimum level** of safety training for CTE students. It is not exhaustive and should not be considered the authoritative safety document for CTE students. Instructors and administrators should work closely with the **district risk management offices** to supplement this information.*

ACCIDENT PREVENTION AND GENERAL SAFETY

Each student will be given a safety orientation by their instructor. It will include the following:

Basic safety rules

- Never do anything unsafe in order to get a job done. If an activity is unsafe, report it to your instructor immediately.
- Do not remove or disable any safety device.
- Never operate a piece of equipment unless you have been trained and are authorized to use it.
- Use the appropriate PPE (personal protective equipment) as described by your instructor.
- Obey all safety warning signs
- Horseplay, running and fighting are prohibited.
- Clean up spills immediately. Replace all tools, supplies and equipment immediately after use. Good housekeeping helps prevent accidents.

How and when to report injuries and where first aid facilities are located

- If you are injured or become ill, report this to your instructor immediately
- All CTE classrooms have a first aid kit. Your instructor will show you where it is located.
- All CTE instructors are first aid and CPR trained and certified.

How to report unsafe conditions and practices

If you see something unsafe, or someone working in an unsafe manner, immediately report this to your instructor.

What to do in an emergency, including how to exit the workplace

Your instructor will guide you in locating the location of exits, fire extinguishers, first aid kits, and assembly locations to be used in the event of an emergency.

Fire emergency (covered later in this safety guide in its own section).

Earthquake emergency

- Drop under a desk or table, cover your head and hold on. Stay away from windows, heavy cabinets, bookcases or glass dividers.
- When the shaking stops, your instructor will check for damage, and available evacuation routes.
- Instructor will coordinate the evacuation to the designated assembly location.
- Instructor should account for each student as quickly as possible. Students must check in at the designated assembly location. Students should realize that others may risk their lives trying to find a missing student.
- Do not approach or touch downed power lines or objects touched by downed power lines
- Do not use the phone except for emergency use.

Identification of hazardous chemicals used at this location (this topic will be covered in detail later in this safety manual).

Use and care of required personal protective equipment (PPE)

- Your instructor will provide access, training and maintenance for all PPE that is required in your classroom.
- The instructor will follow the manufacturer's instructions for the use and care of PPE.

Reference:

- Washington State Department of Labor and Industries
<http://www.lni.wa.gov/Safety/Basics/Programs/Accident/default.htm>
- Washington Administrative Code, [WAC 296-800-14005](#)

ACCIDENT PREVENTION AND GENERAL SAFETY QUIZ

Circle the correct answer:

1. True or False: It is ok to disable or remove a safety device if it gets in your way (FALSE).

2. True or False: All CTE Instructors have current CPR and First Aid training and certification (True).

3. List three things you should know the location of in order to be safe in your classroom or lab.

1. _____
2. _____
3. _____

(Possible responses: emergency exits, fire extinguisher, fire alarm pull box, first aid kit, where to assemble after an emergency evacuation).

4. If you see something unsafe or someone working in an unsafe manner, you should (circle the correct answer)

- A. Ignore them, as it is none of your concern
- B. Write about it in your end of class evaluation so they can fix the problem for the next year.
- C. Immediately report it to your instructor. (Correct answer)

5. In case of an earthquake, you should (circle all that apply)

- A. Drop under a table or desk and cover your head with your arms. (Correct answer = A and C)
- B. Run outside as soon as you feel movement so you won't get stuck in the building.
- C. Follow the instructors lead on evacuation and designated assembly location. (A and C)
- D. Collect all your personal items before leaving the building.

ELECTRICAL SAFETY

Basic facts

- Operating an electrical switch is like turning on a water faucet. Behind the faucet (or switch) there is a source of water (or electricity), a way to transport it, and pressure to make it flow.
- Three factors determine the electrical resistance of a substance: What it is made of, its size and its temperature.
- Substances with *very little* resistance to the flow of electricity are called **conductors**. Metal is an example of a conductor.
- Substances with *high resistance* that are able to prevent the flow of electricity are called **insulators**. Examples of insulators include glass, porcelain, plastic and dry wood.
- When human skin is dry, it is a poor conductor. But *when moist* (perspiration or with water in the environment), **skin readily conducts electricity**. Use *extreme caution* when skin may be damp or wet.
- **Electricity** travels in **closed circuits**.
- *Grounding* a tool means intentionally creating a low-resistance path to the earth.
- *Shocks* result when the body becomes part of the electrical circuit.

Shocks

- Typically occur when a person contacts both wires of an energized circuit, one wire of the energized circuit and the ground, or a metallic part in contact with an energized wire and the ground.
- Effects from shocks can range from a barely perceptible tingle to severe burns and immediate cardiac arrest.

Areas of special concern

- *Contact with power lines*: Overhead and buried power lines are especially hazardous because they carry extremely high voltage. *To avoid hazards*: follow posted warning signs, contact utilities for buried power line locations, stay 10-ft or more away from overhead lines, de-energize and ground lines when working near them, and use non-conductive wood or fiberglass ladders near power lines.
- *Cranes and derricks*: 30% of electrical related fatalities involve cranes and overhead lines. If contact occurs, *follow these procedures*: Remain inside the crane cab until lines have been de-energized, crane operator should try to remove crane from contact by reversing direction, and all others should keep away from crane, ropes and load since the ground around the machine may be energized.
- *Path to Ground missing or discontinuous*: if the power supply to equipment is not grounded or if path is broken, the current may travel through a workers body. *Avoid Hazards by*: grounding all systems, circuits and equipment, frequently inspecting

electrical systems to ensure path to ground is continuous, visually inspecting all electrical equipment, and removing equipment from service if defective.

- *Power tools:* Because these tools are so common, workers are constantly exposed to a variety of hazards. *Tool safety tips:* never carry a tool by its cord, and never yank cord to disconnect it. Keep cords away from heat, oil and sharp edges. Disconnect tools when not in use. Avoid accidental starting by keeping finger off the “on” switch while carrying tools. Use appropriate personal protective equipment. Keep work areas well lit. Use double insulated tools and remove damaged tools from use.

Grounding

- *System or service ground:* A wire call the neutral conductor is grounded at the transformer, and again at the building service entrance. Primarily designed to protect machines, tools, and insulation against damage.
- *Equipment ground:* Grounding the equipment itself provides another path for the current to flow to the ground. It is intended to offer enhanced protection to the worker.
- *Disadvantage to grounding:* A break in the grounding system may occur without the user’s knowledge. Using a Ground Fault Circuit Interrupter (GFCI) is one way of overcoming grounding deficiencies.
- *GFCI:* A ground fault occurs when there is a break in the low resistance grounding path. The ground fault circuit interrupter is a fast-acting circuit breaker designed to shut off electric power in the event of a ground fault within as little as 1/40th of a second.

References:

- Washington State Department of Labor and Industries
www.lni.wa.gov
www.lni.wa.gov/Safety/TrainTools/Online/Courses/default.asp?P_ID=165

ELECTRICAL SAFETY QUIZ

Circle the correct answer:

1. Substances with very little resistance to electricity are called: (B)

- A. Utilities
- B. Conductors
- C. Insulators
- D. Circuits

2. Substances with high resistance to the flow of electricity are called (C)

- A. Utilities
- B. Conductors
- C. Insulators
- D. Circuits

3. Grounding a tool means intentionally creating a _____ resistance path to the ground. (B)

- A. High
- B. Low
- C. Non
- D. Varied

4. Shocks result when the body becomes part of the _____. (B)

- A. Current
- B. electrical circuit
- C. insulator
- D. resistance

5. Overhead power lines are especially hazardous because: (D)

- A. They carry extremely high voltage
- B. Large equipment operators may not be able to see how close they are to a line.
- C. If contact does occur, equipment operators may try to exit the cab while the vehicle is still energized.
- D. All of the above.

ERGONOMICS

Ergonomics is the science and practice of designing jobs and workplaces to match the capabilities of the human body. Ergonomics means “fitting the job to the worker”.

Basic information

- Benefits of using ergonomic principles are a reduction in injuries, and improved quality of work and life, and a reduction in fatigue and discomfort.
- **Work-related Musculo-Skeletal Disorders (WMSDs)** can happen if ergonomics principles are not followed. These disorders may also be called repetitive strain injuries, cumulative trauma disorders, or overuse injuries, and are soft-tissue injuries which occur gradually.
- Causes of WMSDs are heavy, frequent, or awkward lifting, pushing, lulling or carrying loads, working in awkward postures, hand intensive work. Risk of injury depends on the duration, frequency and intensity of exposure.

Ergonomic principles

- Use proper lifting procedure (use legs, not back, keep materials close to the body etc) and use mechanical assistance where possible.
- Maintain a neutral posture as much as possible. Keep shoulders relaxed, low back supported, elbows at sides, wrists straight and feet supported when sitting. When standing, maintain neutral posture. Align ears, shoulders, hips, knees and ankles as though an invisible cord was running straight through all points. Ease lower back strain by placing one foot on a foot rest and rotate.
- Position work to be able to reduce the number of times you must bend, kneel or squat. Raise and/or tilt work. Use a stool to raise ground level work, use tools with longer handles, alternate between bending, kneeling, sitting, and squatting. Limit overhead storage to infrequently used items. Reduce length of reach by keeping items as close as possible, removing obstacles and letting gravity assist.
- Hand-intensive work includes repetitive motions, gripping, pinching, bending the wrist and other similar positions. Attempt to arrange work to avoid unnecessary motions. Use power tools or machinery to do the work, and attempt to spread out the work during the day. Take frequent stretch pauses, change hands or motions, and rotate tasks with co-workers or other students as possible. Keep wrists straight by using tools and procedures that allow proper positioning.
- Moderate or high vibration tools and equipments can also lead to WMSDs. Use low vibration tools if available, use anti-vibration gloves, keep hands warm.
- Risk of injury goes up as risk factors are combined.

Symptoms, recognition and reporting

- WMSDs include discomfort, pain, numbness, tingling, burning, swelling, change in color, tightness or loss of flexibility
- Report symptoms if pain is persistent, severe, or worsening, or if pain radiates; if your symptoms include numbness and tingling or if your symptoms keep you from sleeping at night.
- Reporting symptoms can prevent an acute injury from becoming chronic, and early treatment is more successful.
- Share ideas on how to change the work or class environment of process in order to reduce risk factors.

ERGONOMICS QUIZ

Circle the correct answer(s)

1. Ergonomics is the science and practice of designing jobs and workplaces to match the capabilities of the human body.

True or False

2. Work-related musculo-skeletal disorders (WMSDs) can happen if ergonomic principles are not followed.

True or False

3. Causes of WMSDs include (Circle all that apply)

- A. Heavy or frequent lifting B. Pushing, pulling or carrying loads
C. Working in awkward positions D. Hand-intensive work

4. What are some of the symptoms of WMSDs? List 3 below:

1. _____
2. _____
3. _____

5. Choose the best answer: “Maintain a _____ posture as much as possible”:

- A. Bent B. Neutral C. Relaxed D. Artistic

FIRE SAFETY

Prevent fires using these simple precautions

- Install, maintain, and regularly test smoke detectors
- Change smoke detector batteries during twice-yearly time changes (easy to remember)
- Do not overload electrical outlets
- Maintain a neat and orderly environment to best be able to see potential hazards, such as fabric too close to a heat source, or flammable material near a fire.

Planning for safety

- Tour area and locate fire extinguisher, fire alarm pull box and exits
- Practice using fire extinguisher
- Plan at least two escape routes
- Perform an inspection for fire and other safety hazards
- Assume all alarms are notification of an actual fire.

If a fire starts

- Determine if it is a fire you can attempt to put out with a fire extinguisher based on size (small or large), if the fire is contained vs. diffuse, and the level of threat the fire poses (very little threat vs. immediate threat).

If the fire is extremely small, contained, and not an immediate threat

- Get the fire extinguisher from its location and follow the steps that can be recalled from the acronym **PASS**
 - **P**ull (the pin from the fire extinguisher)
 - **A**im (the nozzle at the base of the fire)
 - **S**queeze (the handle)
 - **S**weep (the spray from the nozzle back and forth at the base of the fire).

If you cannot extinguish the fire

- Seek an exit from the fire. Check to see if door or door handle is hot. If yes, do not open the door and seek alternative exits.
- If you cannot exit, get someone's attention by hanging a sheet or article of clothing such as a jacket out a window.
- Stay low to the floor where smoke and gasses are less
- If you can exit the immediate location, close doors behind you.
- Yell "fire" as you leave and pull a fire alarm if available.
- Stay low to the floor where smoke and gasses are less concentrated.

References:

- Information on Fire Safety gathered from the U.S. Fire Administration
www.usfa.fema.gov
- Washington State Department of Labor and Industries
www.dol.gov

FIRE SAFETY QUIZ

Circle the best answer(s)

1. It is best to prevent or detect fires at the earliest stages. Circle the prevention techniques you can control: (C and D)

- A. Install, maintains, and tests smoke detectors
- B. Change smoke detector batteries
- C. Maintain a neat, orderly environment
- D. Do not overload electrical outlets

2. If an actual fire occurred, you would want to know *the location* of which of the following items? (A and C)

- A. Fire Extinguisher
- B. Smoke alarm
- C. Possible exits
- D. Your car keys

3. PASS is an acronym that helps you remember the steps in using a (n): (B)

- A. fire alarm
- B. Fire extinguisher
- C. Fire detector
- D. Automated sprinkler system

4. PASS stands for: (D)

- A. Pick alarm siren sounds
- B. Patented automated sprinkler system
- C. Pull and send someone
- D. Pull aim squeeze sweep

5. Where are smoke and gasses from a fire less concentrated? (A)

- A. Lower toward the floor
- B. Higher toward the ceiling

HAZARDOUS MATERIALS

A hazardous chemical is any chemical that can do harm to your body. Most industrial chemicals can harm you at some level based on the level of toxicity and how much of the chemical gets into your body.

Several factors of the chemical exposure affect the result on the human body.

These factors include: the level of *toxicity*; the *dose* of chemical that actually enters the body; the physical *form* of the chemical and the *route* by which the chemical enters your body.

Chemical basics

- There are three forms of chemicals: Solid, liquid and gas.
- Solids: Dust or powder can be released into the air by cutting, sanding or drilling, or by dry sweeping or blowing down with compressed air and then inhaled. Also, dust in the air can settle out on work surfaces or eating utensils and then be swallowed with food or drink. Fumes are extremely small droplets of metal formed when metal has been vaporized by high temperatures (usually welding). It looks like smoke. Some solids are fibers, which are similar to dusts, but have an elongated shape (like fiberglass or asbestos)
- Liquids can be splashed on the skin and cause burns or irritation. Liquids can also be absorbed through the skin into the body. Liquids can be sprayed and form mists or evaporate and form vapors which can be inhaled.
- Liquid mists can be inhaled, can settle on the skin and be absorbed or like dust, mists can settle out and contaminate food or drink.
- Gases and vapors: Gases are chemicals that are in a gas form at room temperature (e.g., chlorine and helium). Vapors (e.g., paint thinner, gasoline) evaporate from chemicals that are liquid or solid at room temperature. Gases and vapors enter the body by inhalation.

Routes of entry

- Inhalation (breathing in the chemical and the most common route of entry). Most inhaled gases and vapors are carried into the lungs and absorbed into the bloodstream. With mist or dust, the size of the particles or droplets affect where they settle in the respiratory tract and what symptoms or diseases will develop.
- Absorption (the chemical soaks through your skin). Solvents and pesticides are examples of compounds that can be absorbed through the skin.
- Ingestion (swallowing the chemical). This typically happens by contamination: Chemicals rub off dirty hands and contaminate food, drinks, or tobacco products. Chemicals in the air can settle on food or drink and be swallowed and then absorbed in the digestive tract. This is a great reason to wash your hands before you eat, drink, or smoke.

Chemical toxicity

- The effect of any toxic chemical depends on the amount of chemical that enters the body. This is called the dose. Acute toxicity is a measure of how toxic a chemical is at high levels over a short period of time. Chronic toxicity is the measure of the toxicity over a long period of time. Chemicals can have both acute and chronic toxic effects.
- Many chemicals have exposure limits and are often called “PELs” for permissible exposure limits. Levels in the air must be kept below these limits to protect your health. An example would be 100 parts per million.
- Carcinogens: not all chemicals cause cancer. In fact the list is pretty short. WISHA has specific regulations on the carcinogens: Vinyl chloride, benzene, DBCP, methylene chloride, cadmium, ethylene oxide, arsenic, butadiene, and acrylonitrile. Manufacturers must list any known or suspected carcinogens in their products.
- Chemicals that may harm a developing fetus are called teratogens. Chemicals that cause genetic mutations or changes are called mutagens.
- Another group of toxic chemicals are called sensitizers. Sensitizers can “switch on” and bad reaction in an individual. The reaction to a sensitizer can vary wildly from person to person. Once sensitized, increasingly smaller amounts cause a reaction and the reaction itself can become more severe.

Corrosive chemicals

- Corrosive chemicals are usually used to clean metals, and the most common are acids and caustics. These chemicals can damage skin, eyes, and the respiratory system. Examples of corrosive chemicals are sulfuric acid, ammonia, sodium hydroxide and chlorine.
- On the skin, corrosive chemicals can cause visible burns or damage. The extent of damage depends on how long the corrosive is on the skin and the level of concentration of the chemical.
- Corrosive exposure to the eyes is extremely serious. Exposure to the eyes can cause permanent damage or blindness unless washed out immediately.
- Inhaling corrosive chemicals can cause severe irritation to permanent scarring of the lungs and difficulty in breathing.
- Personal protective equipment should be used as the first line of defense against corrosive chemical exposure. Using rubber gloves, aprons and goggles can prevent exposure damage. Emergency eyewash stations and water should be readily available in case of accidental contact with corrosives. Although this must be available, it should not be considered a line of defense.

Flammable liquids

- It is the vapors from a flammable liquid, not the liquid itself, that ignite and cause fire or explosion.
- The flammability of a liquid depends on 3 things: its vapor pressure, flash point and limits of flammability.

- Vapor Pressure is a measure of how fast a liquid evaporates. Higher pressure means more rapid evaporation. The warmer the liquid, the higher the vapor pressure.
- Flash point is the lowest temperature that a flammable liquid can generate enough vapors to form a mixture with air that will ignite. The lower the flashpoint, the more easily the liquid will burn.
- Limits of flammability: refers to the range of a mixture of air and vapor that is flammable. Mixtures can be too lean (not enough vapor and too much air) or too rich (too much vapor, not enough air) to ignite and burn. This is usually written as a percent, for example: The “lower explosive limit” of acetone is 2.5% and the “upper explosive limit” is 12.8%. Acetone will not ignite outside of those mixture ranges.
- Vapor density: a measure of how heavy a vapor is when compared to air. Air is measured as 1.0, so any vapor that has a density greater than 1.0 is heavier than air and can flow like a liquid and collect on the floor or in a low spot. This may create a fire or explosion hazard if the vapor flows to an ignition source.

Metals

Metals can be both physical (explosion) and health hazards (elevated blood pressure, brain damage, kidney damage, and death).

Getting information about hazardous materials

- You can get information two ways. From the product label, or from the product material safety data sheet (MSDS). The MSDS is the preferred choice.
- Information on the product label: The manufacturer, name of product, a hazard warning, and a list of hazardous ingredients.
- Information on the MSDSs: what chemicals are in the product, what the hazards of the chemicals are, and how to protect yourself from the hazard.

Material Safety Data Sheets (MSDSs):

- MSDSs contain more information than that listed above. All of the following information is included (with example in parentheses): Name of hazardous chemicals (acetone), physical and chemical properties (flammability and volatility), Physical hazards (possible burns), health hazards (headaches, eye irritation), the route by which the chemical enters the body (inhalation), the legal limit allowed in the air (750 parts per million), if the chemical is a carcinogen (no), precautions for safe use (adequate ventilation, keep away from open flame), exposure control methods, including personal protective equipment (respirator, rubber gloves), emergency and first aid procedures (eyes: flush with water for 15 minutes), the date the MSDS was prepared or revised (1996) and the contact information for the person responsible for the information in the MSDS (John Doe, phone and address).

Protect yourself from hazardous chemicals by:

CTE Health and Safety Education Guide

- Knowing what is in the product you work with, using the smallest amount of the chemical to do a job, and maintaining machinery and equipment to prevent leaks or releases, Using ventilation to reduce amounts of chemicals in the air, enclosing a chemical process as much as possible, wearing necessary personal protective equipment.
- In case of leak or spill: Inform supervisor of unusual odors, spills, or releases. Leave an area of a large spill or release.

If you have been exposed to a chemical:

- Let your supervisor know
- Find out what the chemical was
- Follow the first aid directions in the MSDS
- Get medical attention as needed
- Check PPE before going back in the area.

Reference:

- Washington Industrial Safety and Health Act (WISHA)
<http://wisha-training.lni.wa.gov/Training/articulate/HazcomOnlineMod1/default.htm>

HAZARDOUS MATERIAL QUIZ

1. There are three forms of chemicals. Select the answer that best lists these 3 forms. (D)

- A. Vapor, fumes, dust
- B. Vapors, gas, liquids
- C. mist, solids, liquids
- D. Solids, liquids, gas.

2. There are three routes of entry for chemicals to enter the body. Match the 3 routes with their definitions: (A2, B3, and C1)

- A. Inhalation
 - B. Absorption
 - C. Ingestion
1. _____ This typically happens by contamination of food or drink
 2. _____ Gases or vapors are carried into the lungs
 3. _____ Solvents and pesticides are examples of chemicals that can be absorbed this way.

3. A carcinogen is a chemical that causes: (C)

- A. Burns
- B. Eye damage
- C. Cancer
- D. Mutations

4. The amount of chemical that enters the body is called the: (A)

- A. Dose
- B. Exposure limit
- C. Sensitizer
- D. Toxicity

5. MSDS stands for Material Safety Data Sheet. List 3 things you can find on an MSDS:
(Ex: name of chemical, physical and chemical properties, physical hazards, health hazards, route of body entry, legal limit, carcinogenic, precautions, exposure control, PPE, first aid procedures)

- A. _____
- B. _____
- C. _____

PREVENTING SLIPS, TRIPS AND FALLS

Slips and trips can happen anywhere, to anyone, inside or out. Slips and trips often result in falls and more serious outcomes, including disabling injuries and even death.

Definitions

- **Slip:** when there is too little friction or traction between your feet (footwear) and the walking or working surface, and you lose your balance.
- **Trip:** When your foot (or lower leg) hits an object and your upper body continues moving, throwing you off balance; OR when you step down unexpectedly to a lower surface (misstep) and lose your balance, e.g., stepping off a curb.
- **Fall:** occurs when you are too far off your center of balance. You can fall at the same level (when you fall to the surface you were walking or standing on, or fall into or against objects at or above the surface) or you can fall to a lower level (when you fall to a level below the one on which you are walking, working or standing (e.g., ladder, stairs, loading dock, etc.).

Causes of

- **Slips:** Wet contamination/ spills on floors (water, oil, grease, food, other fluids); dry contamination contamination/spills (dusts, powders, ink, plastic wrapping, etc.); highly polished floors (marble, ceramic tile); freshly waxed surfaces; transitions from one type of flooring to another (carpet to vinyl); sloped walking surfaces, loose or unanchored rugs or mats, shoes with wet, muddy, or greasy soles; metal surfaces, mounting or dismounting vehicles or equipment; climbing up or down ladders; loose or irregular surfaces (gravel); inclement weather; leaves, pine needles or other plant debris.
- **Trips:** Clutter or obstacles in aisles, walkways and work areas; uncovered cables, wires or extension cords across pathway; open cabinet or file drawers; changes in elevation; rumpled or rolled up carpets; irregularities in the walking surface, missing or uneven flooring; damaged, non-uniform, or improper steps; debris and waste materials on surface, sidewalk/curb drops; objects protruding from walking surface; unmarked elevation changes such as speed bumps or wheel stops.

Contributing factors

- Anything that makes it difficult to see or that distracts your attention can contribute to a slip or trip.
- Conditions such as poor lighting, glare, shadows, bulky or awkward personal protective equipment, unexpected noises or excess temperature are potential contributing factors.
- Physical conditions that may impact slips and trips: Visual perceptions, age, physical state, fatigue, stress, illness, medications, alcohol, drug effects.
- Behavioral choices that can contribute to slips and trips: Carrying too much at one time, inattentive walking (e.g., using a cell phone, texting, talking); not using designated or cleared paths; hurrying; poor cleaning (clutter, dirty floors, etc); improper cleaning

(trying to clean up a grease spill with water); not using signage when you have knowledge of slip or trip hazards; improper footwear for the conditions or environment.

Design work process to decrease risks

Follow good housekeeping procedures; follow safe walking practices; wear proper footwear; contain work processes to prevent discharge, splatter, or spillage of liquids, oils, particles, etc onto floor; use drip trays where possible; provide adequate lighting, ventilation and temperature control; highlight edges in transition areas and highlight or mark trip hazards (changes in elevation); provide effective drainage and use slip resistant materials in high-risk areas; use skid and slip resistant matting;

Use proper housekeeping to prevent slips trips and falls

Keep aisles, walkways and stairs clear of materials, equipment and other hazards; cover or secure all cords, cables and wires; check rugs to ensure they are flat and use skid resistant backing or carpet tape to keep in place; close drawers immediately after each use; keep floor free of objects; keep floors clean and clean spills immediately; repair any damages or replace flooring if necessary; with wet floors, use adequate and highly visible signage and remove signs when area is dry.

Safe walking practices

- Wear stable shoes with non-slip soles; walk carefully and slowly, and take small even steps if surface is uneven, cluttered, slippery, or at an angle.
- When walking on slippery or wet surfaces: wear high traction footwear, take short, slow steps, point toes slightly outward to keep center of gravity under you, pay attention to the surface upon which you are walking, use rails where available

Mounting and dismounting equipment and climbing and descending ladders safely

Ensure footwear is clean of slippery contaminants; ensure running board, tread, step foothold and platform of equipment are clean of contaminants; always face equipment when mounting or dismounting; have a good handhold before stepping up, place foot on step so edge of step is under the arch; maintain 3-point contact at all times (one hand and two feet or one two hands and one foot); do not jump off when dismounting.

Proper footwear

Foot wear should fit comfortably and snugly; wear slip resistant shoes and boots with good tread; keep footwear clean and in good condition at all times; inspect regularly for damage and repair or replace damaged footwear.

If you do fall, here's how to fall properly

Roll with the fall by letting your body crumple and roll rather than reaching out to stop yourself; bend your elbows and knees and use your legs and arms to absorb the fall; get medical attention to treat anything torn, sprained or broken in a fall.

Resources:

- Washington Industrial Safety and Health Act (WISHA)
<http://www.lni.wa.gov/>
- National Floor Safety Institute
<http://www.nfsi.org/>
- American National Standards Institute
<http://www.ansi.org/>
- Occupational Safety and Health Administration (OSHA)
<http://www.osha.gov>
- National Institute for Occupational Safety and Health (NIOSH)
<http://www.cdc.gov/niosh/homepage.html>

PREVENTING SLIPS, TRIPS, AND FALLS QUIZ

1. Wet spills on the floor are more likely to cause: (A)

- A. Slips B. Trips

2. Clutter or obstacles in aisles, walkways and work areas are more likely to cause: (B)

- A. Slips B. Trips

3. List 3 factors that can make it more likely for someone to slip, trip or fall (wet, dirty, icy surface, uneven surface, change in elevation, slippery shoes, obstacles in path, etc.)

- A. _____
B. _____
C. _____

4. Wearing _____ footwear is recommended to help prevent slips, trips and falls: (A)

- A. Slip-resistant B. Expensive C. Designer D. Damaged

5. If you begin to fall, you should: (choose 1) (B)

- A. Brace yourself for impact by holding your body rigid
B. Roll with the fall, keeping elbows and knees bent
C. Lock your arms and try to fall into a “push-up” position.
D. Grab anything you can to prevent the fall.

STANDARD PRECAUTIONS, BLOODBORNE PATHOGENS AND OTHER POTENTIALLY INFECTIOUS MATERIAL

Why should you know about bloodborne pathogens (BBP)? Infection from a BBP can result in chronic infection, serious illness, and death.

Basic facts

- What is a Pathogen? A microorganism that can cause disease. There are four main groups of microorganisms: Viruses, Bacteria, Fungi, and Parasites.
- Bloodborne Pathogens are microorganisms that are present in blood or other potentially infectious material and can cause disease.
- Organisms must enter the body for transmission of disease to occur. The three primary routes of entry are *inhalation* (air), *Ingestion* (food, water), and *contact* (bloodborne, mucous membrane, or sexual contact).
- Risk of BBP infection depends on several factors: The pathogen involved; the type/route of exposure; the amount of virus in the in the infected blood; the amount of total blood involved; post-exposure treatment; and individual immune response.

Main BBP diseases of concern

- Hepatitis B Virus, Hepatitis C Virus, and Human Immunodeficiency Virus
- Hepatitis B Virus: Hearty, can live for 7+ days in dried blood; 100 times more contagious than HIV; No cure but a **vaccine is available**. Symptoms include flu-like feeling, fatigue, abdominal pain, loss of appetite, nausea, vomiting, joint pain, and jaundice.
- Hepatitis C Virus: Most common Bloodborne infection in the U.S.; more than 80% have no signs or symptoms; Leading cause of liver transplantation; no broadly effective treatment available; and **no vaccine**.
- Human Immunodeficiency Virus (HIV): Fragile – lives only a few hours in a dry environment; attacks the human immune system, cause of AIDS, more than 1 million infected in the U.S.; **no cure, no vaccine**, but treatment is available.

Universal precautions

- A set of precautions designed to prevent transmission of bloodborne pathogens when providing first aid or health care.
- Universal precautions apply to blood, other body fluids containing visible blood, semen and vaginal secretions, cerebrospinal, synovial, pleural, peritoneal, pericardial and amniotic fluids.
- Universal precautions DO NOT apply to feces, nasal secretions, sputum, sweat, tears, urine, vomitus or saliva unless they contain visible blood.
- Universal precautions involve the use of protective barriers such as gloves, gowns, aprons, masks or protective eyewear, which can reduce the risk of exposure to potentially infectious materials.

- Your instructor will give you specific training in the personal protective equipment your specific course may require.

NOTE:

Minors in healthcare career training, vocational education programs, or in lifeguard jobs: If a minor is a student in a bona fide healthcare career training or vocational education program, or employed as a lifeguard, they are exempt from this rule, but not exempt from the requirements under the BBP standard. Similarly, in jobs where a worker (adult or minor) has a risk of coming into contact with bodily fluids that contain blood products, employers must follow the provisions contained in WAC 296-823, including training, Hepatitis B vaccine, personal protective equipment, post-exposure testing, and so forth.

State of Washington
Department of Labor and Industries
Employment Standards

References:

- Centers for Disease Control and Prevention
http://www.cdc.gov/ncidod/dhqp/bp_universal_precautions.html
- Washington Industrial Safety and Health Act (WISHA)
<http://www.lni.wa.gov/Safety/Topics/AtoZ/BBPathogens/default.asp>
- Occupational Safety and Health Administration (OSHA)
<http://www.osha.gov/SLTC/bloodborne pathogens/index.html>
- National Institute of Occupational Safety and Health (NIOSH)
[Bloodborne Infectious Diseases: HIV/AIDS, Hepatitis B Virus, and Hepatitis C Virus](#)

STANDARD PRECAUTIONS, BLOODBORNE PATHOGENS, AND OTHER POTENTIALLY INFECTIOUS MATERIAL QUIZ

1. Circle the best definition of a bloodborne pathogen (BBP): (D)

- A. The amount of virus in the infected blood
- B. Precautions designed to prevent transmission of disease
- C. Viruses, bacteria, fungi and parasites
- D. Microorganisms that can cause disease and are present in blood or other potentially infectious material.

2. Of the three major BBP diseases of concern, which has a vaccine available? (A)

- A. Hepatitis B Virus
- B. Hepatitis C Virus
- C. Human Immunodeficiency Virus

3. List 3 of the 5 factors that influence the risk of getting a bloodborne pathogen infection
(The pathogen involved, the type/route of exposure, the amount of virus in the infected blood, the amount of total blood involved, post-exposure treatment, and individual immune response)

- A. _____
- B. _____
- C. _____

4. Universal precautions involve the use of _____ to reduce the risk of exposure to potentially infectious material (B)

- A. Chemicals
- B. Protective Barriers
- C. Cleansers
- D. First aid

5. If protective barriers get in your way, it is ok to remove them as long as you wash your hands thoroughly after touching any potential source of BBP. (B)

- A. True
- B. False



OSPI does not discriminate and provides equal access to its programs and services for all persons without regard to race, color, gender, religion, creed, marital status, national origin, sexual preference/orientation, age, veteran's status or the presence of any physical, sensory or mental disability.