

Module 1: General Safety

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Terms and Definitions

READY FOR REVIEW

- Accident is any suddenly occurring, unintentional event that causes injury or property damage.
- Carelessness is a failure to think before one acts; failure to pay attention.
- Drill is an exercise practiced so the all members can demonstrate what to do in case of an emergency.
- Emergency is any accident or sudden illness that requires immediate intervention to prevent severe damage or death.
- Evacuation is the act of moving people out of a disaster or dangerous area into a safe place.
- Extinguish is to put a fire out, or to cause to cease burning.
- Hazard is a source of danger.
- Personal protective equipment (PPE) are devices used or worn to protect the physical health of an equipment operator or tool user.
- Safety is freedom from danger, risk or injury.

Developing a Good Safety Attitude

READY FOR REVIEW

- Focus on the present task.
 - Stay alert.
 - If you're tired or bored, accidents can happen.
- Take time to do the job right.
 - Staying safe may take a little extra time, but it will result in fewer mistakes.
 - Determine what needs to be done first, so you won't run out of time on high priority tasks.
- Use your head.
 - Do what you know is right.
 - Don't take shortcuts or fool around.
 - Don't let emotions like anger and frustration get in the way of doing a good job.
- Take responsibility for your actions.
 - Others trust and depend on you to do your job correctly.
 - If you do not act responsibly, others may suffer.
 - Understand that safety is everyone's responsibility.
- Avoid unnecessary risks.
 - Think of what could happen if you take a chance on an unsafe task.
 - Many risks are dangerous and are not worth it.

Safe Work Environment

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- Lighting is adequate to perform required duties and prevent eyestrain.
- Air is clean, without harmful fumes.
- Alarms are located to notify everyone in case of emergencies.
- Emergency exits are clearly marked, unlocked, and easily accessible.
- Emergency telephone numbers are posted.

Note: Fire and police departments, ambulance service, and poison control should always be included.
- Fire extinguishers are readily available.
- First aid supplies are available.
- Walkways are clear, barrier free, and accessible to all.

- Safety rules are posted.
- Evacuation routes are posted.
- All students/employees receive safety training.
- Personal protective equipment is available for all.

- No smoking/smoking areas are designated.
- Adequate storage areas are provided for hazardous materials.
- Hazardous materials are clearly identified.

Basic Types of Emergencies

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- Severe weather and natural disasters, such as tornados, hurricanes, earthquakes, floods, etc.
- Bombs and bomb threats.
- Fires.
- Accidents, such as falls, cuts, burns, electrical shocks, poisonings, etc.

- Health problems, such as heart attacks, strokes, heat emergencies, seizures, etc.

Note: Please remember that accidents and health emergencies should be handled by trained professionals. Your job may be to call for help or to administer basic first aid.

Severe Weather Guidelines

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- When alarms (sirens) or warnings are issued by the local civil defense or national weather center, begin procedure to take cover.
- Move quickly and quietly to shelter area on the lowest level and in the interior of the building away from glass and outside openings.

- Sit down and protect yourself by putting your head as close to your lap as possible, or kneel down and cover your face and head with your arms.
- Answer to roll call if at school.
- Remain in designated area until the signal to return is given.

Bomb Threats or Threatening Phone Calls

READY FOR REVIEW

- When you answer the call, obtain as much information as possible from and about the caller.
 - Record the call if possible.
 - Some examples of information to try to ascertain are: male, female, background noises, accent, and voice characteristics.

- Alert your instructor, supervisor, or building administrator immediately.
- Begin building evacuation immediately.
- A building search will be conducted by police/bomb squad.
- An "all clear" signal will be given when it is safe to return to the building.

Fire Evacuation

READY FOR REVIEW

- Upon discovery of a large fire, smoke, or activation of a smoke detector, you should follow these guidelines.
 - Pull the nearest fire alarm.
 - Close the doors around the fire to contain it.
 - Notify the building administrator or fire/police (0 or 911) of the fire and its exact location.
- Evacuate the building as soon as the alarm sounds in the following manner:
 - Remain calm and move quickly to the exits; do not use the elevators.
 - Close windows and doors as you leave the area; this limits the amount of oxygen a fire receives and prevents the spread of smoke.

- Feel closed doors before opening them; doors that are hot indicate a fire on the other side of them.
- If you are unable to exit through the door and you must wait for rescue through the windows, place wet cloths, such as towels/blankets, on the floor next to the door to prevent the spread of smoke to the room. A wet towel over your head will help if you must walk through smoke to an exit. **DO NOT ENTER THICK SMOKE.**
- Once at the designated area, remain calm and stay with your group; all persons must be accounted for.

Personal Protective Equipment

READY FOR REVIEW

- Eye protection.
 - Goggles.
 - Safety glasses with side panels.
 - Face shield (to be used with safety glasses or goggles as additional protection).
 - Welding helmet with filter lenses.
- Hearing protection.
 - Ear plugs—positioned in the outer part of the ear, this may reduce noise by as much as 30 decibels.
 - Ear muffs—cover the entire ear; they can reduce noise by as much as 15-30 decibels.
 - During extremely high noise levels, you can also use ear plugs underneath your ear muffs to protect noise levels of 105 decibels and above.
- Head protection.
 - Full-brimmed hard hat—protect against blows to the entire head, neck and shoulders.
 - Visored hard hat (front brim only)—used when working in confined spaces.
 - Bump caps—used in confined spaces where there are no serious head hazards.
 - Hair covers—prevent hair from becoming caught in moving machine parts.
- Foot protection.
 - Safety shoes, steel reinforced toe box and outsole—protect feet from falling or rolling objects, cuts and puncture injuries.
 - Safety boots—offer more protection when splash or spark hazards (chemicals, molten materials) are present.
- Hand protection—work gloves.
 - Disposable gloves—for handling mild irritants.
 - Fabric gloves—for better grip on slippery surfaces.
 - Rubber gloves—for use around chemicals and other corrosives.
 - Leather gloves—for working with rough surfaces.
- Respiratory protection.
 - Filtration respirators—filter or “screen” out contaminants from the air you breathe.
 - Purifying respirators—contain replaceable chemical cartridges or canisters that “purify” or entrap contaminants.
 - Air-supplying (also called supplied-air) respirators—provide clean air from an outside source.

Personal Safety Guidelines

READY FOR REVIEW

- Wear protective equipment as required. Some examples include: eye protection when using electrical tools such as drills; respirator when painting; rubber gloves when using parts cleaning solution, and ear protection when running engines.
- Comply with all safety rules and posted signs.
- Follow instructions when performing a task. Ask your teacher or employer questions if you don't understand.
- Never operate, adjust or repair equipment without instruction and proper training.
- Report defective tools and equipment immediately.
- Report all accidents and get first aid immediately.
- Correct or report all unsafe conditions immediately.
- Keep mentally alert to shop hazards.
- Conduct yourself in a manner conducive to safe shop practices.
- Never “horse around” on the job. Don't play around with equipment in class or at work. Don't play jokes on others to distract them when they are working.

Safe Work Areas

READY FOR REVIEW

- Arrange equipment and vehicles to allow safe working practices and ease of cleaning.
- Store materials and supplies safely in their proper places.
- Store tools and accessories safely in suitable storage containers or areas.
- Keep work area organized and clear of debris and other hazards.
- Keep floors clear of obstacles and slippery substances.
- Clean up spills immediately. Use a commercial oil absorbent to remove oily spills.
- Keep aisles, exits and traffic areas free of materials and debris.
- Keep electrical cords and extension cords out of traffic areas.
- Store oily, greasy, and paint-soaked rags in approved metal containers.
- Know where first aid and fire-fighting equipment are kept, so they are immediately available in case of an emergency.

Back Injuries

READY FOR REVIEW

- Weight.
 - Injury usually results from overestimating your physical abilities and trying to lift more weight than you can handle.
- Size.
 - Injury usually results from moving an object that may be within your weight capacity, but is too long, wide or high to lift safely.
- Shape.
 - Injury usually results from moving an object that may be within your weight capacity, but has a cylindrical shape or other odd shape that makes safe lifting difficult.
- Obstructions.
 - Injury usually results from stacking materials so high that vision is limited and obstructions in the pathway cannot be seen.
- Improper position.
 - Injury usually results from twisting or turning to an awkward position when lifting.
- Improper storage.
 - Injury usually results in strain caused by not storing heavy objects at least 12 inches off the floor.
- Improper reaching.
 - Injury usually results from using chairs or boxes to stand on instead of safely using a ladder, or by positioning an object too far from where you are working.

Manual Lifting and Moving

READY FOR REVIEW

- Before lifting.
 - Inspect the item to be lifted for jagged edges, splinters, and grease or other slippery surfaces.
 - Wear gloves for protection, and make sure they fit properly.
 - Plan your route before you lift.
 - Clear any obstacles from your path.
 - Assess the weight of the load.
 - Get help to lift heavy loads.
 - Please note that teamwork works best when both people are about the same size; the load should be distributed evenly between both workers.
- Lifting.
 - Place your feet as close to the load as possible, and 8 to 12 inches apart for good balance.
 - Bend your knees, keeping your back and neck straight and your chin tucked in.
- Grasping the load.
 - Grasp the load firmly with your fingers and hands.
 - Draw your arms in close to your body.
 - Stand slowly and lift smoothly, using your legs.
- Carrying.
 - Hold the item close to your body in a comfortable carrying position.
 - Do not allow the load to block your vision.
 - Do not twist your body to change direction; turn with your feet and move your whole body.
- Setting the load down.
 - Bend your knees.
 - Keep your back and neck straight and aligned.
 - Place the load carefully on the floor or shelf, taking care not to set it on your fingers or feet.
 - Be sure the load is secure.

Components of a Fire

READY FOR REVIEW

- Fuel is any combustible material.
- Heat—enough to raise the fuel to its ignition temperature.
- Oxygen is necessary to sustain combustion.

Classification of Fires

READY FOR REVIEW

- Class A.
 - Fires that occur with ordinary combustible materials. Examples include: wood, paper, trash, bags, etc.
- Class B.
 - Fires that occur with flammable materials. Examples include: gasoline, oil, paints, diesel fuel, etc.
- Class C.
 - Fires that occur in or near electrical equipment. Examples include: wiring, electrical appliances, motors, etc.
- Class D.
 - Fires from combustible metals. Examples include: magnesium, sodium, potassium, sodium-potassium alloys, etc.
Note: Class D fires are more common in industrial settings. They require a special dry powder, or a Class D fire extinguisher.

Fire Extinguishers

READY FOR REVIEW

- Foam.
 - Spray foam above fire, allowing the foam to fall lightly on the fire.
 - It can be used for class A or class B fires.
Caution: Do not spray a stream of foam directly into the fire.
- Carbon dioxide (CO₂).
 - Direct discharge as close to the fire as possible, first at the edge of the flames, then gradually forward and upward.
 - It can be used for class B or class C fires.
- Pressurized water.
 - Direct the stream at the base of the fire.
 - It is used for class A fires only.
- Dry chemical.
 - Direct the stream at the base of the flames.
 - You then follow up by directing it at the remaining materials that are burning.
 - It can be used for all classes of fires.
- Halon.
 - Stand back several feet, hold the container upright and direct it at the base of the fire, sweeping from side to side.
 - It is used for class B or class C fires.
Note: Halon is a clean, pressurized, liquefied gas that does not leave a residue.
Caution: A high concentration of burned halon gas may be hazardous to your health.

Fire Extinguisher Symbols

READY FOR REVIEW

- Class A has a green triangle.
- Class B has a red square.
- Class C has a blue circle.
- Class D has a yellow star.

Steps in Using a Fire Extinguisher

READY FOR REVIEW

- Identify the class of fire (A-D).
 - Once you identify the class of fire, you need to make sure your fire extinguisher is coded to put out that type of fire.
 - Check the label on the fire extinguisher.
- Pull the pin.
 - Some extinguishers require releasing a lock lath, pressing a puncture lever, or other step.
- Aim the extinguisher nozzle (or its horn or hose).
 - Make sure to aim the extinguisher nozzle at the base of the fire.
- Squeeze the handle.
 - This releases the extinguishing agent (carbon dioxide or other chemical).
- Sweep from side to side until the fire appears to be out.
 - Watch the fire area.
 - If fire breaks out again, repeat the process.

Ways to Prevent Fires

READY FOR REVIEW

- Keep equipment clean and in good operating condition.
- Never overload electrical circuits.
- Store flammable/combustible materials in appropriate containers away from heat sources.
- Keep work and trash areas clean and free of debris.
- Dispose of flammables according to established safety guidelines.
- Never leave open flames unattended.
- Use caution when operating spark-producing equipment.
- Clean up spills (if appropriate) or report them.
- Report suspicious persons (possible arsonists) to security or supervisory personnel.
- Keep fire exits and escape routes clear and well-marked.
- Know where fire alarm boxes are located.
- Know where fire extinguishers are located.
- Always be on the lookout for fires or conditions that could cause a fire and report them immediately.
- Properly dispose of cigarettes and matches.
- Always obey "No Smoking" signs and areas.