Introduction
“I’m always careful! I’ll never suffer a work injury!” You may say this to yourself as you begin to read this task sheet. But this same thinking is what injures and kills hundreds of workers in farm accidents each year.

This task sheet looks at the numbers of fatalities and injuries that have caused great concern in farming and ranching.

The Situation
The work death rate per 100,000 workers regularly ranks agriculture among the most hazardous industries in the U.S. Youths are included in these injury numbers. Other industries that have many serious work hazards, like mining and construction, do not have a youth injury problem because youth younger than 16 do not usually work in these industries.

Youth Farm Injury Statistics
Accurate numbers of youth work fatalities and injuries are difficult to determine because youth do not work regularly enough or in large enough numbers to be counted in most official injury statistics. Special studies that rely on voluntary cooperation by farmers are done to find out about youth farm work injury. As a result, the statistics that are developed are considered lower than what the actual numbers may be. The facts below are national data.

Fatality Facts
- Currently, estimates show that slightly more than 100 youth younger than age 20 are killed each year in farm work-related incidents.
- Between 1982 and 1996, 2,174 farm deaths among youth younger than age 20 were documented.
- One-third of these fatalities occurred to youth between the ages of 15 and 19.
- 36% of the fatalities involved machinery.
- Males age 20 and younger accounted for 85% of the fatalities.

Machinery (including tractors), drowning, and firearms were the leading causes of fatal farm injuries to persons younger than age 20.

Injury Facts:
- In 1998 over 32,000 youth injuries occurred on farms with 44% being work-related.
- A range of 1.2-1.4 injuries/100 youth was reported nationwide.
- Falls, animals, and off-road vehicle use were three major sources of injury.
- Hand, head, and leg injuries (in that order) were most numerous.
- Livestock and dairy farms led the injury list followed by crops farms.

State Data
Contact the safety specialist at your land grant university to learn of farm injury statistics for your state.

If you are studying this task sheet, you are part of the ag industry. Don’t become part of the sad statistics.

Learning Goals
- To learn about the numbers and types of injuries associated with youth working in agriculture

Related Task Sheets:
- Safety and Health Regulations 1.2
- Hazardous Occupations Order in Agriculture 1.2.1
- Age-Appropriate Tasks 2.4
How Can I Use This Information?

More than 2 million youths younger than age 20 are potentially exposed to agricultural hazards each year according to estimates by the National Institute for Occupational Safety and Health. Farm family workers, hired workers, children of seasonal and migrant workers, and farm visitors can all encounter a wide range of hazards. Machinery, livestock, farm storage structures, and farm ponds all present unique farm safety challenges.

Follow these safety suggestions to avoid becoming a farm injury or fatality statistic.

1. Identify agricultural hazards in the work area to which you are assigned.
2. Develop a plan to deal with the hazards you identified.
3. Use safety practices all of the time.
4. Think about the consequences of your actions before taking a chance.
5. Reinforce safe work habits by helping others to work safely.
6. Wear personal protective equipment suggested for the job.
7. Speak up for your safety on the job.

Being safe is largely a matter of choice.

Safety Activities

1. Review what you have read by completing this quiz:
   a. True or False? Most fatal injuries to farm youth occur to females.
   b. What are the three leading causes of injuries?
   c. True or False? Most farm injuries involve working with fruit trees.
   d. What percentage of farm fatalities involved 15- to 19-year-olds?

2. Using the Internet sites www.nsc.org (National Safety Council) and www.niosh.gov (National Institute for Occupational Safety and Health), locate information comparing the work fatality of agriculture with other industries. Use a computer to make a chart or graph to summarize the data. If you do not have access to a computer, make a full-size poster of the information to share with your group.

References

3. Farm and Ranch Safety Management, John Deere Publishing, 1994. Illustrations reproduced by permission. All rights reserved.
Introduction
How fast can you react? **Reaction time is defined as the time it takes for a person to react to an event or an emergency.** Emergencies occur without warning. Our past experience, along with our reaction time, determines how well we respond to an emergency event.

This task sheet discusses reaction time as it relates to you and the speed of the machines with which you work. Machines are much faster than a human’s reaction time. There are no super heroes faster than a speeding machine.

Reactions Are More Complex Than You Think
Reacting to an emergency involves a complex sequence of events. Consider when an animal jumps in front of your car as you travel down a road. What happens next?

- Your eye gathers the information, “Animal in road,” and sends a message to your brain.
- Your brain receives the information, processes the information, and sends a response to your extremities (arms and legs).
- Your leg muscles must move your foot from the gas pedal to the brake pedal and begin to push the pedal.
- The vehicle continues to move as you respond until the car finally stops just before you hit the deer—or after you have demolished your car.

Here are a few more examples of emergency situations:
- Accidentally touching a hot stove
- Recognizing that your shirt sleeve is being caught on the drill press chuck
- Realizing that your shoe string is dangling over the PTO shaft that you should not be stepping across
- Pulling a tractor and load onto the highway and seeing a fast-moving vehicle coming your way
- Trying to unplug a corn picker and being pulled into the gathering chains

Emergencies occur anytime and anywhere. Remember, an emergency does not give you time to think about what you will do. You react to emergencies as they occur with no warning or time to plan or prepare for action.

Many factors affect your reaction time. Read further to find out why you cannot beat a machine in an emergency. Your life may depend upon this information.

Learning Goals
- To recognize that personal reaction time is slower than the speed of a machine
- To work safely with attention to safe procedures and sound practices based upon knowledge of the limitations of human reaction time

Related Task Sheets:
- Age-Appropriate Tasks 2.4
- Mechanical Hazards 3.1
- NAGCAT Tractor Operation Chart 4.3
- Using PTO Implements 5.4.1

We are not the “super heroes” of television fame. We are not faster than a speeding machine.
Factors Affecting Reaction Time

Here are a few factors that affect your reaction time:

- Experience
- Age
- Fitness
- Fatigue
- Illness
- Pre-occupation
- Distraction
- Mood
- Weather
- Drugs/medication
- Alcohol and tobacco
- Machine vibrations
- Poor vision
- Poor hearing

Something To Think About:

- Experienced operators have gained knowledge of potential hazards. Beginning operators may not know when danger exists.
- Healthy, well-rested operators think through hazardous situations more clearly than fatigued workers.
- Distracted or daydreaming operators are less cautious than focused workers.
- Frustrated workers tend to make bad decisions.
- Medications, as well as drugs alcohol and tobacco, can slow your reaction time.
- Machine vibrations have been shown to fatigue operators and reduce reaction time.
- Poor vision and hearing can lead to poor reaction time.
Rotating Parts Are Everywhere

Working around or near shop equipment, machinery or tractors exposes the operator to more hazards than an office worker. Rotating parts are everywhere. Some examples are:

- Grinding wheels
- Drill presses
- Chain saws
- Lawn mowers
- Augers
- Belts and pulleys
- Chains and sprockets
- Gears
- Power take off shafts

All exposed rotating parts of farm tools and equipment spin faster than you can pull away should you become entangled.

PTOs and Reaction Time

Now is a good time to ask, “Are you faster than a speeding machine?” “Can you react faster than the machine and avoid injury or death?”

We have all been warned not to step over a turning PTO shaft, but PTO entanglements are still happening. A simple arithmetic problem can be used to explain what can happen should your pant leg be caught on an unguarded rotating shaft.

The unguarded PTO shaft is turning at 540 RPMs. You decide to step over it to save a few steps and seconds, rather than walk around the tractor or piece of equipment. You feel a tug on your pants leg and begin to pull away.

With a reaction time of 3/4 of a second (0.75), how many turns of the shaft will be tugging at your pants before you begin to pull away (if you can at all)?

First, convert 540 RPM to revolutions per second (RPS) by dividing 540 by 60 seconds.

$$\frac{540}{60} = 9 \text{ RPS}$$

Second, multiply 9 RPS by your reaction time to get the revolutions of the PTO shaft before you begin to pull away.

$$9 \times 0.75 = 6.75$$

Or $$9 \times 3/4 = 27/4 = 6.75$$

revolutions before you react or begin to pull away.

Avoid Rotating Part Hazards

To avoid rotating part entanglements, try these practices.

1. Keep guards in place on rotating shafts and parts.
2. Stop the engine before dismounting the tractor.
3. Dress safely to avoid entanglements.
4. Think before you take a chance: “Is saving a few seconds or steps worth risking my life?”

Think, “What is the worst thing that can happen to me?”
A few seconds of thought can prevent injury or death.
## Safety Activities

1. If you are involved in an agricultural education mechanics program, ask the instructor if you can conduct a survey of electric motors on machines and small appliances (drills, portable saws, etc.) to chart the speed in RPM of those motors. The speed of the motor in RPM is found on the motor nameplate. Make a chart of the information as follows:

<table>
<thead>
<tr>
<th>Motor /Machine</th>
<th>Speed of Motor in RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table Saw</td>
<td>1740</td>
</tr>
</tbody>
</table>

2. Conduct activity 1 in the farm shop or in the home with any electrical appliance where you can view the electric motor nameplate information.

3. Using a stop watch, press the start button to start the timer, and as quickly as possible, press the stop button. See how fast you can do this simple task. Take several readings, record the results, and calculate the average time you needed to stop the timer. Although this is not a measure of reaction time to an emergency, you can use this measurement to make reaction time calculations in the following questions.

   Time it took you to start/stop the stop watch: ____________ seconds/fractions of a second

4. Solve this reaction time math problem.

   A drill press is rotating at 1800 rpm. If your reaction time is 1/2 second (0.5), how many revolutions of the drill press will occur before you react and pull your shirt sleeve away?

   Revolutions before reaction to pull away: ____________

   **Hint 1:** Convert RPM to revolutions per second (RPS).

   **Hint 2:** There are 60 seconds in a minute.

   **Hint 3:** Multiply RPS (Hint 1) by your reaction time in Activity 1 or 2, or use 1/2 second reaction time.

5. A PTO shaft turns 540 RPM. Your reaction time is 1/2 second. If your shoelace is caught in the shaft, how many turns of the PTO shaft would occur before you react? Use the hints from Activity 4.

   Revolutions before reaction to pull away: ____________

6. Make the same calculation from Activity 5 using a 1000 RPM PTO shaft as the speed of the machine.

   Revolutions before reaction to pull away: ____________

## References

1. Safety Management for Landscapers, Grounds-Care Businesses, and Golf Courses, John Deere Publishing, 2001. Illustrations reproduced by permission. All rights reserved.


## Contact Information

National Safe Tractor and Machinery Operation Program
The Pennsylvania State University
Agricultural and Biological Engineering Department
246 Agricultural Engineering Building
University Park, PA 16802
Phone: 814-865-7685
Fax: 814-863-1031
Email: NSTMOP@psu.edu

## Credits


This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Agreement No. 2001-41521-01263. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.
Introduction

Agricultural work must be done during various weather conditions. Farm work does not stop for summer heat or winter cold. Crops must be harvested, livestock must be tended, and every daily routine completed. Hot, cold, rain or shine, the work continues. Safe work still must be observed under any weather-related conditions.

This task sheet will discuss how to recognize severe weather and the effects of such weather on the farm worker. Additional task sheets in Section 2.5 will present safety precautions for heat, cold, sun exposure, lightning and wind storms, and rain.

Summer Weather

Crop production activities begin with the arrival of the summer season. This is the time of year to expect higher temperatures, higher humidity, thunderstorms, lightning, and tornadoes. Attention to safe work practices may not permit attention to weather hazards. See Task Sheet 2.5.1.

High Temperatures—Exposure to high summer temperatures can cause illness. Heat cramps, heat exhaustion, and heat stroke are serious problems.

- Heat cramps—Symptoms are leg and stomach cramps.
- Heat exhaustion—Symptoms are cool, moist, pale or flushed skin, headache, nausea, dizziness, weakness, and exhaustion
- Heat stroke—Symptoms include red, hot, dry skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing. Heat stroke can result in death if not treated immediately.

High Humidity—Excessive humidity means that moisture evaporation slows down. Perspiration helps to cool the body as it evaporates. In high humidity, the body continues to lose moisture, but the cooling effect is not felt.

Thunderstorms and Lightning—Cold-weather fronts bring cooler air into contact with warm air masses. Severe thunderstorms result; lightning can happen. On average 93 persons are killed each year by lightning.

Tornadoes—These small but violent storms can pack up to 250 mph wind gusts. They usually follow dark skies with clouds that look like a wall and wind that sounds like an approaching freight train. Tornadoes kill people and can cause millions in property damage.

Learning Goals

- To recognize the effect that severe weather plays in safe work practices

Related Task Sheets:

- The Work Environment 1.1
- Heat and Sun 2.5.1
- Cold Weather 2.5.2
- Lightning, Tornadoes, and Rain 2.5.3

Figure 2.5.a. Summertime forecasts of extreme weather must be heeded. Attention to machine safety is a top priority, but changing weather conditions must be observed as well.
Winter Weather

Winter chores on the farm must be done regardless of the weather. Winter cold brings different hazards. Frostbite, hypothermia, and loss of traction leads to hazardous work conditions. See Task Sheet 2.5.2.

Frostbite—This health hazard occurs when body tissue freezes. Medical attention is needed as soon as possible.

Hypothermia—This health issue involves a general cooling of the entire body. When the body cools down, normal processes cease to function properly. Gradual warming of the victim is necessary, as well as immediate medical treatment.

Loss of Traction—Winter weather affects footing—for both people and animals. Tractors that can pull heavy loads under normal circumstances now slip and slide. Observing extra care and taking extra time in moving machinery, livestock, and ourselves becomes more important on slippery surfaces.

Safety Activities

1. Call your nearest TV or Radio weatherperson and ask for an explanation of humidity in the atmosphere.
2. Use the Internet to define heat index (apparent temperature).
3. Use the Internet to define wind chill.
4. Contact you local emergency preparedness officials to learn what signals or warning sirens are used in your community to announce impending weather or other emergencies.
5. With your family, develop an emergency action plan for dealing with high wind or tornado conditions. Practice the plan at least once per year with the entire family.

References

2. www.iastate.edu/Click on Agriculture and Natural Resources/Click on Extension Publications/Click on Safety/Scroll to PM1563i Severe Weather Tips for Farmers, December, 1994.

Contact Information

National Safe Tractor and Machinery Operation Program
The Pennsylvania State University
Agricultural and Biological Engineering Department
246 Agricultural Engineering Building
University Park, PA 16802
Phone: 814-865-7685
Fax: 814-863-1031
Email: NSTMOP@psu.edu

Credits

Developed, written and edited by WC Harshman, AM Yoder, JW Hilton and DJ Murphy, The Pennsylvania State University. Reviewed by TL Bean and DJ Jepsen, The Ohio State University and S Steel, National Safety Council.

Version 4/2004

This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Agreement No. 2001-41521-01263. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.
Learning Goals

• To work safely in all types of weather conditions

Related Task Sheets:

The Work Environment 1.1
Severe Weather 2.5
Tractor Stability 4.12
Using the Tractor Safely 4.13

Introduction

Agricultural work must be done during various weather conditions. Farm work does not stop because the weather forecast for the day calls for thunderstorms, rain, lightning strikes, or even a threat of tornadoes. Work may be interrupted by these events when they happen, but the work is not cancelled until the weather event occurs.

This task sheet discusses lightning, tornadoes, and rain and the risks they pose to safe farm work.

Lightning

Note: Field work puts stress on everyone, especially if the weather report predicts that stormy conditions will interfere with that effort. Your first priority is safe equipment operation. Knowledge of weather patterns and how they change can improve your safe work habits.

Sudden rainstorms are often preceded by violent lightning storms. Lightning is caused by a buildup of static electricity in the air. Positive charged molecules rise into the sky and negative charged molecules fall to the bottom of clouds. The negative charged particles are attracted to the positive charged particles in a flash of lightning.

Lightning fatalities rank second to floods in weather-related deaths.

Lightning energy as high as 100 million volts and as much as 50,000 degrees F. is released within half a second. Lifelong disability and death can result from exposure to the extreme levels of electricity and temperature.

Myth 1: Lightning does not strike the same place more than once.
Truth: Lightning can strike in the same place many times.

Myth 2: Lightning occurs only under stormy skies.
Truth: Lightning can strike 10 miles from a storm.

Precautions to Take

Follow these precautions if severe thunderstorms are forecast.

• Check the weather forecast before starting to work.
• Observe threatening clouds and increasing winds that begin to develop.
• Use the “30-30 rule.” If the time delay between seeing the flash of lightning and hearing the bang of thunder is less than 30 seconds, you should already be moving toward shelter. Lightning can strike 30 minutes before or after a visible storm.
• In an open field, seek low spots for shelter.
• Seek shelter at a location which is away from hilltops, trees or utility lines.
• Use closed buildings for shelter if possible. Do not use items connected to plumbing or house wiring.
• Tractors with cabs and vehicles can be used for shelter.

Figure 2.5.3.a. Lightning strikes can be fatal. Take shelter indoors if possible. Do not seek shelter beneath trees or near utility lines.
Remember these points in a tornado.

- Understand the radio and local siren warnings used to sound impending weather emergencies.
- If a tornado “watch” is issued, remain alert to storms. See page 3.
- If a tornado “warning” is issued, a tornado has been sighted or has appeared on weather radar. Move to safe shelter immediately. See page 3.
- Do not try to outrun a tornado. The speed and direction of a tornado can be deceiving.
- If caught outdoors in high winds or tornadoes, seek a ditch or low spot for protection. Lie face down with your hands over your head.
- If you find shelter in a building, go to the basement or to an inner room. Stay away from outside walls which may collapse, and stay away from windows which may shatter.

Tornado Myths and Truths

Myth 1: Tornadoes cause buildings to explode.

Truth: Violent winds and debris smashing into the building cause most of the structural damage.

Myth 2: Windows of the house should be opened to equalize pressure and minimize damage.

Truth: Opening the windows only opens the building to the damaging winds. Go to a safe place instead.

With early-warning systems in place throughout the U.S., tornado deaths have been reduced greatly. Know what the changing weather means to your safety.
**National Oceanic and Atmospheric Administration (NOAA)**

The NOAA agency of the federal government conducts weather and environmental observations around the world. NOAA information is used by National Weather Service forecasters to report weather patterns and events. NOAA satellite data benefits many groups. Aviation, maritime, and farm groups need up-to-the-minute weather information to assure safety and economic success.

Special NOAA weather radios can be purchased in many stores. These radios continuously broadcast updated weather warnings and forecasts. The radio’s average range is 40 miles depending upon topography. Some NOAA radios have a feature that automatically sounds a tone when a watch or warning is issued in your area.

**Rain and Rainstorms**

Regular rainfall is necessary for crop growth. Periods of drought reduce yields and cause anxiety for farmers. Excessive rainfall delays planting and harvest and frustration again builds. Rain is necessary for success, but rain and rainstorms affect farm safety. Examine these points.

- Excessive rain causes reduced traction. Tractor steps may be mud covered. Fields may be slippery. Tractors can become stuck. See Task Sheet 4.13, Using the Tractor Safely.
- Excessive rain causes flooding. Crops can be damaged when soils become saturated.
- Saturated soils cannot hold more water. Flash flooding can occur. High water can sweep people and vehicles away.
- Rainy periods delay crop operations resulting in potential yield loss.
- Long periods of weather extremes frustrate farm growers. Unsafe acts can result as producers attempt to hurry to complete the work.

Think about these scenarios. Have you seen these effects of weather?

**U.S. Weather Notification System**

The National Weather Service issues daily forecasts and long-range weather outlooks. This service also decides when to issue severe weather watches. The notices include “watches” and “warnings.”

*Severe weather watch*

This notice indicates conditions are favorable for the development of severe weather, such as tornadoes, thunderstorms, blizzards, and potentially damaging wind or hail.

*Severe weather warning*

This notice indicates that a tornado, severe thunderstorm, or winter storm is in the immediate vicinity. People who are outdoors should find shelter as soon as possible.
Cloud Types

A. Cumulus Cloud

B. Stratus Cloud

C. Cumulonimbus Cloud

Figure 2.5.3.e. Clouds can help predict weather. Cloud A is a cumulus cloud. These heaped or lumpy clouds indicate a period of fair weather. Cloud B is a stratus, layered cloud. They are full of ice crystals. These layered clouds can also form fog and mist. Cloud C is a cumulonimbus cloud. These towering clouds have an anvil shape at the top. They forecast rain, hail or storms. See if you can observe clouds and make a weather prediction.

Special Note: An individual is responsible for his or her own personal safety and has the right to take appropriate action when threatened by severe weather. No employer can force you to work in a dangerous situation.

Safety Activities

1. Use the Internet to learn more about lightning and tornadoes. Write a report for your teacher, leader, or for extra credit in science class.
2. Develop a family or farm emergency plan for severe weather if one does not exist.
3. If a weather emergency plan does exist, have the family or farm employees gather to review and practice the plan together.
4. After a rainstorm, clean the steps to each tractor and implement ladder to reduce slip and fall hazards.
5. Make a cloud project. You will need a large clear plastic jar, a small metal tray, ice cubes, and hot water.
   
   Step 1. Fill the jar 1/2 full of hot water (be careful).
   
   Step 2. Place some ice trays on a metal tray on top of the jar.
   
   Step 3. Observe the air space in the jar beneath the tray. Air and water vapor inside the jar next to the tray is cooled, condensing into water droplets (a cloud).

References

1. www.noaa.gov/(National Oceanic and Atmospheric Administration website)/Search the site for any weather information you desire.

Contact Information

National Safe Tractor and Machinery Operation Program
The Pennsylvania State University
Agricultural and Biological Engineering Department
246 Agricultural Engineering Building
University Park, PA 16802
Phone: 814-865-7685
Fax: 814-863-1031
Email: NSTMOP@psu.edu

Credits


This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Agreement No. 2001-41521-01263. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.
Introduction
Uniform safety signs are designed to promote and improve personal safety in agricultural workplaces. Safety signs have been developed to warn of farm machinery hazards, but there are also safety signs that apply to non-machinery hazards. Signal words, sign format, and color combinations all play a role in safety signs.

This task sheet discusses uniform hazard warning signs that farm workers should observe and understand. Use specific owners’ manuals to learn more about them.

Safety Alert Symbol
This symbol was created to draw attention to the need for safety. The symbol means:

Attention!
Become Alert!
Your safety is involved!

The safety alert symbol is used with agricultural, construction, and industrial equipment. The primary uses of the symbol are in an owner’s manual and on hazard warning signs.

Good Hazard Warning Signs:
• Include the “safety alert” symbol
• Warn a person of the nature and degree of hazard or potential hazard
• Provide recommended safety precautions or evasive actions to take
• Provide other directions to eliminate or reduce the hazard

DANGER—The most serious potential hazard. These are RED.

WARNING—Show a lesser degree of potential hazard. These are ORANGE.

CAUTION—Indicates a need to follow safety instructions. Usually are YELLOW.

Learning Goals
• To quickly gather hazard potential and safe operation information by understanding hazard warning signs

Related Task Sheets:
Tractor Instrument Panel 4.4
Tractor Controls 4.5
Tractor Operation Symbols 4.5.6
Preventative Maintenance and Pre-Operation Checks 4.6
A pictorial quickly presents a potential hazard situation and a possible result of ignoring this potential danger. When these “picture” messages are seen, ask the question, “What is the worst thing that can happen to me?”

Pictorials

A pictorial is a graphical representation intended to convey a message without the use of words. It may represent:

- Hazards
- Hazardous situations
- Precautions to avoid a hazard
- Results of not avoiding a hazard
- A combination of these messages

Pictorials may be used in addition to or in place of a word message. The pictorial should quickly help a person to recognize a hazard. Many pictorials have been developed and are shown and explained here. Learn what each pictorial is trying to communicate. This could help you respond to or avoid a serious injury. Use the reference section to find a complete exhibit of pictorials for farm work.
Hazard warning signs placed on tractors and machinery serve as quick, easy sources of information. They do not replace an owner’s manual. The warning signs make the information readily available.

Figure 2.8.h. A potential high pressure hydraulic hose leak is a hazard which could force oil beneath your skin. Check hydraulic leaks with a mirror or piece of metal instead of your hand or fingers.

Figure 2.8.i. This safety sign warns of the potential to be run over by a tractor. Use the seat belt while operating the tractor equipped with a ROPS. Do not stand to drive. Passengers should not be allowed to ride the tractor. Extra riders are at a great risk for injury or death.

Figure 2.8.j. Potential entanglement in a rotating auger with cutting is shown. Moving parts need guards. If unguarded areas are encountered, the agricultural worker must use extreme caution.

Figure 2.8.k. Electrical contact with overhead power lines and the high lift bucket shows the potential for electrocution to the operator.

Figure 2.8.l. Possible slippery area with potential fall hazard is shown in this warning sign.

Figure 2.8.m. This safety pictorial shows the potential for thrown objects and the need for safety goggles. High noise levels indicate the need for ear protection.

Hazard warning signs and symbols provide the most direct information nearest the potential hazard site. Use them!

In the space above, draw a safety sign that warns someone of the potential to be entangled in a belt drive. Check the asae.org website to compare results.
**Safety Activities**

1. Use the Internet websites shown in the reference section, locate the safety signs standard S441.3, and print out the .pdf file. Use the information for a class or group discussion.

2. Safety signs are constantly being developed. ASAE Standards from question Number 1 also give the rules for developing safety signs. Choose a potential hazard, and design a safety sign for that situation. Perhaps someday your sign will be used as an industry standard.

3. Tell your leader, teacher, or employer what the safety alert signal words mean:
   - Caution
   - Warning
   - Danger

4. Draw a picture of the safety sign or symbol for each of these:
   - Hand entanglement in a chain and sprocket drive
   - Hot engine coolant temperature
   - Falling into machinery, such as an auger


6. Develop a hazard warning sign for a potential dog bite on a farm. Draw your sign here.
**Learning Goals**

- To learn how to prepare for emergency situations
- To learn how to respond to farm injury emergencies

**Related Task Sheets:**
National Ag Safety and Health Resources 1.4.2

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**Introduction**

Knowledge of first aid and rescue should be part of everyone’s safety experience. Hazards and risks can be reduced by careful planning and safe work habits, but injuries can still occur. What can you do if an injury or fatality occurs where you work?

This task sheet discusses first aid and rescue basics, however, it will not make you a professional emergency rescue worker.

*Important: Enroll in a CPR and first-aid course and keep your skills current.*

**Preparations**

In addition to safe equipment, a safe work site should include:

- A person trained in CPR and first-aid procedures
- A first-aid kit and supplies
- An emergency plan, including telephone numbers for emergency services such as 911
- A location or site map available for emergency responders

Let us examine these points in more detail.

**CPR Training**

Cardiopulmonary Resuscitation (CPR) is used to provide manual ventilation (air intake) and chest compressions to stimulate the patient’s heart and lung operation until medical help arrives or the victim begins to breathe on his or her own. Injured victims or those persons suffering from a heart attack or stroke can be assisted by CPR techniques.

CPR classes are offered by the American Heart Association or the American Red Cross in most communities. CPR is best learned in the classroom and with practice under the supervision of a qualified instructor.

**First-Aid Kit**

See page 3 for details.

**Emergency Contacts**

In the event of an emergency, a call to 911 or to emergency medical service (EMS) personnel must be made quickly. Telephone numbers should be posted near the phone or stored in your cell phone. Include these numbers:

- Fire department
- Police department
- Ambulance service
- Poison control center
- Chemtrec 1-800-424-9300 (for chemical spills)
- Electric and gas companies

Be prepared to give directions to the site of the accident. Many times people panic and cannot remember their address, phone number, or directions to the farm. Have this detailed information posted by the phone with the emergency phone numbers. Farm maps should be provided to emergency responders for their files.

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Write down the directions to the farm to read to emergency responders.
What can you do? Without training, your emergency response may be inappropriate and may create a liability issue.

Follow the ABCs of first aid after assessing the overall situation. Do not put yourself or the victim in more danger. Here are the ABCs of first aid.

- **A (Airway)**
  The victim must be able to breathe. Lay the victim flat on his/her back after checking that there are no broken bones or spinal injuries which could cause further harm. Be sure that the airways (nose, mouth, and throat) are clear. Remove any material from the mouth. Tilt the head and lift the chin to open the airway. Loosening the shirt collar and belt may improve breathing.

- **B (Breathing)**
  Determine if the person is responsive. Shout, “Are you okay?” If there is no response, mouth-to-mouth resuscitation may be needed. Did you learn how to conduct mouth-to-mouth resuscitation in Junior High health class?

- **C (Circulation)**
  Blood must flow throughout the body to carry oxygen to the cells. Without oxygen, brain damage can occur in minutes. Cardiopulmonary Resuscitation (CPR) will be needed if the victim cannot breathe on his or her own. CPR involves regular chest compressions and breathing assistance. You must be CPR trained to provide this service.
**First-Aid Equipment Needs**

General purpose first-aid kits are readily available. A small, well-maintained first-aid kit should be placed on every tractor, farm truck, and major piece of equipment. Larger kits should be located in the farm shop or at home. The small kits should contain at a minimum:

- Sterile first-aid dressings and compresses of various sizes
- Roller bandages
- Adhesive tape
- Disinfectant soap or wound cleanser
- Tweezers
- Scissors
- Latex gloves
- Directions for requesting emergency assistance

**Farm Family Emergency Response**

A farm family member is often the first person on the accident scene. Fear, panic, crying, and shock can occur. These emotional responses may delay getting help for the victim. Discuss farming hazards, and practice emergency procedures to better handle emergencies.

Discovery of a victim of an agricultural accident requires immediate action. Three actions are needed.

- Activating emergency medical services (EMS)
- Stabilizing the scene
- Providing patient care

**Activating EMS**

You must quickly and calmly determine whether to remain at the site or to seek help. Discovering a farm accident means a call for assistance is needed. It is recommended that each farm have a site map located at the farm entrance. Rescue teams can then assess the location and identify potential hazards.

**Stabilizing the Scene**

Controlling hazards at the scene that could harm you or cause further harm to the victim is called “stabilizing the scene.” Tractors and machinery can roll further. Fire and explosions can occur. Hazardous materials could spill, or toxic fumes can exist. Be cautious. You may rush to help the victim and become a victim as well.

If the scene cannot be stabilized, but you can still safely approach the victim, try to remove them from the danger. If you suspect spinal injury to the victim, there is a risk of paralysis or death if you move them. Take time to think about the risk to the victim.

Your decisions are important. Think about them, read about these situations, and enroll in CPR and first-aid classes to increase your decision-making skills in emergency matters.

**Providing Patient Care**

If you are not trained in CPR, your actions may be limited to assuring that the victim is breathing and that bleeding is controlled. Review the airway information on page 2.

Arteries carry blood away from the heart in pulses. Severed arteries spurt blood. You must apply pressure to that point to stop the bleeding.

Talk with the victim to help keep the victim calm. Do not attempt to move the victim. Further injury can result.
**Safety Activities**

1. Conduct a farm survey to identify the locations of first-aid kits. Are they complete? Have supplies been replaced?

2. Conduct a survey of all persons on a local farm to find out how many have been trained in first aid and CPR.

3. Complete a CPR course sponsored by a local agency, such as the American Heart Association or the American Red Cross.

4. If you have CPR certification, remember to enroll in a refresher course.

5. Complete a lifeguard certification program.

6. Join the local Junior Volunteer Fire Program of your local VFD to learn skills in fire safety and rescue.

7. Produce a poster showing the steps needed to perform mouth-to-mouth resuscitation.

8. Many schools and shopping centers now have automated external defibrillators (AEDs) to use if someone has a heart attack. Learn more about these devices and how they work.

9. Conduct a training session on responding to an emergency, such as a tractor turnover, machinery entanglement, or grain bin entrapment. Make sure that all family members and employees understand what to do in an emergency.

10. Offer to set up a farm accident rescue program for the local VFD and EMS groups. Seek adult sponsorship to help you do this.

11. Learn about pressure points used to stop arterial bleeding. Post a drawing of the body’s pressure points in the farm shop.

12. Post detailed directions to your farm next to your telephone or in the directory of your cell phone. The directions should begin at your local emergency medical service.

13. Organize a day on the farm where everyone can learn and practice how to shut off every engine/motor in the event of an emergency.

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**References**


3. www.osha.gov/Type"first aid" in search box.

4. Farm Family Emergency Response Program, College of Agricultural Sciences, Department of Agricultural and Biological Engineering, Penn State University, University Park, PA.