Please keep in mind, there is much more material on farm safety than presented here, but to keep things simple – this lesson is a general overview of farm safety.

Always be cautious when working with equipment, livestock, chemicals, electricity, etc. It is important to read over safety regulations and procedures before beginning any activity.
WHY IS IT IMPORTANT TO TALK ABOUT FARM SAFETY?

- A simple Google search shows that farming is one of the top 10 most dangerous jobs. (Forbes, CNBC, USA Today & more)
  - Farmers, ranchers, and other agricultural managers are at a higher risk than most of fatal injuries or accidents among full time workers

- Being responsible & knowing proper protocols for farming can save not only your life, but others as well

- Farming is one of the few industries in which the WHOLE family is at risk for both fatal and non-fatal injuries
  - Farm injuries are particularly high among children:
    - Children play on equipment, they are always present and need to be aware of the dangers of farm life so if they are not watched, they are still safe

Visit [http://www.osha.gov/](http://www.osha.gov/) for more information and details on farm safety
FARM EQUIPMENT AND OTHER TOOLS
FARM EQUIPMENT

Machinery, equipment and tractors are the most common causes of farm deaths

SOME THINGS TO DO AND BE AWARE OF:

1. Read the owners manuals and follow all of the safety instructions
2. Equipment should be turned off and in a parked position before being worked on
3. Always replace broken or removed safety shields before operating equipment
1. Know your tractor, the implements and how they work – read the manual, and keep your tractor in good condition

2. Use ROPS (Rollover Protective Structure) and seat belt whenever and wherever applicable

3. Be familiar with your terrain and surroundings and drive safely - use caution on slopes, slow down for turns, and say off the highway whenever possible

4. Never start an engine in a closed shed or garage – Carbon Monoxide is deadly

5. Always keep your PTO properly stored (it rotates with the strength of 500 men)

6. Keep your hitches low and always on the draw bar – this is to keep the tractor from flipping backwards

7. Never jump off a moving tractor or leave it with the engine running

8. Never refuel while the engine is running or hot - do not add water to the radiator while the engine is hot

9. Keep all children off and away from your tractor and the implements

10. Never be in a hurry, take your time and do it right
COMMON TRACTOR INJURY-INCIDENTS

- By-pass starting
- Front-end loader accidents
- Rearward tractor rollovers
- Sideways tractor rollovers
- People falling from tractor (especially extra riders)
- Tractor run overs
- Caught-between crushing
- PTO stub shaft entanglement
TRACTOR ROLLOVERS

Rollovers account for about one-half of all tractor fatalities on our farms. The chief causes of these rollovers include:

- Driving too fast for conditions
- Striking surface irregularities such as rocks, stumps and holes
- Short turns at high speeds
- Running into ditches
- Hitching high for extra traction
- Driving on steep slopes
- Improper operation of front-end loaders
When working on or around equipment be careful of the following:

- Shear points – places where the edges of two moving parts come together
- Pinch points – where two objects move together
- Wrap points – are exposed rotating part of machinery
- Crush points – where two parts move together
- Free-wheeling parts – parts that continue to move after the machinery has stopped
- Pull-in points – places where you can be pulled into the machinery
- Thrown objects – places where debris is thrown from the machinery
ALL TERRAIN VEHICLE (ATV) SAFETY

ATVs are VERY common on farms, they also cause a large number of injuries.

Everyone using an ATV should wear a helmet
  - Helmets reduce the risk of death by about 40%

Children under 16 should not operate ATVs

Use good judgement when operating an ATV
  - No “horseplay”
TOOLS

USE COMMON SENSE

Read safety warnings

Before using a tool, make sure it is safe to use

- Is the handle broken?
- Are all safety guards in place?
- Is the electric cord in good condition?

Use tools only for their proper function – use the right tool for the right job

- Screwdrivers are not chisels
- Wrenches are not hammers
HAND TOOLS

USE PERSONAL SAFETY EQUIPMENT

- Safety glasses
- Hearing protection
- Gloves
- Respiratory protection from dust
- Closed toe (or even steel toe) shoes/boots

Make sure children can not access hand tools, store them properly
OSHA RECOMMENDATIONS FOR ALL POWER TOOLS

- **NEVER** carry a tool by the cord or hose
- **NEVER** yank the cord or the hose to disconnect it from the receptacle
- Keep cords and hoses away from heat, oil and sharp edges
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters
- All observers should be kept at a safe distance away from the working area
- Secure work with clamps or a vise, freeing both hands to operate the tool
**OSHA RECOMMENDS THE FOLLOWING FOR ALL POWER TOOLS**

Avoid accidental starting
- Do not hold a finger on the switch button while carrying a plugged-in tool

Tools should be maintained with care
- Keep tools sharp and clean for best performance
- Follow instructions in the user’s manual for lubricating and changing accessories

Be sure to keep good footing and maintain good balance

The proper apparel should be worn
- Lose clothing, ties, or jewelry can become caught in moving parts (that includes wedding rings)
- Keep long hair pulled back
AXES/CHAINSAWS

Make sure the blade of the axe and the teeth on the chainsaw must be sharp and in top condition to work properly.

Give yourself plenty of room when using an axe or a chainsaw, do not let people stand close by.

Wear sturdy boots to protect your feet.

When carrying an axe or chainsaw, make sure to keep the blade away from yourself!
ELECTRICITY
ELECTRICITY HAZARDS AROUND THE FARM

Power Lines
- Always look up when moving equipment or objects and locate buried power lines before digging

Extension cords that are missing insulation

Overloaded outlets

Drilling into a power line in a wall

Shorts in power tools or electric lines
  - Rodent damage to electrical lines can cause them to short out
Before working on equipment, disconnect if from all sources of electricity

- Never assume equipment is not electrified
- Know how to check for electricity and have the proper tools to safely work, if not...CALL A PROFESSIONAL
- Remember that some equipment stores electricity so you can still be electrocuted even if the power supply is off – use caution
ELECTRICAL FENCES

- They can create a fire or electrocution hazard
- Lightening strikes may follow fence wires into a building and start a fire or electrocute people/livestock
- Fences should be mounted at least ten feet from any structure or areas where combustible materials, such as hay, are stored
- Fences must be properly grounded and installed according to manufacturer instructions

Never touch a fence that may be electrified with two hands, as this will allow the current to travel through the heart and lungs

Always keep one hand in your pocket so you don’t accidentally touch something that will turn a painful but non-lethal shock into cardiac arrest
CHEMICALS/TOXIC GASES
Sources of farm chemicals include:

- Pesticides
  - Insects
  - Rodenticides
  - Herbicides
  - Fungicides
- Fertilizers
- Medication for Livestock
- Fuel/Oil for Farm Equipment
- Cleaning Supplies
CHEMICALS/PESTICIDES

ALWAYS READ AND FOLLOW THE DIRECTIONS OF USE, SAFETY AND WARNING LABEL INSTRUCTIONS THAT ACCOMPANY ANY CHEMICAL

- Any application different from the instructions may be not only dangerous but ILLEGAL!
- If you can’t understand them then call the help number
- Wear protective equipment (different ways of absorption)
- Don’t eat, drink or smoke while pouring, mixing or applying chemicals
  - Only prepare enough for immediate use
- Make sure to wash your hands and face after working with chemicals
  - Chemicals can enter your body through your skin
- Be sure to change clothing and wash up before playing with kids or pets as chemicals may be on your clothing
  - Wash work clothes separately

NEVER USE A CHEMICAL UNTIL YOU KNOW THE RISKS INVOLVED!
CHEMICALS/PESTICIDES

- Dispose of empty containers in an approved way
  - Read the label for the approved disposal method
  - Check local regulations on methods of disposal
  - Some counties have regular pesticide and chemical disposal programs
    - Contact your extension agent

- Chemicals should be stored in their original containers, with labels and instructions still attached

- Keep chemicals in a separate building/location from feed, seeds or fertilizers

- Signs should be present where chemicals are stored to warn of the dangers

- **MAKE SURE STORAGE LOCATION IS NOT ACCESSIBLE TO CHILDREN**

Half of all pesticide related deaths are present in children under 10 years old
TOXIC GASES

Toxic gases can be a problem anywhere you have a confined space with no ventilation

Never leave equipment running in a barn or garage without providing ventilation
  • Exhaust and generator fumes can kill
  • Install a circulating fan in your work space and barn

Never mix chemicals
  • Some chemical reactions can explode and others can result in fumes that cause coughing, shortness or breath, chest pain, irritation to through, nose and eyes

Storing chemicals
  • Flammable materials should be stored in an approved, dedicated, flammable materials storage cabinet
  • Chemicals should be stored no higher than eye level and never on the top shelf
  • Shelves should be firmly secured to the walls
**TOXIC GASES**

**Low oxygen conditions** in confined spaces (such as silos, manure pits, storage areas) can be deadly.

At low levels (16-18% vs. the normal 21% in the atmosphere) there is an impairment of judgment and breathing without the victim realizing it.

A concentration to below 10% can result in death within minutes.

**Silo gas (nitrogen dioxide)** is a well-known danger associated with silos.

Low levels of this gas can cause headache, eye, nose and throat irritation, but at higher levels it can cause pulmonary edema and possible death.

**Methane (biogas)**

It is non-toxic, however it is highly flammable (at a concentration of 5-15% in the air). Anything that might create a spark – cell phones, radios, engines, clothing static or other non-explosion proof devices – could initiate an explosion.

**Ammonia exposure effects**

<table>
<thead>
<tr>
<th>Effect</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readily detectable odor</td>
<td>20-50 ppm</td>
</tr>
<tr>
<td>Severe irritation of eyes, ears, nose and throat. No lasting effect with short-term exposure</td>
<td>400-700 ppm</td>
</tr>
<tr>
<td>Dangerous, less than 1/2 hour exposure may be fatal</td>
<td>2,000-3,000 ppm</td>
</tr>
<tr>
<td>Serious edema, strangulation, asphyxia, rapidly fatal</td>
<td>5,000-10,000 ppm</td>
</tr>
<tr>
<td>Immediately fatal</td>
<td>&gt;10,000 ppm</td>
</tr>
</tbody>
</table>
LIFTING/HEAVY OBJECTS
LIFTING

IMPROPER LIFTING IS ONE OF THE MOST COMMON CAUSES OF BACK INJURIES

Before lifting an object check to make sure you can:

- Carry the load to the destination
  - Can you use any equipment for this instead?
- Check for objects in the way; such as uneven surfaces, rocks, fence, ropes, stairs, curbs, extension cords
  - Do you need gloves?
- Do you have to pass through a doorway?
  - If so, is the door open? Will the object you are carrying fit through the door?
- Once you have lifted the object, will it block your view?
- Can you take the object apart and safely carry the pieces instead?
LIFTING

PROPER LIFTING TECHNIQUES:

- Get as close to the object as you can
- Make sure your feet are firmly planted
- Bend at your knees and not your back
- Securely grasp the load
- Lift by straighting your knees
- Make sure that you do not twist your body while lifting
WEATHER
Weather Fatalities 2016

- Flood: 126
- Lightning: 38
- Tornado: 105
- Hurricane: 11
- Heat: 131
- Winter: 30
- Cold: 31
- Wind: 57
- Rip Currents: N/A

http://www.nws.noaa.gov/om/hazstats.shtml
HEAT EXHAUSTION AND HEAT STROKE

Prevent heat related injuries by:
- Avoiding hard work during the hottest part of the day
- Wear light loose-fitting clothing that is light in color
- Wear a wide brim hat
- Drink lots of fluids periodically, don’t drink alcohol
- Take frequent breaks in cool and shaded areas
- Work at a slower pace
- Get acclimatized to the weather prior to working
- Learn how to recognize the sings of heat exhaustion and stroke

Heat emergencies are of three types: heat cramps (caused by loss of salt), heat exhaustion (caused by dehydration) and heat stroke (shock). Remove the victim from the heat and have him lie down. Apply cool compresses, elevate the feet, drink fluids and use a fan to blow cool air. Get medical help if needed.

https://www.peacefulmind.com/remedies-for-heat-exhaustion/
HYPOTHERMIA


http://www.dxline.org/img/term/hypothermia-7549_2.jpg

TREATMENT IN THE FIELD

<table>
<thead>
<tr>
<th>BODY SIGNS/SYMPOMS</th>
<th>TEMP. (rectal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>37.5°C NORMAL</td>
<td><a href="http://www.hypothermia.org">www.hypothermia.org</a></td>
</tr>
<tr>
<td>36 FEEL COLD</td>
<td>Seek dry shelter, replace wet clothing with dry, including socks, gloves, hat, cover neck, insulate whole body including HEAD from cold, Exercise but avoid sweating. External warm (bed, hot water bottle), feed ONLY if CORE TEMP. above 35°C. Warm sweet drinks and food (high calorias).</td>
</tr>
<tr>
<td>35 SHIVERING</td>
<td></td>
</tr>
<tr>
<td>BODY CORE TEMPERATURE BELOW 35°C = HYPOTHERMIA = HOSPITAL</td>
<td></td>
</tr>
<tr>
<td>34 IRATIONAL</td>
<td>NO EXERCISE, HANDLE GENTLY, REST, NO EXTERNAL WARMTH (except to chest, trunk, eg. Heliker Jacka).</td>
</tr>
<tr>
<td>33 MUSCLE STIFFNESS</td>
<td>Warm sweet drinks and calories, internal warming via warm moist air (exhaled air, steam) or warm moist oxygen (40 - 42°C at mask).</td>
</tr>
<tr>
<td>32 SHIVERING STOPS, COLLAPSE, TRANSFER TO HOSPITAL, URGENT.</td>
<td>Monitor pulse, breathing, restrict all activity, lie down with feet slightly raised.</td>
</tr>
<tr>
<td>31 SEMI CONSCIOUS</td>
<td>Nothing by mouth. Check airway remains open.</td>
</tr>
<tr>
<td>30 UNCONSCIOUS</td>
<td>May tolerate plastic airway, put in recovery position, check airway, turn every 2 hours to protect skin, monitor pulse and breathing.</td>
</tr>
<tr>
<td>29 SLOW PULSE AND BREATHING</td>
<td>Slow mouth-to-mouth breathing, at victim's own rate (may be very slow).</td>
</tr>
<tr>
<td>28 CARDIAC ARREST</td>
<td>Check airway, CPR, with mouth-to-mouth breathing. Aim for normal CPR rates of 12-15 breath/min, and 80-100 compressions/min; but slower rates of 6-12 breath/min; and 40-60 compressions/min, may be adequate. Continue for as long as you can.</td>
</tr>
</tbody>
</table>

BELOW 29°C. NO VITAL SIGNS, COLD. DO NOT GIVE UP TREATMENT.

NOTE: NOT DEAD UNTIL WARM AND DEAD!
Avoid rapid rewarming and HANDLE GENTLY AT ALL TIMES.
Core temperature may lag behind skin temperature and continue to drop, do keep monitoring.

http://www.dxline.org/img/term/hypothermia-7549_2.jpg
Rain can cause flooding of roads and fields

- If flooding occurs livestock needs to be able to get to higher ground or they will drown
- Flooding can also ruin equipment that is left on low lying areas
- Every year, hundreds of people die trying to drive through flooded roads
  - Don’t drown, turn around!

Rain can also cause electrical problems if roofs leak

- Electrical fences are also an important risk

Even if roads are not flooded they will be slippery and visibility will be lower

- Hydroplaning is also a concern
FLOOD

Pile of dead cows after a flood in Seattle, 2007
HAIL

Getting caught out in a hail storm with no protection can be both painful and deadly.

Large hail has been known to kill livestock and destroy gardens and field crops.

Hail can also damage buildings, vehicles and equipment.

Hail damaged tomatoes
SNOW AND ICE

- Can build up on buildings and cause roofs, branches and electrical wires to collapse
- Can make it hard for animals to access feed and water
- Can increase the number of falling accidents
Wind can cause damage to buildings, topple trees, cause branches to fall and damage buildings.

In strong winds, flying debris can cause injury or death to both people and livestock.

Tornado insurance and precautions should be in your plan, always.

- In rural areas, wind storms often result in power outages.
- Watch out for downed power lines – they may still be electrified and can kill if touched.
Lightening strikes the Earth’s surface about 100 times every single second. About 2,000 worldwide are killed each year by lightening.

Many more survive strikes but suffer from lasting symptoms such as:
- Memory Loss
- Dizziness
- Weakness
- Numbness
- And other life-altering ailments

Remember when it comes to lightening, there is NO SAFE place outdoors.

Lightening can strike up to 25 miles away from a thunderstorm cloud.

Lightening strikes:
- Under Trees (25%)
- Open Areas and High Elevations (Includes Sports Fields and Golfing (5% of total)) (51%)
- Water (Swimming, Boating, Fishing) (14%)
- Farm & Heavy Equipment (5%)
- Telephone (4%)
- Radio Equipment (1%)
ENCLOSED SPACES
GRAIN BINS/SILOS
Grain bins and silos are used to hold harvested crops. They can have a build up of toxic gases if they are not ventilated correctly. The highly corrosive environment of silos makes annual inspections of your systems essential to check for deterioration or physical damage. It is always dangerous to enter bins and they should be maintained so that children cannot get in them.
• Grain being stored is removed through an opening in the center of the bin
• As you can see, this process pulls the grain down and toward the center of the bin
• This will cause a depression and a void in the middle of the grain

Vertically crusted grain can collapse on a farmer attempting to break up the crust.

Crusted grain surface can seem even and stable but there can be voids underneath.

A person can get covered with grain in a matter of seconds.

• Grain wagons can be a hazard, particularly to youngsters
• The grain in a grain wagon acts just like the grain in a bin when moving
• As the grain settles it will create a void and pull the child down, and most children (or adults) are not strong enough to pull themselves out of the moving grain
SILO SAFETY

Silo gas is formed by the natural fermentation of chopped silage shortly after it is placed in the silo

- Nitrogen dioxide levels peak about 3 days after harvesting
- It leads to irritation to nose and throat and inflammation of the lungs
- High concentrations can cause little immediate problem can cause death by fluid collecting in lungs (farmers can die in their sleep hours later...)

DO NOT ENTER SILOS FOR 4-6 WEEKS AFTER FILLING and MAKE SURE SILOS ARE VENTILATED BEFORE ENTERING
MANURE PITS

MANURE PILE

SLURRY TANK

MANURE PIT
MANURE PITS

A danger of manure pits: a solid locking crust may form on the top and it will not support the weight of a person

Manure pits need to be fenced so that animals, kids and visitors can not access them

Warning signs should also be placed around the pit to warn off the dangers

Manure pits should be treated like any other type of confined space. As such:

• All manure pits should be ventilated
  • Some of these gases are heavier than oxygen and tend to stay near the bottom of the manure pit

• The atmosphere within the pit should be tested before entry

• A standby person should be in constant contact and ready to lift the worker to safety with mechanical lifting equipment (winch, hoist, or pulley)

• Anyone entering a manure pit should wear a safety belt or harness with a lifeline tied to the mechanical lifting device
PONDS/WATER

Ponds are used to water livestock, conserve water and soil, store water for irrigation, fire protection and serve as a source of recreation.

Along with these benefits, ponds also represent a hazard to those who live and work on the farm:

- Small children can fall in or wander away for adult supervision and drown.
- Works can role equipment into the pond and possibly drown.
- Pond maintenance also posses a risk to workers.
- Falling through thin ice in winter can result in hypothermia and death.
LIVESTOCK
LIVESTOCK HANDLING

ONE OUT OF SIX INJURIES ON FARMS INVOLVE ANIMALS

The majority of animal injuries are to farm family members.

Livestock can pose numerous safety risks particularly to children.

Teach visitors and children to respect animal and how to treat them well.
Some general rules about animals are:

- Larger animals pose a greater risk than smaller ones.
- Males are more dangerous than females.
- Mothers with young will attack if they perceive their young are in danger.
- Never startle animals, always let them know when you approach by speaking in a calm voice.
- Animals that are cornered or feel threatened are more likely to cause injury.
Kids, age 5 to 14, are most often bitten by pets
  - Teach proper handling of pets to children so they do not injure the pet, who may then bite the child

Make sure that all pets are properly vaccinated and neutered

Never approach an animal that is acting hostile
  - Different diseases or injuries can make even family pets be aggressive
POULTRY

- Roosters will attach people with their spurs
- If they can, roosters will try and peck at the eyes
- Little children are often the target of their aggression
- Mother hens sitting on eggs will often peck at the hands and arms of those collecting eggs
- Dust, ammonia and other gasses in chicken houses can also cause respiratory problems

Geese can be very aggressive when nesting and can cause injury by biting and using their wings to hit
SHEEP

It is common for sheep to jump at people if startled when approached from the front

- They can hit with enough force to knock people down, and cause head and shoulder injuries. They can even break the legs of handlers

Mothers with lambs can be very protective so care needs to be exercised when approaching them

Rams will butt with they heads and can injure those that work with them

Children should never be allowed to access areas with rams
Goats will butt with their heads

- Don’t forget that horns can be very sharp!

Children should never be allowed to access areas with the billy (or buck) goat.
PIGS

Pigs can bite hard enough to cause serious injury
They can also hit you in the legs with enough force to break legs
Pigs have been known to kill children that enter their pens
Children must be supervised when working with them
CATTLE

Cattle tend to kick forward more than backward so be careful when milking

Bulls can be aggressive particularly when a cow is in heat. They can cause severe injuries with their heads and horns as well as by stepping on you

Cows with calves can charge causing injury

Care should be taken even when working with calves as they can still injure those working with them
HORSES

Every year many people are killed when working with horses.

They can bite, kick or stomp on workers.

Even a fall from a well trained horse can result in serious injury or death, riders should always wear a safety helmet.

When riding watch out for low hanging branches.

Ride only horses that you are capable of handling.
WILD ANIMALS

Most farms are in rural areas so wild animals are often around.
Wild animals can bite and scratch.
They can spread diseases like rabies, both to people and animals including pets.
They can also transmit ticks and other parasites.
ALWAYS BE PREPARED FOR ANYTHING WHEN IT COMES TO ANIMALS...
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