


TARLETON STATE UNIVERSITY
AGRICULTURE SAFETY

Program Name: Agriculture Safety
Department Name: TSU Risk Management & Compliance
Doc. No.: AGRS-04-L2-S0-CH0-001
Rev. No.: 2

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

Concurrence and Approval


This document was developed for use by all Tarleton State University Employees and has been reviewed and approved by the following approvers.

Document Custodian:

Hector C. Davis, Environmental Health and Safety Coordinator


Approval:

	07-October-2016
Hector C. Davis, EH&S Coordinator	Date

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
	Level 2	Rev No:	2
		Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

Change History

Revision Number	Interim Change No.	Effective Date	Description of Change
001	0	10-March-2014	Initial document release under new document and record control guidance
002	0	07-October-2016	Biannual review

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
	Level 2	Rev No:	2
		Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

1. INTRODUCTION

The following information is provided to assist Tarleton Agriculture Departments in developing procedures to meet applicable safety requirements to protect students, employees, and the environment. This program sets forth recommended minimum requirements that need to be followed to maximize the safety of all workers.

Any pregnant students, or students planning to become pregnant, should consult their health care provider to determine what, if any, additional precautions are needed based on their individual situation. It is the responsibility of the student to communicate their needs to their immediate supervisor as soon as possible in order for risk-reduction to begin when it can be most effective, and to determine if additional modifications are necessary. While the university cannot mandate that the student notify it that she is pregnant or is planning to become pregnant, the university strongly recommends that students do provide notification so appropriate steps can be taken to ensure the health of both parent and child. To communicate health circumstances or to request additional information, please contact Tarleton's Title IX Coordinator within the Department of Employee Services at x9128.


2. PESTICIDE CHEMICAL SAFETY

This section discusses agriculture chemical safety for pesticides, including rodenticide, insecticides, herbicides, etc. Pesticides are chemicals that protect crops and livestock from rodents, insects, disease, or weeds. They also control pests that endanger human health. Because pesticides are poisonous, they can be extremely dangerous to humans. Before applying commercial pesticides, always ensure your safety, the safety of others, and the safety of the environment.

- a. Application and use of pesticides and agricultural chemicals must be in accordance with 4 TAC Chapter 7 and 40 CFR Parts 156 and 170. For more information on pesticide usage, contact one or more of the following groups: Texas Department of Agriculture, Texas Department of State Health Services, Structural Pest Control Board, Texas Commission on Environmental Quality (TCEQ), Environmental Protection Agency (EPA).
- b. General Pesticide Safety

The following sections provide general or specific guidelines for handling pesticides. To help reduce the hazards associated with pesticides:

 - i. Do not transport, mix, or use agricultural chemicals unless you can summon help, if needed.


	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

- ii. Keep an ample supply of water nearby to flush exposed areas, if a spill occurs.
- iii. Check all pesticide equipment before you use it to ensure proper working condition.
- iv. Read pesticide labels carefully. Follow the label directions when mixing, applying, storing, or disposing of pesticides.
- v. Wear personal protective equipment to prevent dermal, inhalation, and mucous membrane exposure.
- vi. Do not eat, drink, or smoke when handling pesticides.
- vii. Launder clothing and bathe after working with pesticides to ensure that all chemicals are removed from clothing and skin.
- viii. Do not use agricultural pesticides around the home or office.
- ix. Observe assigned reentry intervals. Always wear the appropriate protective clothing when entering fields before the reentry date.
- x. Always handle pesticides downhill from wells, cisterns, sink holes, ditches, or standing water.
- xi. Do not apply pesticides when rain is eminent or if wind could affect the spraying area.
- xii. Triple-rinse spray equipment and empty containers. Apply the rinse water to the treated field.
- xiii. Properly dispose of empty containers.

c. Preparing to Apply Pesticides

Preparation is essential for chemical safety. Follow these steps to properly prepare for pesticide application:

- i. Plan Ahead.
 - a) Always read chemical labels before attempting to work with pesticides.
 - b) Prepare for a possible emergency by maintaining a personal decontamination site, a chemical spill kit, and by knowing the proper first aid procedures associated with your pesticide. **THIS INFORMATION WILL BE AVAILABLE IN THE MSDS.**
- ii. Move Pesticides Safely.
 - a) Transport chemicals safely and in proper containers to avoid spills and contamination.
 - b) Do not carry pesticides in an enclosed area, such as a car.
 - c) Be sure to secure the pesticides prior to transport to prevent shifting or bouncing.
 - d) Never leave your vehicle unattended when transporting chemicals.
- iii. Select Appropriate Personal Protective Equipment.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

- a) Regardless of the pesticide's toxicity, always wear a long-sleeve shirt and pants when working with pesticides.
 - b) Wear additional protective equipment, as necessary.
 - iv. Select Application Equipment.
 - a) Choose suitable equipment to properly apply pesticides.
 - b) Before using the equipment, inspect it to insure it is in proper working order.
 - v. Provide Prior Notification.
 - a) Before applying pesticides, inform all people in or around the application area.
 - b) Notification allows people to protect themselves from harmful chemicals.
- d. Mixing Pesticides
- Always read and carefully follow label directions when mixing pesticides. Even if you are familiar with a particular chemical, reread the label to ensure that you have the latest safety information. In addition, follow these guidelines for mixing pesticides:
- i. Wear Personal Protective Equipment.


Always wear appropriate PPE when handling hazardous chemicals.
 - ii. Work in a Safe Area.

The pesticide mixing and loading area should be well ventilated, well lighted, and downhill from any water sources. Concrete slabs are ideal for mixing chemicals since they allow for easy cleanup.
 - iii. Measure Chemicals Correctly.

Measure and mix pesticides carefully. Never mix different pesticides except as directed by the product label or chemical manufacturer. Do not use more chemical than prescribed by the pesticide label. The overuse of pesticides is illegal, and may result in the following:

 - 1. Higher pest control costs
 - 2. Pesticide residue in food
 - 3. Groundwater pollution
 - 4. Pesticide resistance
 - iv. Pour Pesticides Carefully.

Always wear a face shield and take care not to splash chemicals when pouring pesticides. Never use your mouth to siphon pesticides.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

e. Applying Pesticides

When you apply pesticides, you are responsible for protecting yourself, other people, and the environment. Follow these guidelines when applying pesticides:

i. Minimize Exposure.

Even mildly toxic chemicals can harm you if you use them daily. Take care to minimize your exposure to any chemical. Avoid working in pesticide spray, mist, or runoff. Always work with another person when working with hazardous chemicals.

ii. Avoid Applying Pesticides in Sensitive Areas.

Avoid spraying pesticides near beehives or areas that humans normally occupy (e.g., schools, playgrounds, hospitals, etc.) If you must apply pesticides in sensitive areas, do so when the weather is calm and when people are not around.

iii. Avoid Pesticide Drift, Runoff, and Spills.

Pesticides that fall outside the targeted application area can be very hazardous. Choose weather conditions, equipment, and chemicals that do not lend themselves to these hazards.

iv. Avoid Equipment Accidents.

Equipment accidents are often caused by poor maintenance and improper work habits. Avoid equipment accidents by following all operating instructions and properly maintaining all equipment.

f. Pesticide Storage and Disposal

Always try to use all the pesticide in your application tank. If pesticides remain, use them on other target locations. After emptying the tank, clean and store the equipment.


The following summary of EPA storage criteria should be followed for pesticides labeled with the signal words DANGER, POISON, or WARNING, or the skull and crossbones symbol. These procedures and criteria are not necessary for the storage of pesticides classed as less toxic (CAUTION word on the label) or for those registered for use in the home or garden.

g. Site Storage:


- i. Locate where flooding is unlikely.
- ii. Locate where runoff will not contaminate any water system.

h. Storage Facility:

- i. Dry, well ventilated, separate room, building, or covered area with fire protection (e.g., dry chemical fire extinguisher).

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

- ii. Secured by fence and /or locked doors. Signs on rooms/buildings to provide hazard warning (e.g., DANGER, POISON, PESTICIDE STORAGE).
 - iii. Movable pesticide equipment is labeled as contaminated and not removed from the site until decontaminated.
 - iv. Provision is available for the decontamination of personnel and equipment; contaminated water disposed of as excess pesticide; contaminated runoff collected and treated as excess pesticide.
- i. Operational Procedures:
- i. Store pesticide containers in rows with the labels plainly visible.
 - ii. Place contents from damaged containers in sound containers and label properly.
 - iii. If relevant, segregate pesticides by formulation.
 - iv. Store rigid containers in an upright position, with tight lids/bungs, off the ground in a manner to permit access and inspection.
 - v. Maintain a complete inventory indicating the number and identity of containers.
 - vi. Check containers regularly for corrosion and leaks.
 - vii. Keep suitable absorbent (e.g., vermiculite) on hand in case of spills.
- j. Safety Precautions:
- i. Inspect pesticide containers for leaks before handling them.
 - ii. Do not allow unauthorized personnel in the storage area.
 - iii. Do not store pesticides next to items intended for consumption by animals or humans.
 - iv. Do not eat, drink, smoke, or chew tobacco where pesticides are present.
 - v. Do not store beverages, food, eating utensils, or smoking material in the storage or loading areas.
 - vi. Wear rubber gloves while handling containers of pesticides.
 - vii. Wash hands immediately after handling pesticides. Remove contaminated protective clothing immediately; extra sets of clean clothing should be nearby.
- k. Fire Control:
- Where large quantities are stored, inform the fire department.
Furnish the fire chief with home telephone numbers of responsible person.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

1. Disposal

Never leave pesticide containers at a field site. Be sure to account for every container used, and safely dispose of empty containers. Store herbicides separately from other pesticides. Some herbicides may volatilize and contaminate the pesticide.

Unused or outdated pesticides must be disposed as hazardous chemicals Refer to the Hazardous Waste Program for more information.

m. Pesticide Cleanup

- i. Always thoroughly clean all pesticide equipment as soon as you are through with it. Leaving pesticide residue in mixing, loading, or application equipment can result in accidental injury or death to livestock or people or unwanted contamination of plants or soils.
- ii. Clean the inside and outside of pesticide equipment, including nozzles. Dispose of contaminated rinse water as directed on the chemical label.
- iii. Do not allow pesticide rinse water to contaminate water supplies.


n. Antidotes

Time is of the essence when pesticide overexposure occurs. If immediate medical assistance is needed, you should call 911 or take the individual directly to the nearest emergency treatment center instead of maintaining an antidote kit on site.


3. FERTILIZER CHEMICAL SAFETY

Ammonia fertilizers are widely used because of their effectiveness in getting large amounts of nitrogen into the soil. Anhydrous ammonia fertilizer is essentially dry ammonia gas compressed into liquid form. This material is very harmful if accidentally spilled or sprayed onto body surfaces. It can cause blindness if it gets into the eyes. Also, high concentrations of ammonia gas in the air are very irritating to the lungs. Always use appropriate personal protective equipment and exercise rigorous care when handling, applying, and storing such toxic or irritating materials.

- a. Safety Precautions: Most ammonia fertilizer accidents occur when the material is being transferred from one tank to another. Exercise care in the handling and use of ammonia fertilizer by doing the following:
 - i. Always wear chemical goggles and adequate skin cover.
 - ii. Inspect equipment before each day's work and correct any abnormal conditions.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

- iii. Water is the first aid treatment of choice when ammonia gets into the eyes or on the skin. In case of mishap, flush affected areas for 15 minutes and get medical help as soon as possible.
 - iv. Make sure all valves, lines, and connections are secure in order to reduce the chance of either leaks or being doused during transfer.
 - b. Observe these precautions when working with anhydrous ammonia:
 - i. Use good equipment specially designed for handling anhydrous ammonia. Keep your equipment in good repair. Worn hoses, loose connections, and other defects can cause accidents.
 - ii. Follow the prescribed sequence of operations for connecting to, filling, and disconnecting from the applicator tank.
 - iii. Never leave the equipment during the transfer operation.
 - iv. After filling the applicator tank, close all valves.
 - c. Storing Ammonium Nitrate:
 - i. The minimum amount feasible of ammonium nitrate shall be stored.
 - ii. Storage buildings shall have adequate ventilation.
 - iii. All flooring in storage and handling areas shall be of noncombustible material, without open drains or traps.
 - iv. Buildings and structures shall be dry and free from water seepage through the roof, walls, and floors.
 - v. Bags of ammonium nitrate shall not be stored within 30 inches of the storage building walls and partitions.
 - vi. The height, width, and length of piles stored shall be uniform.
 - vii. Aisles shall be provided to separate piles by a clear space of not less than 3 feet in width.
 - viii. Ammonium nitrate shall be stored separately from flammable or combustible materials (e.g., paper, rags, hay, oils).
 - ix. Broken bags, spilled material, and discarded containers shall be promptly gathered and disposed.
 - x. Prohibit smoking where ammonium nitrate is stored.
 - xi. Fire control devices such as a water hose or portable fire extinguishers must be available in the storage area.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

4. FARM EQUIPMENT SAFETY

New farm equipment is specifically designed for safe handling and operation. Older farm equipment is outdated and missing some of the latest standard safety features. The following sections discuss general guidelines for farm equipment safety, including farmstead equipment, farm field equipment, guards, shields, and power take-off equipment (PTOs).

a. General Equipment Safety


Keeping equipment in good working condition is half the formula for being safe. The other half is the ability and awareness of the person operating the equipment.

Equipment failure causes some farm accidents; however, most farm accidents are caused by tired, stressed, rushed, distracted, or incompetent operators. In addition to the specific safe handling rules for each type of farm equipment, there are ten basic guidelines for equipment safety:

- i. Read and comply with the operator's safety manual for each piece of farm equipment.
- ii. Prepare for safety by wearing appropriate clothing, wear appropriate personal protective equipment (as needed) get enough rest the night before, don't drink alcohol, and ensure that all workers have been trained and are capable of safely operating farm equipment.
- iii. Keep all guards, shields, and access doors in place when the equipment is in operation.
- iv. Be aware of what you are doing and where you are going.
- v. Adjust equipment speed to operating conditions.
- vi. Keep children and others away from the working area.
- vii. Take breaks from work, as necessary.
- viii. Always stop the engine, disconnect the power source, and wait for all moving parts to stop, before servicing, adjusting, cleaning, or unclogging equipment.
- ix. Display the slow moving vehicle emblem for equipment driven on public roadways.
- x. Allow the engine to cool before refueling.

b. Farmstead Equipment

Farmstead equipment is agricultural machinery that is normally stationary. This includes materials handling equipment and accessories. Examples of farmstead equipment include cotton gins, grain augers, crushers, sorters, and miscellaneous belt-driven equipment.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

Farmstead equipment should have an audible warning device to indicate that the machine is about to be started. Refer to Tarleton’s Lockout/Tagout program to safely perform repairs or maintenance on electrical equipment. Farmstead equipment that is not properly guarded and shielded may pinch, crush, electrocute, or otherwise harm humans. Refer to the operator’s manual for specific safety instructions on each piece of equipment.

c. Farm Field Equipment


Farm field equipment is agricultural machinery that is normally mobile. Examples of farm field equipment include combines, tractors and their implements.

d. General Tractor Safety

Tractor accidents are the leading cause of fatalities and accidents on Texas farms and ranches. Approximately 42% of these accidents are the result of operators being run over by tractors, 36% are due to tractor roll-overs, and 5% involve riders who fall off the tractor and are then run over by the attached trailing equipment.

The following guidelines offer general safety tips for operating tractors:

1. Know your tractor and how to use it safely. Regularly review the safety precautions in your operator’s manual.
2. Prepare for tractor work by inspecting the vehicle and wearing appropriate clothing.
3. Ensure that new and inexperienced workers are properly trained in tractor operation.
4. Never allow riders. A tractor should have only one person on board.
5. Install an approved rollover protective structure (ROPS) and seat belt on any tractor that is not equipped with these features. ROPS prevent tractor turnover injuries, but only if the seat belt is worn.
6. Always wear a seat belt, when driving a tractor equipped with a ROPS. Disengage drives and turn the engine off before leaving the tractor unattended.
7. Keep yourself and others away from moving parts.
8. Hitch loads only to the drawbar. When using three-point rear hitches, add front-end weights to maintain stability and control steering.
9. Never bypass start the engine.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

e. Driving Safety

The following guidelines provide tips for tractor driving safety:

1. Watch where you are going at all times. Be sure everyone is out of the way before moving.
2. Watch for and avoid obstacles, ditches, embankments, and holes.
3. Slow down when turning, crossing slopes, or driving on rough, slick, or muddy surfaces.
4. It is safer to back up an incline.
5. Apply power slowly when pulling a heavy load.
6. Lock the brake pedals together for single action braking.

f. Prevent back rollovers as follows:

- i. Only hitch loads to the drawbar.
- ii. Limit the height of three-point hitches.
- iii. Use front-end weights to stabilize heavy hauling loads.
- iv. Start slowly.
- v. Change gears carefully.

g. Prevent side rollovers as follows:


- i. Increase tractor width, if possible.
- ii. Lock brakes together for road travel.
- iii. Operate tractors only as recommended. Avoid steep slopes and ditches.
- iv. Be careful when pulling heavy loads or working with a front-end loader. Turn corners slowly.

h. Roll-over Protective Structures (ROPS)

ROPS consist of cabs or frames that protect tractor operators. They are designed to prevent tractor rollover injuries. All tractors manufactured after October 25, 1976 must have ROPS. Older tractors may be retrofitted with a ROPS obtained from the tractor manufacturer. Installing a makeshift metal bar is not sufficient to protect people from the dangers of a tractor rollover. An OSHA-approved ROPS that meets durability tests is the only real protection against rollover injuries.

EXCEPTIONS: The only types of tractors that do not require ROPS include the following:

1. Low profile tractors used for work that would interfere with a ROPS (e.g., picking orchards, vineyards, hopyards, etc.)

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

2. Tractors with mounted equipment that is incompatible with a ROPS (e.g., corn pickers, cotton strippers, fruit harvesters, etc.)

- i. Bypass Starting

Bypass starting occurs when an operator “bypasses” normal safety procedures for starting equipment. A typical bypass occurs when someone standing on the ground touches a screwdriver or other metal object to the starter contacts to activate the engine. This action avoids standard safety devices that keep the engine from starting without someone in the driver’s seat. Another method of bypass starting occurs when someone uses the starting button to start a tractor from the ground.


Any method of bypass starting is extremely dangerous. If the tractor is in gear and the bypass occurs, the machine will start and can injure or kill anyone in its path. This situation is even more serious if the tractor is equipped with a hydraulic clutch. If a tractor with a hydraulic clutch is bypass started, it will lurch suddenly after hydraulic pressure is built up.

All tractor operators shall follow these safe starting rules:

- i. Never start a tractor by shorting across the starter terminals.
- ii. Keep tractors in good working order so they will start normally.
- iii. If a tractor has a neutral start switch, but it starts in gear with the key or starter button, something is wrong. Fix the tractor immediately.
- iv. Never wire around or defect the neutral start switch.
- v. Always place a tractor in neutral or park before starting it.
- vi. Never start a tractor from the ground.

5. GRAIN AUGERS

A grain auger is a piece of farm equipment that helps transfer grain from one location to another. Tractor operators that move grain augers should take special precautions when working with this equipment. Moving grain augers in their elevated position may result in electrocution if the equipment contacts overhead power lines. Farm owners, managers, and operators should ensure that augers are in the lowered position before moving them. In addition, all augers should have warning signs that indicate the potential electrical hazards associated with moving the auger upright. Functional components of augers must be guarded to the fullest extent possible.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
	Level 2	Rev No:	2
		Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

6. HYDRAULIC EQUIPMENT SAFETY

Farm equipment operators must be extremely careful when working around hydraulic equipment. Hydraulic pressure is often strong enough to knock a person out if a leak or explosion occurs.

Follow these guidelines when working with hydraulic equipment:

- i. Inspect hydraulic equipment regularly for leaks. Report and fix any leaks immediately.
- ii. Ensure that all couplings are properly installed and in good working condition.
- iii. Ensure that all lines and fittings are in good condition. Repair or replace any equipment that is not in good condition.
- iv. Lock transport wheels and support jacks on implements in place before disconnecting hydraulic cylinders. This action will prevent sudden shocks to the machine or personal injury.
- v. Keep couplings and hoses in good repair so that the hydraulic system can safely sustain maximum pressure.

7. GUARDS, SHIELDS, AND PTO's


Guards and shields are extremely important because they keep operators from inadvertently contacting, or being caught, by moving machinery parts. Ensure that moving parts are guarded or shielded whenever possible. In addition, to prevent burns or fires, shield heat-producing components (e.g., exhaust pipes). Guards and shields are absolutely essential for PTO farm equipment. Leave the master shield in place when the implement is unhitched.

Since all moving parts cannot be guarded due to their function, stay clear of these machines when they are in operation. In addition, turn these machines off if they need service, maintenance, or repair. Replace any guards or shields if they are lost or damaged.

8. FUEL STORAGE

Fuel storage is an important safety concern in agriculture. The following section discusses general safety guidelines for stationary fuel storage tanks, portable fuel tanks, and liquefied petroleum gas.

- a. Stationary Fuel Storage Tanks
Petroleum products for agricultural use, including gasoline and diesel fuel, are stored in Aboveground Storage Tanks (AST) or Underground Storage

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

Tanks (UST). The TCEQ regulates AST's and UST's. Fuel tanks with volumes less than or equal to 1,100 gallons are exempt from TCEQ requirements. Fuel tanks with volumes greater than 1,100 gallons must meet these requirements:

- i. Notification
- ii. Registration
- iii. Record Keeping

b. Portable Fuel Tanks

Even small quantities of fuel, such as gasoline, kerosene, or diesel fuel must be properly labeled and stored. Always use DOT approved metal tanks, Underwriters Laboratories (UL), or Factory Mutual (FM) to store small amounts of fuel. Store small portable fuel tanks in well-ventilated areas, away from other flammable materials or ignition sources. Do not use containers such as empty plastic milk jugs to store fuels. Clearly label all fuel containers to indicate their contents.

Please refer to the Chemical Safety Program for more information on flammable materials.

c. Liquefied Petroleum Gas

The Texas Railroad Commission regulates the sale and use of Liquefied Petroleum Gas (LPG) a.k.a. Propane. There are several safety considerations associated with LPG. All LPG tanks must comply with Department of Transportation (DOT) standards and NFPA 58 for storage and use.

- i. Paint LPG tanks either white or aluminum.
- ii. Locate LPG tanks away from flammable materials and possible ignition sources. In addition, ensure that AST's have noncombustible structural supports and a firm masonry foundation so that the bottom of the tank does not touch the ground.
- iii. LPG tanks cannot be downhill from flammable liquid tanks such as gasoline or diesel.
- iv. Stationary LPG tanks cannot be placed in any area beneath an electric transmission or distribution line.
- v. LPG tanks must be equipped with hydrostatic relief valves, excess flow valves, etc., required by the Texas Railroad Commission.
- vi. Portable LPG containers may be used within a building; however, they must be stored in a separate location outside of the building.


	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

Table 1 provides minimum safe distance requirements for the location of stationary LPG containers.

Location Description	0-500.99 Gallons	501-2000.99 Gallons	2001-4000.99 Gallons
	Minimum Safe Distance		
Ignition Source/Combustible Material	10 feet	15 feet	25 feet
Flam. Liquid Container	20 feet	20 feet	20 feet
Building	10 feet	15 feet	25 feet
Adjoining Property Line	10 feet	15 feet	25 feet
Roadway, Railway, Utility Line, or Pipe Line	10 feet	15 feet	25 feet

Table 1: Minimum Safe Distance Requirements (LPGs)


9. GRAIN STORAGE

Grain storage bins and hoppers pose severe hazards, including entrapment and suffocation. Each year, numerous people suffocate and die while working on or under the unstable materials contained in grain silos. Grain materials are unpredictable and they move quickly causing entrapment, burial, and suffocation to occur within seconds.

In some cases, the surface material in a grain bin acts like quicksand. When a storage bin is emptied from the bottom, the grain material forms a funnel. The flow rate of this funnel can be strong enough to trap a worker and make rescue virtually impossible.

In other cases, a condition known as bridging can create serious hazards. A bridge occurs when grain or other loose material sticks to the side of a bin that is being emptied from below. The bridge is highly unstable and dangerous. If it collapses, it can trap any worker either on or below it. Follow these guidelines to reduce the risks associated with grain storage:

- a. Assume that all stored materials are bridges and that the potential for entrapment and suffocation is constant.
- b. Do not enter a storage area from the bottom if material is adhering to the sides.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

- c. If you must enter a storage area, use a safety belt or harness with a lifeline.
- d. Always stay above the highest level of material. Never stand on top of stored material.
- e. Lock out supply and discharge equipment whenever a worker enters the storage area.
- f. Post signs that indicate the hazards of working with stored materials.
- g. Ensure that storage areas are equipped with mechanical devices so that workers are not required to enter the area.

10. LIVESTOCK SAFETY


Farm animals are responsible for many disabling injuries. Although animal-related injuries are generally less severe than injuries caused by farm machinery, such accidents cost time, money, and productivity. The following guidelines offer general safety instructions for working with any animals:

- a. Take good care of animals and treat them kind.
- b. Use adequate restraining and handling facilities when working with animals.
- c. Always leave yourself an escape route when working with animals (i.e., do not work in small, confined areas or back yourself into a corner).
- d. Do not put your hands, legs, or feet in gate or chute closures where you may become pinned or crushed by a large animal.
- e. Reduce the chance for slips and falls by keeping handling areas free from debris. Attach "no slip" safety strips to slick areas. Stay away from frightened, sick, or hurt animals whenever possible. Take care around animals with young offspring.
- f. Wear protective clothing around animals, as appropriate.
- g. Do not handle livestock when you are alone.
- h. Treat manure pits as confined space. Exercise caution as appropriate. Refer to the Manure Pits section for more information.

i. Beef Cattle

Ordinary beef cattle generally have a calm disposition; however, they are easily spooked. Because cattle can see almost 360 degrees without moving their heads, a quick movement from behind can scare them just as easily as a sudden movement from the front. Loud, sudden noises, and small dogs tend to upset cattle.

Although cattle are not likely to attack humans, their size and weight can make them dangerous. Always leave yourself an escape route when working with cattle. Remember, cattle tend to kick forward and then backward with their back legs. If you are

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

working near the udder or flank area of a cow, consider pulling the back leg forward to prevent a kick.

ii. Dairy Cattle

Dairy cattle tend to be more nervous than other domestic animals. Always announce your presence to a cow by speaking calmly or touching the animal gently. When moving cows into a constraining place, such as a milk parlor, always give them time to adjust before beginning work. If a dairy cow tends to kick, consider using a hobble.

iii. Swine

Hogs can be dangerous because they can bite with enough force to cause serious injury. Likewise, a hog's size and weight can easily harm a person if the animal steps on, lays on, or charges a person. Guiding hogs for sorting or movement to a new pen requires lots of patience and adequate facilities. An easy way to guide a hog backwards is to place a box or basket over the hog's head. The hog will then back away to avoid the box. As with cattle, you should announce your presence to a hog by speaking calmly.

iv. Horses


Take care not to spook horses with loud noise. If you intend to work with a horse, you should know how to ride properly, saddle, and handle a horse. Ride with extra care around trees, water, or rough terrain.

v. Sheep

Take care when working around sheep to avoid being butted by a ram. To safely immobilize a sheep for handling, place the animal on his rump and tilt him far enough back to keep the rear hooves off the ground.

vi. Poultry

Chickens are fairly harmless, although geese, gobblers, and roosters can harm children and the elderly. Most hazards associated with poultry concern improper equipment usage, duct, and slippery surfaces within poultry facilities.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

11. MANURE PITS (CONFINED SPACE HAZARD)


- a. Manure pit systems are often used to store large amounts of raw manure under animal confinement buildings. Manure pits make cleanup easier for farm employees; however, these pits may contain hazardous atmospheres. Due to the nature of these pits, workers should *always treat manure pits as confined spaces*.
- b. Manure pits may contain one or more of the following gases in dangerous concentrations:
 - i. Methane
 - ii. Hydrogen sulfide
 - iii. Carbon dioxide
 - iv. Ammonia
- c. Within the confined space of a manure pit, these gases can create an oxygen deficient, toxic, and /or explosive atmosphere. Treat manure pits like any other type of confined space. For example:
 - i. Ensure that manure pits are properly ventilated.
 - ii. Test the pit atmosphere before entering the pit.
 - iii. Always wear a safety belt or harness with a lifeline when working within a manure pit, so a worker can be pulled to safety if necessary.
 - iv. NEVER work alone in a confined space.
 - v. Always have a safety attendant ready to pull a worker out of a manure pit to safety.

Please refer to the Tarleton Confined Space Program for more information.

12. TOWING SAFETY

When towing a trailer or farm equipment, follow these guidelines to ensure driving safety:

- i. Ensure that the trailer and hitching attachments meet local and state requirements. The trailer must have a current tag and registration.
- ii. Inspect the trailer's wheels and the towing vehicle's wheels to ensure they are in good working order.
- iii. Ensure that the trailer hitch is sufficiently strong and properly mounted.
- iv. Make sure that the towing ball is the correct size for the trailer hitch.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

- v. Always secure a safety chain between the trailer and the towing vehicle.
- vi. Inspect all indicator lights to ensure they are working.
- vii. Adjust mirrors as necessary to view the roadway behind the trailer.
- viii. Adjust your speed and apply brakes evenly to allow for increased stopping distances.
- ix. When backing a trailer, it is helpful to have another person behind the trailer to guide you. Put your hand on the bottom section of the steering wheel and turn the wheel in the direction that you want the trailer to move.


13. OUTDOOR BURNING

As per Texas Administrative Code 111.219, there are established general requirements for allowable outdoor burning:

- a. Before any forest management burning occurs the Texas Forest Service must be contacted
- b. Burning must be performed outside city or town corporate limits
- c. Burning must be conducted downwind of or at least 300 feet from any nearby structure containing sensitive receptors unless prior written approval is obtained
- d. Burn only when wind direction or weather conditions will not cause smoke and ash to adversely effect a public road, air strip, water way or structure containing sensitive receptors
- e. If at any time burning causes smoke to blow onto a public road, it is the responsibility of the person burning to post flag-persons on affected roads
- f. Burning must be in accordance with the following appropriate weather conditions:
 - i. No burning when wind speed is <6 mph or >23 mph
 - ii. No burning during actual or predicted persistent low-level atmospheric temperature inversions
 - iii. Must NOT burn any of the following items: Electrical insulation, treated lumber, plastics, non-wood construction/demolition materials, heavy oils, asphaltic materials, potentially explosive materials, chemical wastes and items containing natural or synthetic rubber.

14. HEARING CONSERVATION PROGRAM

Excessive noise levels may permanently or temporarily damage a person's hearing. Whenever possible, employees should reduce noise levels to an

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

acceptable level. OSHA standard 29 CFR 1910.95 sets limits for acceptable noise exposure indicated as decibels (dB). Refer to Table 1.


Duration/Day (Hours)	Sound Level (dB)
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

Table 1: OSHA Limits for Acceptable Noise Exposure

Hearing loss can be permanent so it is essential to wear protective equipment when noise levels are high. Before using personal protective equipment, such as ear plugs or muffs to reduce noise exposure, try to reduce noise levels by changing work procedures. Refer to Table 2 located on the following page for a list of common agricultural noises and their decibel levels.

15. Maintenance practices such as the following can reduce noise levels:
 - a. Replacing worn or loose machine parts.
 - b. Performing high-noise operations during hours when people are less likely to be affected.
 - c. Maintaining and lubricating equipment to eliminate rattles and squeaks.

16. Engineering controls, such as the following, can also reduce noise levels:
 - a. Replace noisy material
 - b. Use large, low speed fans
 - c. Considering the noise level of new equipment or processes before purchasing or implementing
 - d. Placing heavy machines on rubber mountings
 - e. Using sound-absorbing acoustical tiles or baffles
 - f. Placing noisy machinery or operations in a separate area or room
 - g. Enclosing noisy conveyors

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

Refer to the Hearing Conservation Program for more information.

Decibel	Sound
0	Lowest sound audible to the human ear
30	Crickets, distant frogs, whisper
40	Kitten meowing, songbirds, distant dog bark
50	Refrigerator running, babbling stream, quiet empty barn
60	Average conversation level
70	Chicken coop, busy restaurant. At this level, noise may begin to affect your hearing if exposed over a long period of time.
80	Tractor idling, barn cleaner, conveyors, elevators. These noises can damage hearing if exposed for more than eight continuous hours.
90	Tractor at 50 percent load, blower, compressor, combine. As noise levels increase, the “safe” exposure time decreases; damage can occur in less than eight hours.
100	Tractor at 80 percent load, pig squeal, power tools. Even two hours of exposure can be dangerous. With each 5-decibel increase, the “safe time” is cut in half.
120	Tractor at full load, bad muffler, old chain saw. The danger is immediate.
140	Gunshot, backfire, dynamite blast. Any length of exposure time is dangerous. At this level, the noise may actually cause pain in the ear.


Table 2: Common Agriculture Noises

17. HEAT STRESS

People may suffer from heat stress during hot, humid conditions. Because the climate at Tarleton State University is conducive to heat stress, people must take preventive measures to reduce their risk. To prevent heat stress, employees should limit strenuous physical activity during the hottest portion of the day, wear a wide-brimmed hat when working in the sun, take frequent breaks, and drink plenty of hydrating fluids. Heat stress occurs in two forms: heat exhaustion and heat stroke.

a. Heat Exhaustion

Heat exhaustion is usually caused by strenuous physical activity and hot, humid conditions. Because heat exhaustion is the body's response to

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

insufficient water and salt, it should be treated as quickly as possible.

Signs and symptoms of heat exhaustion include:

- i. Exhaustion and restlessness
- ii. Headache
- iii. Dizziness
- iv. Nausea
- v. Cold, clammy, moist skin
- vi. Cramps in abdomen and lower limbs
- vii. Fast, shallow breathing
- viii. Rapid, weak pulse
- ix. Falling body temperature
- x. Fainting

Take the following steps to administer first aid for heat exhaustion:

- 1) Have the victim lie down in a cool or shaded place.
- 2) If the victim is conscious, have him or her sip cool water or an electrolyte sports drink
- 3) If the victim is unconscious or is conscious but does not improve, seek medical aid as soon as possible.


b. Heat Stroke

Heat stroke is usually caused by exposure to extreme heat and humidity and/or a feverish illness. Heat stroke occurs when the body can no longer control its temperature by sweating. Heat stroke is extremely dangerous and may be fatal if not treated immediately. The signs and symptoms of heat stroke include the following:

- i. Hot, dry skin
- ii. Headache
- iii. Dizziness
- iv. High temperature
- v. Strong pulse
- vi. Noisy breathing
- vii. Unconsciousness

Immediately take the following steps to administer first aid for heat stroke:

- 1) Move the victim to a cool place.
- 2) Seek medical attention as soon as possible.
- 3) Remove the victim's clothing, and place cool packs in the arm pits and groin areas.
- 4) Fan the victim and sponge the body with cool water.
- 5) If the victim is conscious, place them in a half-sitting position and support the head and shoulders.

	Tarleton State University		
	Risk Management & Compliance	Program:	Agriculture Safety
		Doc. No.:	AGRS-04-L2-S0-CH0-001
		Rev No:	2
	Level 2	Date:	10-07-2016
Dept.:		TSU Risk Management & Compliance	

6) If the victim is unconscious, place them on their side.

18. LOCKOUT/TAGOUT

Lockout/tagout procedures are used to isolate hazardous energy sources from electrical, hydraulic, or pneumatic machinery. Furthermore, when service or maintenance work is required, lockout and tagout devices help ensure personal safety from possible energy releases. All employees whose work involves hazardous energy sources must be trained in lockout/tagout procedures. Refer to the Lockout/Tagout Program for the Control of Hazardous Energy or contact Risk Management and Compliance.

REFERENCES

Refer to the latest version of the EPA Regulations regarding Pesticide Use (40 CFR Subchapter E)

Tarleton State University: Confined Space Program, Hearing Conservation Program, Chemical Safety Program, Lockout/Tagout Program,

Texas A&M University System, Texas Cooperative Extension, Hearing Loss Protection for Agricultural Workers, David W. Smith, Extension Safety Program

Texas Administrative Code, Control of Air Pollution from Visible Emissions and Particulate Matter, "Outdoor Burning" 30 TAC 111.219.