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Materials for Teaching Agricultural Safety in the College Classroom

by

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and

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Omaha, Nebraska

2016

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Preface

Like crops themselves, teaching agricultural safety has its seasons. Over a career, one might see periods when national and local awareness and support of agricultural safety programs are high: times when parents, producers, and employees want more programs in the school or in the workplace. Then there are times when the focus shifts to other topics, and it's easy for people to think that we've "taken care of" agricultural safety. Until the next local incident shocks us back into awareness.

Unlike our human focus, the hazards themselves never take a break. The range of hazards in the agricultural workplace that result from daily exposure to powerful machines and chemicals, from the repetitive day-in, day-out activity, from the stress of second-guessing the crops, the weather, the pests... Agricultural workers must face these hazards every day.

Agricultural hazards take a heavy toll – agriculture remains one of the most dangerous occupations – yet, it rarely makes the front page. Instead of the dramatic incident in which dozens are killed or injured – incidents that make it into the newspapers and onto television, incidents that mobilize resources – agricultural losses are a steady drip, drip, drip – a tractor overturn here, a confined space injury there, an unfortunate encounter with a bull or horse... it adds up, and almost every farm family has these stories to tell.

Safety educators must work constantly to inform agricultural producers, their families, and their employees both when safety is "popular" and when it is not. In addition to this, at the college level, we must work to prove the relevance of agricultural safety courses and raise the next crop of safety educators and safety advocates. Our hope is the materials in this book will motivate and facilitate the teaching of agricultural safety at the college level and be the seeds of that crop.

The hazards never take a break, and neither must we.

Carol J. Lehtola, Ph.D.
Charles M. Brown
Gainesville, Florida 2016

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Carol J. Lehtola

Carol Lehtola's career in agricultural safety spanned over 20 years, including 16 years as an associate professor in the Agricultural and Biological Engineering Department at the University of Florida, where she taught agricultural safety at the undergraduate and graduate levels. She also served as Florida Extension agricultural safety specialist. Early in her career she developed the TRAC-SAFE program to reduce tractor fatalities, which became a national model. She received numerous honors, including the ASABE NAMIC Safety Award (2004), several ASAE Blue Ribbons, and several departmental and college teaching awards. She is a graduate of Bethany Lutheran College (Mankato, MN), South Dakota State University, and Iowa State University.

Charles M. Brown

Charles Brown originally trained as a chemist and spent 20 years working in research labs. The bulk of that career was spent working on the chemistry underlying the formation of kidney stones. Charles moved from science to science communications in the 1990s and worked as an editor for the College of Agriculture and Life Sciences at the University of Florida for several years before joining Carol Lethola's group to work on agricultural safety and disaster preparedness materials in a wide variety of media. Working together for just over a decade, Carol and Charles produced many publications, videos, Web sites, and newsletters, gaining national recognition from the International Society for Agricultural Safety (ISASH) and Health and the Extension Disaster Education Network (EDEN).

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Materials for Teaching Agricultural Safety in the College Classroom

Introduction

Purpose
This book is a resource for educators teaching college-level courses in agricultural safety.

Each chapter of this book covers a specific topic suitable for teaching in an agricultural safety course. The included topics are those Carol Lehtola has typically teach in her college classes, and instructors should feel free to add other topics they feel are needed. Materials are provided as a guide, and personalization is highly recommended. Feel free to expand on the activity suggestions.

Each chapter contains:

- Basic PowerPoint slide content
- Sample assignment questions
- In-class lab/activity ideas
- References and additional resources

Topics like hazard identification and correction or tractors and machinery are covered in dedicated chapters. Other topics, such as agrability or working with a disability, are covered in activities which can be structured as student laboratories.

Please note that many publications, videos, and Web sites are suggested in this text, but Internet sites are subject to change and the suggested materials may not remain available. Instructors are encouraged to locate resources that are most suitable for their topics and audiences.

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Chapter 1

Process of Hazard Identification and Correction

1.1 PowerPoint Slides

Slide 1.1 – Objectives

- Define hazard
- Understand how to identify a hazard
- Identify four items necessary for an effective safety checklist
- Understand the safety hierarchy
- Develop a Job Safety Analysis (JSA)

Slide 1.2 – Purpose of the Class

- ...so no one will have to say at their workplace that they didn't know it was dangerous for workers to _____.

Notes
In this class, we will show what happens when things "go wrong" and how to prevent such incidents from occurring. A manager has no excuse for not realizing the hazards in their particular workplace. For example, in a company that had grain bins, a worker was killed in a bin when the grain was flowing. The company managers said that they did not realize that flowing grain posed a hazard. With all the OSHA information readily available, it is pretty easy to find the hazards associated with grain.

Slide 1.3 – Hazard

- ...condition or changing set of circumstances that presents a potential for injury, illness, or property damage. The potential or inherent characteristics of an activity, condition, or circumstance which can produce adverse and harmful consequence.

Notes
Definition of hazard from the American Society of Safety Engineers (ASSE)

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Slide 1.4 – Hazard Identification

- ...to **control** unwanted damage to people, property, and the environment
- Think "potential" harm to worker, machine/equipment/products, and environment
- Goal is to identify hazards as precisely as possible.

Notes
This slide explains the purpose and the need for hazard identification.

During the process of identifying hazards, we need to remember to think in terms of something being of "potential" harm to workers, machine/equipment/products, and/or the environment.

The goal of hazard identification is to identify hazards as precisely as possible.

Slide 1.5 – Where to Go to Begin Hazard ID

- Injury records and investigations of near-misses
- New jobs, processes, or products
- Seasonal tasks
- Trends in other similar businesses
- Compliance requirements (OSHA or insurance company)

Slide 1.6 – From Hazard ID to Action Plan

- Hazard identification
- Corrective measures
- Who is responsible
- Target date

Notes
Four items essential for a safety checklist to become an effective action plan:

– Identify the hazard
– Identify the corrective measure
– Identify someone who is responsible for seeing that it gets done (whether doing it themselves or assigning someone else to do it)
– Identify a target date. (For example, if there was not an April 15 deadline, no one would get their taxes done!).

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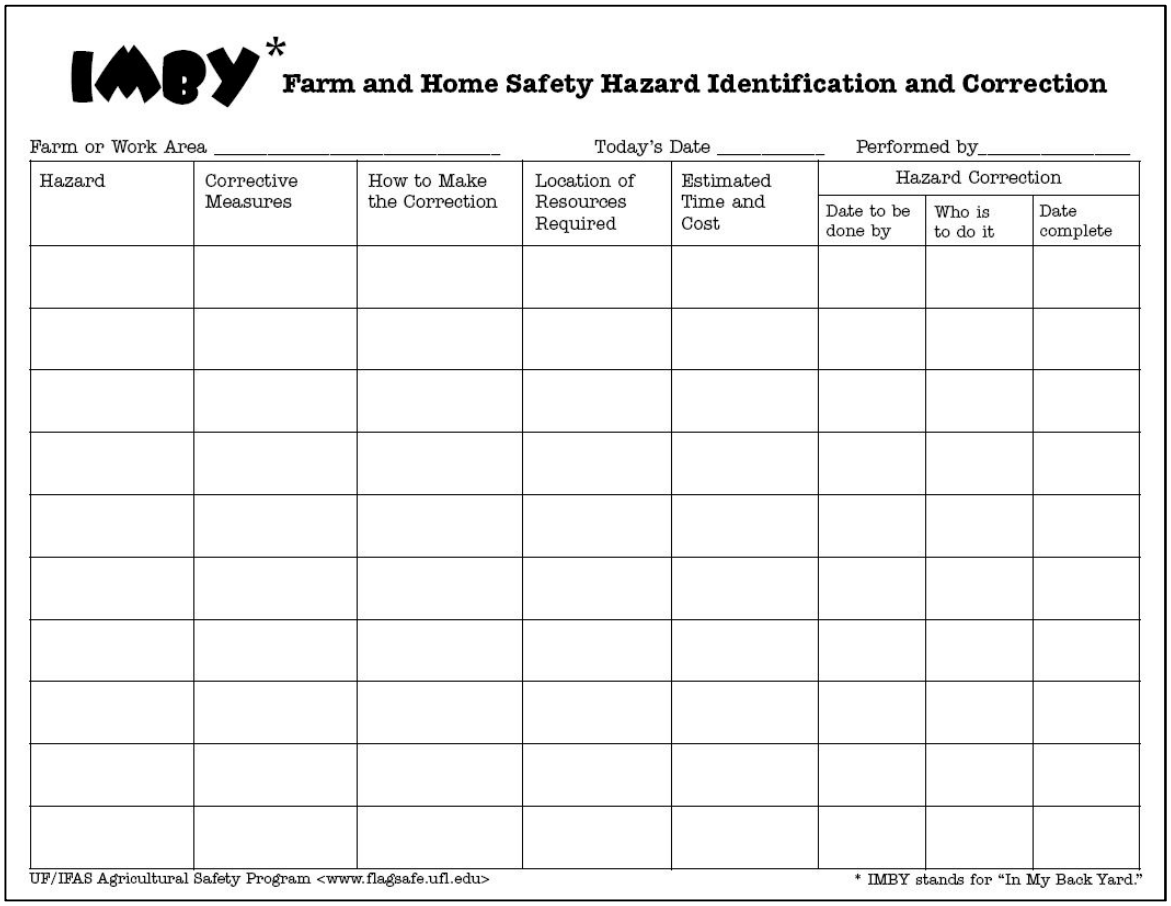
There can be other things on a checklist, including estimated cost, where to obtain the materials to fix the problem, etc., but the four things noted are absolutely necessary and much more effective than a mere yes-or-no type of checklist.

Slide 1.7 – IMBY Worksheet



IMBY* **Farm and Home Safety Hazard Identification and Correction**

Farm or Work Area _____ Today's Date _____ Performed by_____

Hazard	Corrective Measures	How to Make the Correction	Location of Resources Required	Estimated Time and Cost	Hazard Correction		
					Date to be done by	Who is to do it	Date complete

UF/IFAS Agricultural Safety Program <www.flagsafe.ufl.edu> * IMBY stands for "In My Back Yard."

Notes

The In My Back Yard (IMBY) checklist is an example of a checklist that will become an action plan. This checklist is part of the IMBY program (which includes lesson plans) which can be found in the National Ag Safety Database (http://nasdonline.org/31/d001598/quot-imby-quot-toolkit.html).

Slide 1.8 – Job Safety Analysis (JSA)

- A written procedure that identifies hazards or potential hazards associated with each

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step of a job and develops solutions that will eliminate or guard against the hazards.

Notes
Job Safety Analysis (JSA)

Definition: a written procedure that identifies hazards or potential hazards associated with each step of a job and develops solutions that will eliminate or guard against the hazards.

A JSA improves job procedures and helps managers and employees understand jobs/tasks better. By having a JSA in writing, everyone is provided with the same information.

Slide 1.9 – Basic Steps of the JSA

- Select the job
- Break down the job into steps
- Identify potential hazards
- Develop solutions and recommended actions

Notes
Four Basic Steps of the JSA:

1. Select the job

   A job: a sequence of separate steps or activities that together accomplish a goal

   A job step: a single and separate activity that clearly advances a work assignment and is a logical portion of that assignment

   Job steps can't be too broadly defined (farming, building a facility, mining iron ore) nor too narrowly defined (flipping a light switch, pushing a button, tightening a screw): 4–6 steps is ideal; 7–9 is workable; 10–12 begins stretching the process.

2. Break down the job

   Each step should accomplish some major task.

   Each step tells "what is done," not "how it is done."

   Watch an experienced worker perform the job (consider videotaping); repeat as often as necessary.

   Number each successive step.

   Begin each step with an action word.

   Break job into all steps before considering hazards or solutions.

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3. Identify potential hazards

Include both obvious and potential hazards.

List both how the injury could occur and what the injury might be.

Examine each step to find and identify hazards actions or conditions that could lead to injury. (Ask yourself the question, "How can a person possibly get hurt by doing this step or this job"?)

Hazard inspection forms are good reminders of possible hazards Critical: be sure to include hazards that have negligible consequences as well as those that have a low probability of occurring.

4. Develop solutions and recommended actions

For each step decide what is necessary to eliminate, control or minimize hazards.

Be specific. Say exactly what needs to be done. Avoid general statements like "be careful."

Give a recommended action for each hazard. Repeat as often as necessary.

Include PPE for each step.

Solutions/recommendations may include finding a new way to do the job or changing the physical conditions.

Solution examples

– A multi-use tool
– Hazard identification
– Training and education
– Injury investigations
– Work observation

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Slide 1.10 – Job Safety Analysis Example: Hitching Tractor and Wagon

Job Safety Analysis	Type of job: Helping to hitch an implement (e.g., wagon, machine) to a tractor	
Date:		
Personal Protective Equipment to Be Worn:	Work boots with steel toe shanks, gloves	
Basic Job Steps	**Potential Hazards**	**Recommended Action or Procedure**
Check the position of the implement wheels	Implement could roll when tongue is picked up, causing a crushing injury	Check the wheel of the implement are blocked
Check the position of the implement tongue	Straining the back if the tongue is heavy	Use blocks to keep tongue at hitching height, squat down, and use leg muscles to lift rather than bending over an lifting with your back; use implement's jack stand, if it has one; use temporary jack if tongue is heavy and implement doesn't have a jack stand
Tractor driver backs to within inches of implement tongue	Crushed between tractor and implement if tractor operator miscalculates while backing; runover by rear tractor tire	Stand outside of tractor and implement until tractor driver stops tractor; use hand signals
Helper aligns implement tongue and pinhole with tractor and pinhole	Crushing injury to the hands or body	Keep hands in back of drawbar connection point; wear leather gloves; tractor operator backs with low gear and low engine speed
Insert drawbar pin; insert safety pin or attach safety chains	Helper can be run over by tractor implement; suffer crushing injury to the feet if the implement tongue slips off of the tractor drawbar	Operator puts tractor in park or sets brakes before helper drops in the hitch pin; helper steps from between tractor and implement before tractor operator moves tractor; helper wears steel-toe work boots

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Slide 1.11 – Active vs. Passive

- Passive provides automatic protection (airbags, GFI)
- Active requires participation by the person (seatbelt)
- Passive + Active (ROPS + seatbelt)

Notes

Passive strategies that provide automatic protection against injury are more effective than active strategies that require participation by those being protected.

Examples:

Passive:	Airbags GFCI and fuses Safety start switches Automatic sprinkler systems
Active:	Seatbelts Manually operated shut-off switches
Passive + Active:	ROPS and seatbelt (passive + active)

Slide 1.12 – Risk Assessment

- Identify frequency
- Identify severity

Notes

When determining a priority process for hazard corrections, one must consider frequency and severity. Is it something that does not have a high level of severity but occurs frequently and may account for a large amount of "lost work hours"? Or is it something that may occur only once but if it does, someone is going to be killed? There is really no one single "good" answer for determining priority levels of where to start making corrections. Sometimes, starting with the easiest and least expensive may get people motivated to work through their to-do list and on to tackling the more difficult and more expensive fixes.

Slide 1.13 – Safety Hierarchy

- Eliminate hazard or risk during design
- Apply safeguarding technology
- Use warning signs

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- Train and instruct
- Prescribe personal protective equipment (PPE)

Notes
The best place to eliminate a hazard is during the design phase. When designing a product or process, potential hazards need to be identified. Are there ways they can be designed out? At this point, one also needs to consider the potential risks for how the product (or process) can be misused. The product or process, however, must still be able to perform the function for which it is designed. The intake area of a harvesting machine, for example, still has to be able to pull in the crop.

If the hazard cannot be eliminated, then safeguarding technology is applied. This can be the installation of guards and shields to cover hazardous areas. Ideally, guards should be an integral part of the equipment — that is, the equipment cannot operate if the guards are not in place. Past philosophies have been that if these are made very difficult to take off, then they won't be taken off. However, if maintenance or repair has to be done and they are removed, they are more likely to be kept off rather than put back on.

If guarding cannot be applied (example: intake area of combine), then, warning signs are applied. These are used to show people the potential dangers of that particular area. However, warning signs have downsides: (1) they are overused so people tend not to see them anymore and (2) the lack of a sign implies that that particular area poses no danger.

Training and instruction of how to use the equipment or process safely is the next step in the hierarchy.

Slide 1.14 – Correction Strategy Examples

- Eliminate the source
- Substitute a less hazardous equivalent
- Remove person from hazard (robots, automation)
- Isolate the hazard (barricades)
- Dilute the hazard (ventilation)

Slide 1.15 – Resources

- AEM link for making your own signs
  http://digital.aem.org/safetymanuals/

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- Farm/Agricultural/Rural Management Hazard Analysis Tool (HAT) http://www.agsafety.psu.edu/farmhat/

Notes
The Association of Equipment Manufacturers (AEM) has developed a free online database of pictorial graphics that can be used to customize safety posters.

The Farm/Agricultural/Rural Management Hazard Analysis Tool (HAT) includes forms and pictures for actually scoring and ranking agriculturally related hazards.

Slides 1.16 to ?? – Examples of Hazards

- Identify the hazards in the following series of slides.

Notes
Use this section of the PowerPoint presentation to show slides of various hazards. Include both obvious and more subtle hazards, and guide the students to identify and understand the hazard.

Possible hazards to present:

- Trip hazard
- Pedestrians or bicyclists can easily trip... and fall into traffic
- No railing on staircase
- Damaged steps as well as no railing
- Open, as well as improperly installed, electrical box
- A trip hazard and can damage the electrical cord
- Uneven surface — slip, trip, and fall hazard
- Electrical cord mess — electrical and fire hazards
- Trip over cord or damage cord
- Anyone can take off in the golf cart, and it is parked in a no parking zone.
- Spills on floor can lead to slips and falls.
- Flammable items by a cabinet that the sign says to keep flammables away from.
- Bicyclist and traffic
- Road hazard — can lead to a bicyclist “wiping out” or someone tripping and falling
- Canister blocking fire escape door
- Trash as well as blocking access to the door
- Improper lamp shade — can overheat and catch on fire
- Improper storage of canisters

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1.2 Assignment Questions for Hazard Identification and Correction

Hazardous Attitude Categories

A hazardous attitude is an underlying predisposition within us towards how we act and interact in situations that could lead to an incident resulting in injury.

A. "It can't happen to me" — The feeling of invulnerability. This is the sense that these things always happen to someone else, and "it can't happen to me." This is where it is important to be able to find things that people can identify with and "personalize the risk." Examples can be to read a story such as *Rhythm of the Seasons* that puts faces on the statistics. If someone from the community has been injured, perhaps have them speak to the class. The more localized you can make something, the better.

B. "Don't tell *me* what I can't do" — The anti-authority attitude. Rules are for other people and not for me. This is the person who will break the rules whenever they feel they can get by with it. The rules are there to prevent someone from getting injured or killed.

C. "I'll do it this way and now" — The impulsivity attitude. This is when the person takes immediate action without stopping to think about what they are doing. It is the action of doing something – anything – and doing it quickly. People need to realize that they need to pause and think about their actions and the possible consequences.

D. "I can do it by myself and don't need any help" — This is the attitude of being over-confident in their capabilities and not thinking they have any limitations. This is the person that consistently takes unnecessary chances, feeling that they can get away with it. People need to realize that taking unnecessary chances is foolish.

E. "I can't do anything about it anyway" — The resignation attitude. The feeling of "what's the use?" and feeling helpless and unable to cope. This person will simply give up and not feel like taking a proactive role in their safety.

F. "That would take too much time" — The feeling of being in a hurry and not wanting to take the time to use the safer approach or taking the time to fix something in order to do the job safer.

G. "I didn't see it until it was too late" — By not paying attention to what one is doing, they do not have time to react to a situation that may occur.

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Recognizing Hazardous Attitudes

For each of the following stories indicate the safety attitude or attitudes that are prevalent. (There may be more than one in some cases.)

Story #1 – This is a story about Fred, who was applying pesticides to his crop and was not using the proper PPE. Fred was in a hurry to get the pesticide applied and was careless in his use of the Personal Protection Equipment and was self-poisoned. He was spraying for about an hour when his co-workers saw him acting weird and rushed him to the hospital, where doctors administered the antidote. He spent two days in the hospital.

Story #2 – This is a story about Bill, who was working in the summer transplanting trees when he suffered a case of heat stress. Bill was working in the sun on a day when the temperature was above 90°F and the humidity was around 85%. He had not been drinking water and had symptoms of headaches, an upset stomach, and dizziness. His boss came out to check on him and noticed that he was walking irregularly and made him go sit down in the shade and drink lots of water.

Story #3 – This is a story about Heidi, who at the time of the incident, was moving a flat of potted plants off the bench and onto the floor. She had been transplanting cuttings to pots all day. Each time she completed a flat of pots, she would set them on the ground, where someone else would come and get them with a trailer. While she was moving the flats, she bent the wrong way and dislocated a disk in her back.

Story #4 – This is a story about Amy, who at the time of the incident, was lighting greenhouse heaters. When the heater had been refueled, some of the fuel had spilt on the side and the ground. The individual who performed the task did not clean it up. Amy came by and lit the heater, and the flame followed down the side of the tank and onto the ground. Around the base of the heater, there were some leftover plant trimmings that had not been cleaned up in some time. They in turn ignited, and the fire spread. Amy ran and got a fire extinguisher from the office and returned to the fire. She was able to put the fire out with some help but not before some of the surrounding plants were destroyed.

Story #5 – This is a story about Steve, who at the time of the incident, was moving a wheelbarrow through the greenhouse and tripped on an unseen object sticking out in the aisle. The previous worker in the greenhouse had left material laying out in the walkway while he went to do another job. Steve had the wheelbarrow full of plant trimmings, and he did not see the object lying on the floor. After the wheelbarrow passed over the object, Steve's foot got caught up in the object and tripped him. Steve fractured his jaw when it hit the back of the wheelbarrow. He had his jaw wired shut for six weeks.

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Story #6 – This is a story about Mike, who at the time of the incident, was fixing a cooling fan in the greenhouse. Mike had turned off the fan at the breaker box and had not tagged it out. While he was up working on it, a co-worker who did not know that someone was working on the fan turned it on. Mike was in the process of wiring up a new motor and was holding one of the electrical leads when a jolt of electricity knocked him off the ladder. Mike was lucky not to have been electrocuted.

Story #7 – This is a story about Missy, who at the time of the incident, was cleaning up the pesticide locker and knocked a shelf down, causing several containers of pesticides to break open and spill in the locker and spread to the area surrounding the locker. There was an accumulation of excess chemicals that, over the years, had gotten to be quite a large amount. The shelves were overloaded and the top shelf was getting ready to fall down. As Missy was moving a container, the shelf gave way and knocked the shelf below it and its contents to the ground. As the chemicals mixed, a cloud developed. Missy, fearing for her safety, ran out of the locker and called the fire department. While Missy was not hurt, the owner of the company was fined and had to pay a company to come out and clean up the hazardous waste.

Story #8 – This is a story about Tom, who at the time of the incident, was installing a sprinkler system in a greenhouse and cut his hand with a hacksaw. It was 4 pm on a payday Friday, and Tom could not leave work until the last section of sprinkler was installed. He was not paying attention to where his thumb was and when he drew down on the hacksaw his thumb was under the blade. Instead of going out with his friends Friday night, he spent it in the hospital where he received eight stitches.

Story #9 – This is a story about Jennifer, who at the time of the incident, was moving trees with a tractor on a hill and rolled the tractor. Jennifer was using the bucket of the tractor to move the tree. She was on an angle and was OK until she had to turn. The bucket was up in the air because of the way that they attached the tree to the tractor. They had been doing this all day, but the angle had unknowingly increased. When she turned the tractor, it rolled. She was not injured. The tractor had a ROPS, and she was wearing a seatbelt.

Case Study Analysis

1. For the case study you have been provided, identify factors involved with the AGENT OF INJURY, the OPERATOR, and the ENVIRONMENT that led to the incident.

2. Identify possible hazardous attitude categories that were involved in this case. Attitudes may be those of management as well as those of the worker involved.

3. For the factors identified in (1), indicate which ones could be controlled, and discuss how

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they could be controlled (changed) to "break the chain of events" in order to prevent the incident from occurring or to lessen the severity of the outcome in the event that it could not be prevented.

4. Discuss the "big picture" of the event. What are possible issues or other causative factors that may not be obvious (cultural, social, costs, perceptions, etc.), i.e., think deeper than what you see on the surface!

Hazard Hunt!

Instructions:

Use your residence, place of work, or an area of campus.

Identify a minimum of 25 hazards. For each hazard, indicate the following:

- The hazard and potential for injury
- Location and time of the hazard
- Recommendation(s) for correction (if known)
- Category*

*Categories of hazards to look for include, but are not limited to, the following:
– Electrical
– Structural
– Fire
– Surfaces that would contribute to slips and falls
– Traffic — pedestrians, automobiles, bicycles
– Health hazards such as atmospheric, and noise
– If someone is seen doing something in an unsafe manner, that can be noted and identified as a hazard.

Hazard Hunt Questions

Find three different versions of a safety checklist (hazard identification or safety audits).

a. Copy a sample page of each.
b. Rank them according to their "usefulness."
c. Explain which one you would find most useful for taking corrective action and why.

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Think about the Campus Hazard Hunt activity you did. What four critical items would have to be a part of a safety checklist in order to make it an effective action plan for hazard correction? [1. Hazard; 2. Correction; Who is responsible; 4. Target date]

Injuries have identifiable causes that are: [Preventable and controllable]

In breaking the chain of events, we need to identify the factors that we can: [Control or do something about changing to prevent the incident or lessen the severity of the results]

What key things need to be considered when prioritizing intervention strategies? [Severity, Frequency, Costs, Feasibility, Compliance...]

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CHAPTER 2

Principles of Occupational Safety and Health

2.1 PowerPoint Slides

Slide 2.1 – Objectives

- Define occupational safety
- Define occupational health
- Explain the seven primary principles of occupational safety and health

Slide 2.2 – Safety is...

- ...the minimization of risks while maximizing the quality of life
- ...a Best Management Practice

Notes
Safety is about management of risks in order to minimize losses.

Slide 2.3 – Safety Requires...

- ...an understanding of how products and processes are used as well as identifying how they can be misused

Slide 2.4 – Safety is All About...

- Identifying problems
- Developing solutions
- Implementing interventions

Slide 2.5 – Identifying Problems

- Agent of injury (“item”)

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- Environment (physical and social)
- Human (operator/worker)

Notes
We need to see the interaction of these three elements in order to identify where the "chain of events" could have been broken in order to prevent the incident from occurring in the first place, or in the event that it does occur, to lessen the severity of the outcome. Example: ROPS on a tractor may not prevent the overturn from happening, but it can mean the difference between life and death for the operator.

We need to identify the things that can be controlled in each category in order to break the "chain."

This relationship is often depicted by showing three circles that are interconnected.

Slide 2.6 – Agent of Injury...

- What factors for the "agent of injury" will impact safety?

Notes
The agent of injury is that thing that inflicts injury or damage (tools, equipment, products, surfaces, chemicals, etc.)

Slide 2.7 – Agent of Injury...

- What factors for the agent of injury will impact safety?
- Examples: age, maintenance, safety features, risk for breaking down, ergonomics, shielding, guarding
- Animals: temperament, familiarity with people, having just given birth

Notes
Example: If a machine is the agent of injury, things such as its working condition, likelihood of breaking down, lack of safety features, etc. enter into the safety equation. Newer machines are also more ergonomically correct in relation to the operator and are safer machines. These factors are important for managers who deal with machine selection for their employees.

If working with livestock, the temperament of an animal will be a factor in safety.

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Slide 2.8 – Human...

- What factors does the human bring to the workplace that will influence safety?

Notes
What does the operator or worker bring to the workplace that will affect safety?

Slide 2.9 – Human...

- What factors does the human bring to the workplace that will influence safety?
- Examples: age, attitude, training, experience, impairments, risk perception, size, skills

Notes
Physical size, psychological attitudes, age, risk perception, and impairments such as medications or alcohol are all factors that the operator brings to the workplace. What factors can be controlled to insure that a worker is fit to do the task at hand?

Slide 2.10 – Environment...

- What factors does the environment bring to the workplace that will influence safety?

Notes
Environment is made up of both the physical as well as the social aspects.

Slide 2.11 – Environment...

- What factors does the environment bring to the workplace that will influence safety?
- Physical examples: weather, heat, cold, wet, windy, climate controlled, noise, site hazards
- Social examples: peer, attitudes and support, “it’s just the cost of doing business” mentality

Notes
Physical factors of the environment include weather as well as the conditions in the workplace. What factors can be controlled, or perhaps on a given day, are there alternatives that can be considered? For example, if a blizzard is predicted for the next day, perhaps extra feed can be prepared for the cattle today. Environment is a major factor in agriculture because often producers will have a short window of time in which to plant or harvest a

crop. That is when shortcuts are taken and incidents become more likely to occur.

Social factors also create an environment that influences safety. In agriculture, there is a prevailing mentality that "we know it is dangerous, but that is just the cost of doing business."

Slide 2.12 – Discouraging Use of the "A" Word

- ...use of the term "accident" promotes the concept that these events are outside of human influence and control. NHTSA, NSC, and others promote use of terms such as crash, collision, incident, injury, event, or fatality. These things are *predictable and preventable.*

Notes
Develop the attitude that the word accident will no longer be used in this class. By using the term accident, people promote the idea the fact that the incident just happened and nothing could have been done about it.

Example: When a 10-ft-deep trench with no safety shoring in fragile soil collapsed, there was nothing "accidental" about it. Often in such a case, one will read "...three people killed in freak trench accident." Given the laws of physics, there was nothing freakish or accidental about it. All the dominoes were in place; a collapse was inevitable.

Slide 2.13 – Occupational Safety and Health (OSH)...

- ...elimination or minimization of damage or harm to people in the workplace, their working tools, equipment, materials, products, etc., and their living and working environment
- Safety — acute injuries/events
- Health — chronic exposures over time

Slide 2.14 – OSH Examples of Disciplines

- Engineers
- Industrial hygienists
- Medical
- Loss control specialists
- Educators
- Public health

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Slide 2.15 – Industrial Hygiene...

- Toxicology
- Gases, vapors, solvents
- Dermatoses (skin-related diseases)
- Hearing
- Respiratory
- Vibrations
- Ergonomics

Notes
These are just a few of the exposures that industrial health workers deal with in the workplace.

Slide 2.16 – Principles of OSH

- *Incidents have identifiable causes which are either preventable or controllable.*

Notes
This principle rejects the idea that injury incidents occur strictly as "acts of God," fate, luck, or chance. The perception that an event is "uncontrollable" inhibits a concentrated effort for change.

"People think in terms of (accidents) as more closely associated with the stars and heavens above than with our own decisions and actions here on earth, provides individuals and the public with a convenient excuse for their fallible ways" (Murphy, p. 88).

Slide 2.17 – Principles of OSH

- *An incident normally derives from multiple causes rather than a single cause. This results in multiple approaches to hazard and injury prevention and control being more effective than any single approach.*

Notes
If a single cause theory is used in incident investigation, when the precipitating event is identified, people will tend to look no further, e.g., at underlying causes. We need to look further into the underlying factors that include beliefs, cultures, peer pressures, costs, etc.

. . . . . .

Again, we need to identify numerous places where the chain of events can be broken.

Example: Tractor operator killed in tractor overturn of a tractor without a ROPS. Why was there no ROPS? Cost, perception, not aware of needing it? Public policy? Regulation?

Slide 2.18 – Principles of OSH

- *Risk is inherent and always present in life.*

Notes
Consideration of risk implies a concern about the hazards associated with the risk. It is necessary to understand and manage the risk.

Slide 2.19 – Principles of OSH

- *To be human is to err.*

Notes
Mistakes are a usual and rational part of human life. It is important for managers and supervisors to have an understanding of human behavior, such as knowing what people are likely to do, when they will probably do it, and how they may go about it. These are keys to designing products, work processes, and working environments that eliminate or minimize potential damage to property or people. This also shows the reason for requiring training of workers.

Slide 2.20 – Principles of OSH

- *Human perceptions of risk are not very accurate*

Notes

We believe our perceptions, and our behavior is based on those perceptions.

An example of a perception in agriculture is that it is “cute” to see a picture of a child riding with grandpa on the tractor. Yet, children fall off those tractors and get run over and killed.

A survey asked farmers what they thought was the most dangerous item they worked with. They responded that the most hazardous was chemicals while the least dangerous item they worked with was the tractor. Their next question was that, if they knew someone who had been killed or injured on the farm, what was the agent of injury. The number 1 response was

the tractor. They tended to use PPE when working with chemicals because they perceived chemicals to be dangerous, but they would not put a ROPS on a tractor because they felt it wasn't a hazard.

Slide 2.21 – Principles of OSH

- *Human behavior can be changed.*
- Two items essential for OSH behavior change:

  a. personalization of the risk
  b. access to the means for change

Notes

In order to change behavior, people have to personalize the risk. The common phrase people say is "it won't happen to me." We need to show them that it can happen to them. People won't take positive action until they realize that this is true. This is a reason for the students to read the book *Rhythm of the Seasons* – it puts faces on the statistics. Once people recognize what they need to do to change, then they need access to the corrective measures. People are like rivers in that they tend to follow the path of least resistance. "Access" means not only available but also affordable, convenient, etc.

An example would be having proper PPE for sale at the same location where the chemicals are sold. This makes it more likely that people will purchase PPE than if they need to stop at another store to purchase it. Another example is, if hearing protection is required in the workplace, have it accessible by the workplace entrance.

As managers, provide other examples of your role for these two factors.

Slide 2.22 – Principles of OSH

- *OSH is a function of management.*
- *There needs to be a plan for buy-in to the OSH program.*

Notes

It is important that management be committed to a safety program. If management does not care, nobody else will either. It is important for management to buy into developing a positive safety culture.

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Slide 2.23 – Principles of OSH

- *Each individual has a responsibility to work safely and to not put another worker at risk.*

Notes
Individuals need to realize that if they do something unsafe that they are not only endangering themselves but their coworkers also. Additionally, they also are endangering people who may have to come in and rescue them.

Slide 2.24 – Six E's of Safety

- Engineering
- Education
- Enforcement
- Ergonomics (human factors)
- Economics
- Empowerment

Slide 2.25 – OSHA (www.osha.gov)

- Occupational Safety and Health Act (1970) administered by OSH Administration
- *Minimum* federal safety standards requiring employers to provide a safe workplace for employees
- State OSHAs are often stricter

Slide 2.26 – Compliance vs. Best Practices

- Compliance – in compliance when a company meets all minimum safety regulations
- Best Practices – safety program that uses the best practices and equipment to ensure worker safety; often exceeds the minimum standards (proactive approach)

Slide 2.27 – Industry Best Practices

- Management commitment
- Supervisory commitment
- Employee commitment and involvement

. . . . . .

- Team commitment
- Accountability by all
- Authority to carry out OSH responsibilities
- Rules that are logical and enforceable

Notes

Management sets company policy and value system. They control the agenda.

– Really talking about leadership (safety program and otherwise)

Safety program leadership is about building relationships, communications, trust, and credibility that motives people to follow and enforce safety procedures because it is the right thing to do.

– How to get involvement?

◦ Form joint employee-management safety committee(s); rotate members
◦ Post company policy on bulletin board; hold meetings to verbally explain safety policy
◦ Model safety behaviors
◦ Participate in hazard reviews
◦ Participate in investigations of injury and property damage incidents
◦ Have employees make safety suggestions and recommendations
◦ Joint development of safety policy
◦ Help conduct equipment tests and inspections
◦ Have all safety activity on company time
◦ Recognition and award programs

Slide 2.28 – Best Practices (cont'd)

- WRITTEN safety policies
- Safety inspections
- Safety meetings and trainings
- Subcontractor management plan
- Incentive programs
- Incident and injury reporting and investigations
- Light-duty, early return to work

Slide 2.29 – Inspections

- Daily
- Periodic

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- Internal
- External (OSHA, insurance carrier, consultant)

Slide 2.30 – Training

- New employees
- Employees doing a different task or using different equipment
- Tailgate (daily or weekly, frequently)
- Periodic
- Seasonal or annual
- Recognize accomplishments

Slide 2.31 – Injury Factors

- First 30 days of employment
- Lack of equipment guarding
- Employee error

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2.2 Sample Assignment Questions for Occupational Safety and Health

When analyzing injury prevention, we look at the interaction of the operator, the environment, and the agent of injury. The "bottom line" purpose of this analysis is to break the chain of events that led to the incident. We look to break the chain in order to accomplish one of two goals. List these goals.

Discuss why all hazards cannot be eliminated at the drawing board stage of the design process.

One of the seven leading principles of occupational safety and health (OSH) states that "human behavior can be changed." What two items discussed in class are absolutely necessary for behavioral change for safety? For each one, provide an example of how this can be accomplished.

Another OSH principle is that there are multiple causes of injuries. In the McWane corporation case study covered in class (see section 2.3, below), discuss what may be possible underlying causes for the many injuries and deaths.

Explain the principle of "breaking the chain of events." Discuss the interrelationship of environment, human, and agent of injury that is involved in this principle.

Discuss why the term "accident" is not an acceptable term among safety professionals.

Explain why it is necessary to look beneath the surface when understanding causes of an injury event. For example, why is it inadequate to just indicate that "Joe was injured due to a tractor overturn"?

For each of the following injury intervention examples, identify the intervention category. Fill in the blank with the number of the category.

1. Engineering	2. Education	3. Enforcement	4. Economic Incentive
5. Guarding	6. Warning Signs	7. PPE	

_____ OSHA
_____ Forklift operator certification requirement
_____ "Danger — Flowing Grain"
_____ Gloves
_____ Integrated Shielding
_____ Decreasing a company's insurance premium
_____ Steel-toed boots
_____ Ergonomically correct machinery

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_____ Pictograph of hand being cut off
_____ Fines for employer negligence

You have been hired as a manager of a local agri-business, and you are in direct contact with agricultural producers. Discuss things that you can do to improve the safety practices of your clientele.

We discussed that perceptions influence safety practices. A survey of farm families was given as an example. The survey results indicated that they thought _____ were the most hazardous items they worked with while the least hazardous thing that they worked with was _____.
[chemicals, the tractor]

Their response to a related question, "if you know someone who has been injured or killed in an agriculture-related incident," the number one agent of injury farmers reported was _____ while _____ accounted for no injuries known to them.
[the tractor, chemicals]

The ideal place to eliminate a hazard is:

a) During the product design phase
b) During the product testing phase
c) During the product marketing phase
d) After the injury rate for that product has been established

The "no-no" word in this class is _____. Why?

Discuss the role of each of the following in injury intervention and provide an example for each:

a) engineering
b) education
c) enforcement
d) economic incentives

Rank in order from the 1st thing to be done to the last thing to be done in the Safety Hierarchy.

_____ Use Warning Signs
_____ Personal Protective Equipment
_____ Eliminate/design out the hazard
_____ Shields/guards
_____ Training

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2.3 Activities for Occupational Safety and Health

"A Dangerous Business"

View "A Dangerous Business" and its follow-up program on the PBS website (http://www.pbs.org/wgbh/pages/frontline/shows/workplace/)

1. Jot down notes and thoughts from watching the video "A Dangerous Business."

2. Jot down highlights of jobs and injuries. Also identify any treatment they received.

3. What is management's attitude towards managing and reducing risk? How does this influence the overall workplace attitude?

4. Discuss what your role and attitude should be, as a manager, towards risk management, hazard reduction, and employee well-being. Ultimately, how will this pay off for your business?

5. What was the "ironic" ending of the presentation? This indicates that one can be in this same line of business and successfully use risk management strategies. Comment on the difference in attitudes and how that impacts employees and the bottom line (profits).

The following questions are based on the follow-up story.

1. What is the area in which prosecutors can "nail" McWane the most and cause changes to be made? Why was this the area in which charges were filed rather than for working conditions?

2. What are the follow-up situations for these people who appeared in the initial McWane broadcast?

    - Ira Cofer
    - Guadalupe Garcia
    - Marcos Lopez

3. Mr. Henshaw was working with the Department of _____ during the initial McWane investigation. What is he doing now?

4. Identify three things that McWane has done to improve safety for their workers.

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CHAPTER 3

Costs and Worker Compensation

3.1 PowerPoint Slides

Slide 3.1 – Objectives

- Understand both direct and indirect costs of injuries
- Understand aspects of insurance related to injury

Slide 3.2 – Cost of Work Injuries

- Direct
  – Medical
  – Compensation
  – Expenses

Slide 3.3 – Cost of Work Injuries

- Indirect cost
  – Equipment
  – Product
  – Insurance cost

NOTE: Off-the-job injuries also impact a business.

Slide 3.4 – Costs

- Insured
  – Medical bills
  – Compensation
  – Premiums

- Indirect/Uninsured
  – Property damage

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– Equipment damage
– Production delays
– Supervisory time
– Retraining
– Image/Morale

Slide 3.5 – Uninsured Costs

- 4 to 5 times insured costs; paid by employer
  – Wages to injured worker
  – Wages to non-injured worker
  – Damage to material or equipment
  – Cost of overtime
  – Supervisor's wages for filling out injury reports, investigation etc.

Notes
Hidden costs of injury:

– Wages paid for time lost by the worker
– Wages paid to uninjured workers who stop to watch or assist
– Cost of damage to material or equipment (including getting materials reorganized so production can continue)
– Cost of overtime (make up lost production, additional supervision, lights, heat, etc.)
– Cost of wages for supervisors (caring for worker, investigating the accident, writing reports, taking victim to doctor/hospital, etc.)
– Costs associated with instructing, training, or repositioning employees (including new employees)
– Medical costs paid by employer
– Rehabilitation costs (travel time, replacement labor)
– Costs of managers (besides supervisors) and clerical personnel involved in investigating and processing claims forms, interviews, etc.
– Costs of decreased productivity while new worker is being trained
– Costs associated with missed production deadlines or lower value of products
– Wage costs increase due to restricted work activity or lower production from injured worker
– Costs associated with unfavorable publicity

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Slide 3.6 – Uninsured Costs

- Training costs for repositioning
- Employer's medical costs
- Clerical personnel investigation/reports/calls etc.
- Decreased productivity when employee returns
- Delivery delays

Slide 3.7 – Uninsured Costs

- Unfavorable publicity
- Recall of defective products
- Increase in insurance
- Possible lawsuits, fines, penalties

Slide 3.8 – Experience Modifier

- Base premium multiplier factor = 1.0
- "Good safety" companies can have an Experience Modifier (EM) < 1.0 (i.e., premiums will be less than the base)
- "Poor safety" companies can have an EM > 1.0 (i.e., premiums more than base)

Slide 3.9 – Example of "Value of Safety"

- Given company A and company B that have the same number of employees and do the same type of work:

  – Base premium = $350,000 annually
  – Company A: EM = 0.80; annual premium = $280,000
  – Company B: EM = 2.0; premium = $700,000
  – Difference = $420,000 (taken from profits)

Slide 3.10 – Bottom Line

- An effective management-based safety program can make the difference between profit or loss

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- The lack of a safety program can result in a company going out of business

3.2 Sample Assignment Questions for Costs and Worker Compensation, and Managing Safety

Explain the impact the Experience Modifier (EM) can have on a company.
Explain how EM works and what items a company needs to implement in order to lower their EM.

Who needs to be a member of the safety team for:

a. a commercial agricultural operation
b. a private family farm/ranch?

Explain the significance and importance of developing a Job Hazard Task Analysis for employees? What information does it need to contain?

To obtain regulations that your business needs to be in compliance, the main website to check is www._____.gov

What is the recommended strategy for finding out what your business needs in order to be in compliance?

As the safety leader for Tangy Citrus, Inc., you need to show top management how safety measures can have an impact on the company's profit margin. Presently, the company's base premium paid for worker compensation insurance is $345,000 per year. The company has not been too serious about implementing safety measures in the past; therefore, their Experience Modifier is presently 1.3. By adopting several safety factors, they can reduce the EM to 0.75 within three years.

a. Show the cost savings that will result (per year) *after* the safety measures have been adopted.
b. Describe 5 measures that can be developed and implemented to reduce their Experience Mod.

What do you tell an employee who complains about having to use PPE?

Federal OSHA standards are actually the _____ safety standards and not necessarily the strictest safety standards.

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Safety policies must be in _____, so everyone is presented with the same information.

The final step in the safety hierarchy is to protect the worker by use of _____.

Mining gets more attention for safety than construction or agriculture because if often involves _____.

_____ are often four to five times more than the injury costs that are covered by insurance. Even if an employee in the field is injured, it can cost office staff time due to _____.

Personal Protective Equipment (PPE) may be uncomfortable for (how long a time) _____, but a disability is uncomfortable for (how long a time) _____.

Explain how a safety team approach can be implemented on a privately owned and operated family farm.

3.3 Activities for Costs and Worker Compensation, and Managing Safety

OSHA's Top Ten Safety Violations

OSHA's top 10 most violated standards for fiscal year 2015 are listed below. Each one is followed by the number of the applicable OSHA standard, and each one is linked to a quickcard or other OSHA resource document.

1. Fall Protection (1926.501)
2. Hazard Communication (1910.1200)
3. Scaffolding (1926.451)
4. Respiratory Protection (1910.134)
5. Lockout/Tagout (1910.147)
6. Powered Industrial Trucks (1910.178)
7. Ladders (1926.1053)
8. Electrical, Wiring Methods (1910.305)
9. Machine Guarding (1910.212)
10. Electrical, General Requirements (1910.303)

OSHA Standards can be accessed at www.osha.gov. For a complete listing of OSHA's Quickcards, visit the following website. Most are also available in Spanish.

https://www.osha.gov/pls/publications/publication.athruz?pType=Types&pID=6

Using the following data, discuss what the causative agents and issues are and identify measures to be taken in order to reduce these injuries. What would you do (as the new safety manager) to lower the worker compensation insurance premiums? Be specific (don't just say that they need to implement a safety program).

DATA: The packinghouse employs 125 workers at each of 2 shifts. 80% of the workers do not speak English.

Work shifts:	6 am–5 pm
	5 pm–4 am
Cleaning crew:	4 am–5:45 am

Workers are paid on the amount they have individually packed. They receive their checks as they arrive at work on Thursdays.

Lost time due to injuries:

– 3 years ago: 20 people for a total of 25 days
– 2 years ago: 18 people for a total of 35 days
– 1 year ago: 22 people for a total of 45 days
– First 6 months of current year: 12 people for a total of 35 days

Time of day of injury:

– 6–8 am 20%
– 8–10 am 3%
– 10–noon 14%
– Noon–2 pm 1%
– 2–4 pm 1%
– 4–6 pm 25%
– 6–8 pm 1%
– 8–10 pm 17%
– 10–midnight 1%
– Midnight–2 am 2%
– 2–4 am 15%

Day of the week of injury:

– Sunday 18%
– Monday 18%
– Tuesday 4%
– Wednesday 4%
– Thursday 35%
– Friday 15%
– Saturday 6%

Types of injuries/causes:

– Machine 30%
– Heat related 10%
– Slips/falls 25%
– Muscle sprains and strains 25%
– Assaults 5%
– Other 5%

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Worker Compensation Case Study

The purpose of this activity is to gain an understanding of identifying problem areas and being able to develop and implement strategies towards improving the safety and working conditions in a company. This results in lower worker compensation insurance premiums and increases profits.

Read the case study that has been provided to your team.

a. Identify the things the company or organization has done to reduce their worker compensation insurance premiums.
b. If, as part of your management role, you have been assigned to work with safety in the agribusiness for which you work — what would be the process to follow towards achieving a higher safety rating?
c. Why is it important that all levels of management be involved?

Each team will give a brief presentation that will include:

a. A summary of the company/organization — who they are and what they do.
b. What strategies did they implement and how did they do it?
c. What was the result/savings etc.?

A Dangerous Business Activity

Each team has been assigned a business that has been cited for worker health and safety violations. (Reference note: Many of the companies were listed in the National Council for Occupational Safety and Health "Dirty Dozen" Report, April 2006, or check for a more recent listing.)

For the business you have been assigned find three articles on the Internet that provide more details related to safety management or mismanagement.

Prepare a summary of the disregard the company is showing towards worker's safety and health and whether there any indications that anything is being done about it.

What were your feelings when you read about this company?

CHAPTER 4

Introduction to Agricultural Safety

4.1 PowerPoint Slides

Slide 4.1 – Distinguishing Characteristics of Ag Workplace

1. Lack of uniformity and control over workplaces and work activities
2. Overlap of residences and work sites
3. Family businesses employing labor without age-related restriction
4. Relatively little regulation of work hazards and risks

Slide 4.2 – Most Hazardous Occupations in the U.S.

- Fatality rate per 100,000 workers (annual)*

  – Mining 30
  – Agriculture 24
  – Construction 15
  – All industries 3.4

  *2013-2014 Data

Notes
Activity: Before this slide is shown, have students count off beginning at 1, stand, and remain standing to show the number of deaths annually per 100,000 workers — when the fourth student counts off (representing the All Industries fatality rate), tell them that they can stop and either sit down or stand on one side of the room. Then, tell them that we will now compare the all-industries rate with agriculture. Begin counting at 1 and remain standing. When the 24th person is standing, compare that large group with the group of 4. That visual makes an impact.

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Slide 4.3 – But farming seems so peaceful and serene! What do you think are the leading agents of injury and death in agriculture?

- Tractors and machinery
- Livestock and animal
- Structures (including toxic atmospheres and grain entrapments)

Slide 4.4 – Tractor-related

- How many have driven a tractor?
- How many have ridden on a tractor as a passenger?
- How many have seen a tractor on the road when you have been in a car?

Notes
Ask these questions. Students may want to share and discuss their experiences.

Slide 4.5 – Leading Causes of Tractor-related Fatalities

- 1/2 are due to tractor overturns
- Runovers (operator or passenger falling off; starting tractor from the ground)
- Collisions with motor vehicles on public roads

Notes
Use a scale-model tractor to demonstrate tractor overturns.

Slide 4.6 – Influential Factors

- Peer pressure
- Cost of safety equipment (if not essential to the machine's being able to function) Price-getters not price-setters
- No incentive or reward system or mechanism

Slide 4.7 – Influential Factors

- Society's image of agriculture
- Family farm is the residence as well as the workplace
- Work ethic!

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Notes

What is your image of agriculture? What is the image projected in the “wanna go for a tractor ride” type of ads. How hazardous do you think agriculture is in relation to other industries?

Even though it appears “idyllic.” agriculture is consistently in the top three hazardous industries. What are the reasons that agriculture has six times the fatality rate of general industry, e.g., allows kids in the workplace. Data doesn’t include those under 16.

Find surveys of attitudes toward agriculture on the part of the general public and agricultural producers.

CHAPTER 5

Machinery Management Safety

5.1 PowerPoint Slides

Slide 5.1 – Machinery Incidents

- Tractors are involved in 1/2 of ag-related fatalities
- Tractor overturns are involved in 1/2 of tractor-related fatalities
- Use of ROPS and seatbelt can prevent overturn fatalities

Slide 5.2 – Machinery Incidents (cont'd)

- Tractor-related
  1. overturns
  2. runovers (extra riders, by-pass starting, falling off)
  3. collisions with motor vehicles on roads

Slide 5.3 – Injury factors...

- First 30 days of employment
- Lack of equipment guarding
- Employee error

Slide 5.4 – OSHA

- Training upon employment and then once/year afterwards
- OSHA Standard for employer's responsibility
  (ROPS) http://edis.ifas.ufl.edu/OA013
  and (Training) http://nasdonline.org/193/d001596/safer-tractor-operations-for-agricultural-employers.html
- ROPS required on tractors manufactured after Oct. 25, 1976

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Slide 5.5 – Training Must Include

1. Securely fasten your seat belt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.

Slide 5.6 – Training (cont'd)

4. Stay off slopes too steep for safe operation. If necessary, back up a slope and drive forward going downhill.
5. Watch where you are going, especially at the end of rows, on roads, and around trees.
6. Do not permit extra riders.

Slide 5.7 – Training (cont'd)

7. Operate the tractor smoothly – no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by the manufacturer.
9. When the tractor is stopped, set brakes securely, and use park lock if available.

Slide 5.8 – OSHA

- Shielding and Guarding (https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10958)
- Construction equipment (www.osha.gov; www.elcosh.org)

Slide 5.9 – Types of Machine-Related Injuries

- Machinery slides – available to view at www.aces.edu/farmsafety/ (Auburn University) (click on Tractor and Machinery Safety Presentation with the graphic warning)
- Note: this site also contains safety-related materials useful for managers/employers

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Slide 5.10 – Tailgate Training

- Sources for tailgate training materials for employees working with machines:
  – www.oznet.ksu.edu/library/landscaping equipment safety.htm (landscape and horticultural services industry)
  – http://nasdonline.org/4697/o000028/ohio-state-university-extension.html (ag and many in common with construction)

Slide 5.11 – YOU MAY BE QUICK!

- *....but machines are quicker!*

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5.2 Sample Assignment Questions for Machinery Management Safety

For each machine hazard listed provide (1) the definition, (2) an example, and (3) injury that can result.

Free-Wheeling Parts:
Pinch Points:
Stored Energy:
SMV:
Pull-in Point:
Secondary Party:

Why can't *all* hazards be "designed out" of machinery?

Explain the two main hazards associated with hydraulic fluid.

Explain two key elements that make a person's chances of surviving a tractor overturn to the rear (in a NON-ROPS tractor) slim.

Discuss how, as a manager/employer, you can positively impact your company's safety record for your employees who work with machinery:

a. through machine hazard identification
b. through machine selection and purchase

Explain how used farm machinery that is sold from private party to private party or through auction sales can be a safety issue.

Discuss implications for developing regulatory policies for controlling these practices.

If such policies were to be developed, would they need to be state or federally mandated? Provide the rationale for your answer.

Identify the two leading scenarios for tractor-machinery collisions with motor vehicles on public roads.

Prepare a Public Service Announcement of **100–200** words that could be used by a radio station to inform the motoring public about these hazards. Include suggested corrective measures that motorists can do in order to ensure safe traveling when using the same roads as tractors/machinery.

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The three leading causes of tractor-related injuries and fatalities (don't have to be in order) are:
(a) _____, (b) _____, and
(c) _____. Which one is increasing due to the increased rural-urban interface? _____

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5.3 Activities for Machinery Management Safety

YOU MAY BE QUICK... BUT MACHINES ARE QUICKER!

Machines and Reaction Time Activity

My reaction time was _____ seconds. My height is _____.

Note: Charts for the following are included in the power point graphics.

1. For each of the following, identify what would have happened to you in that amount of time:
    a. In that amount of time, how much "length" would have been entangled in a 6-inch auger at 400 rpm? _____
    b. In that amount of time, how much "length" would have been pulled into a belt and pulley traveling at 66 feet per second? _____
    c. In that amount of time, how much "length" would have been pulled into a power take-off shaft (PTO) rotating at 1000 rpm? _____
    d. In that amount of time, how much "length" would have been pulled into a PTO turning at the slower speed of 540 rpm? _____
    e. I would have been cut _____ times by the rotary lawn mower.

2. One thing that I routinely do by taking a short cut is:

    This shortcut saves me an estimated _____ seconds each time I do this task.

    Each time I do this I am putting myself (and others) at risk for _____.

    100 repetitions of this task would save a total of _____ minutes.

    Is the risk taken worth the _____ minutes saved?
    _____ seconds saved x 100 repetitions)/60 seconds in a minute = _____ minutes

MACHINES HAVE NO MEMORY AND NO CONSCIENCE...
THEY DON'T CARE WHO YOU ARE OR WHAT THEY CUT!

. . . . . .

Tractor Hazard Identification Activity and Short-Cut Simulation Activity

Note: The instructor needs to put numbered identification tags at various locations on the tractor to highlight hazard locations.

Tractor Hazards Identified:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Tractor Walk-Around

1. When was the ROPS installed on the tractor? _____
2. This "sticker" also indicates what relevant factor related to *this* ROPS and tractor unit? _____
3. Is the SMV sign correct? _____ If not, what is wrong with it? _____
4. What do the rear lights indicate? _____ Since there are no turn signals, what must the operator do when traveling on roadways? _____
5. Are there indications that the seatbelt has been used frequently? _____ Explain your answer:
6. Provide a recommendation/suggestion of a modification that could be made to insure the usage of the seatbelt on the tractor.
7. The brakes are set for what type of travel? _____ (road or field)
8. What is missing from the PTO area? _____

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Scale Model Tractor Demonstration

a. Hitching above the drawbar makes it easier for the tractor to: Why can't a person escape from a rear overturn?

b. Use of the seatbelt and ROPS showed that the operator would be _____ in the event of an overturn.

c. Pictures are provided showing transporting of Large Round Bales. Which one shows an incorrect procedure? _____ What is the hazard?

d. Explain the significance of the statement "short-cuts do not save time when put in the perspective of taking risks."

e. What is needed when a tractor is driven on the public roads? What color is it *supposed* to be? _____ This is used for vehicles that travel less than _____ miles per hour.

f. In the publication, Safer Tractor Operations for Agricultural Employers, (http://nasdonline.org/static_content/documents/185/d001588.pdf) what is included with the operator checklist that will be beneficial to an employer?

g. The instructional seat is fine when used _____ . It should not be used for _____!

Review a tractor/machinery-related "Fatality Assessment and Control Evaluation" (FACE) report on-line. (NIOSH FACE Reports: http://www.cdc.gov/niosh/face/inhouse.html)

a. Identify factors of the environment, agent of injury, and the people involved that contributed to the event

b. For the factors identified in (a), indicate which ones could be controlled and discuss how they could be controlled — what could have been done to break the chain of events?

c. Discuss the 'big picture' of the event — what are possible 'issues' that are involved with this situation? (Issues can include costs, culture, social norms, perceptions, etc.)

d. Identify long-term consequences of this event

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PTO Safety

Do the PTO training exercise found at www.nasdonline.org, and answer the following questions.

1. What does a PTO take from the tractor and deliver to another machine?
2. What is a common rotation speed for PTOs?
3. What should always be in place to make a PTO safer to work around?
4. What is one thing you should ALWAYS do to be safe around a PTO?
5. What kind of clothing is safer when working around machinery of any kind?
6. Paul has been using the tractor to mow all morning. Now it is time for lunch. What is the first thing Paul should do before he gets off the tractor?
7. Indicate what your reaction time was from that activity and the number of feet that would have been wrapped around the PTO in that time.

Sharing the Road

Do the Sharing the Road training found at www.nasdonline.org, and answer the following questions.

1. The two main scenarios for collisions between motor vehicles and farm equipment are:
2. The orange triangle is known as an _____ emblem and designates equipment at speeds of _____ mph or less.
3. Total stopping distance is _____ + braking distance.
4. A large tractor may be _____ times the weight of an SUV.
5. The tractor operator has limitations of _____ and _____.
6. Agriculture is an industry where the _____ is taken to the fields for production.
7. List two factors that will increase stopping distance:
8. For the stopping distance calculator activity list the variables you used and what your stopping distance was.

Study Guide for the Tractor Overturns

1. Tractor _____ are the leading cause of death in agriculture. There

_____

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are approximately _____ deaths in the U.S. annually from that cause.

2. One is especially at risk when working on a slope or_____ terrain.
3. Hauling a large round bale with the bucket raised, raises the _____ makes the tractor more and
4. When hauling loads in the loader, one must haul them _____ and
5. One cannot escape from an overturn because one cannot _____ quickly enough.
6. _____ provides significant protection in the event of a tractor overturn. It must be used with the seat belt in order to insure the operator stays within the _____
7. There have been _____ fatalities in tractor overturns where the ROPS and a seatbelt were used.
8. Can your family afford the cost of _____?

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5.4 Resources for Machinery Management Safety

(Note: The Safer Tractor Operations publications include questions that can be used for testing.)

Safer Tractor Operations for Agricultural Employers
www.nasdonline.org/193/d001596/safer-tractor-operations-for-agricultural-employers.html

Safer Tractor Operations for Farm Workers/Employees
www.nasdonline.org/1867/d001809/safer-tractor-operations-for-farm-workers-employees.html

Safer Tractor Operations for Florida's Privately Owned and Operated Farms and Ranches
www.nasdonline.org/1863/d001805/safer-tractor-operations-for-florida-039-s-privately.html

Safer Tractor Operations for Home and Acreage Owners
www.nasdonline.org/1864/d001806/safer-tractor-operations-for-home-and-acreage-owners.html

Safer Tractor Operations for Emergency and Rescue Personnel
www.nasdonline.org/1866/d001808/safer-tractor-operations-for-emergency-and-rescue-personnel.html

Safer Tractor Operations for Landscape Maintenance and Horticultural Industries
www.nasdonline.org/1865/d001807/safer-tractor-operations-for-landscape-maintenance-and-horticultural.html

Avoid the Invisible Hazard: Know about Soil Shear Lines
www.nasdonline.org/187/d001590/avoid-the-invisible-hazard-know-about-soil-shear.html

Filling Gas Cans Safely
www.nasdonline.org/186/d001589/filling-gas-cans-safely.html

Ready or Not? Get Ready with a Tractor Operator Checklist
www.nasdonline.org/190/d001593/ready-or-not-get-ready-with-a-tractor.html

Shortcuts are Short-Sighted, or Invest Seconds, Save Lives!
www.nasdonline.org/static_content/documents/189/d001592.pdf

When Two's a Crowd: Dangers of Extra Riders on Tractors
www.nasdonline.org/static_content/documents/185/d001588.pdf

YeeHaa! Formula for a Successful Tractor Rodeo
www.nasdonline.org/191/d001594/yee-haa-formula-for-a-successful-tractor-rodeo.html

Hand-me-down Hazards: Dangers of Used Equipment
www.nasdonline.org/192/d001595/hand-me-down-hazards-dangers-of-used-equipment.html

Getting Started on the Right Foot: Dangers of Bypass Starting
www.nasdonline.org/184/d001587/getting-started-on-the-right-foot-dangers-of.html

Tractor Safety for Disaster Recovery (PDF brochure)
www.www.flsart.org/trainingmodules/STO-recovery-workers-bro.pdf (on the Home page)

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Answer Key for Tractor Overturn Video

1. Overturns, 130; 2. Changing; 3. Center of gravity, unstable; 4. Low and slow; 5. React;
6. ROPS, zone of protection; 7. Zero; 8. Living without you

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CHAPTER 6

Confined Spaces and Trenching

6.1 PowerPoint Slides

Slide 6.1 – OSHA Definition of Confined Space

- "... a space that
  1. Is large enough and so configured that an employee can bodily enter and perform assigned work; and
  2. Has limited or restricted means for entry or exit; and
  3. Is not designed for continuous human occupancy.

Slide 6.2 – Permit-Required Confined Space for General Industry

- "All employers must provide training to employees who work in confined spaces so they may acquire the understanding, knowledge, and skills necessary for the safe performance of their duties."
- Employee's responsibilities and procedures

Slide 6.3 – Confined Spaces in Agriculture Examples

- Manure pits
- Hoppers and silos
- Fertilizer storage tanks
- Conveyor enclosures
- Spray tanks

Slide 6.4 – Confined Space Examples

- Sewers
- Wells
- Trenches

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- Excavations

Slide 6.5 – Reasons for Entry

- Cleaning
- Inspection
- Maintenance
- Installation
- Repairs (can include welding)
- Reading meters, gauges, etc.
- Rescue of workers who are injured or overcome

Slide 6.6 – Atmospheric Hazards

- Oxygen deficient
- Oxygen enriched
- Toxic atmospheres
- Irritating atmospheres

Slide 6.7 – Physical Hazards

- Mechanical equipment
- Electrical
- Fluids
- Thermal condition (extremes in hot or cold)
- Engulfment by solid materials (e.g., grain, soil)

Slide 6.8 – Psychological Factors

- Claustrophobia
- Other "Phobias"
  – Heights
  – Falling

Slide 6.9 – Often Multiple Deaths Due to Unsuccessful Rescue Attempts

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Slide 6.10 – …But I Don't Dig Ditches

- ... install water lines
- ... septic tank or well problems
- ... soils judging teams (FFA)
- ... archaeology
- ... rescue workers or passers-by

Notes
Any of these activities could be involved in trenching activities.

Slide 6.11 – Soil Stability Factors

- Soil type
- Depth of cut
- Water content of soil
- Changes due to weather and climate
- Superimposed loads
- Vibrations
- Previously dug soil

Slide 6.12 – Protective Measures

- Trench boxes
- Shoring
- Sloping

Slide 6.13 – OSHA Requirement

- More than 5 ft in depth shall be shored, laid back to a stable slope, or some other equivalent means of protection shall be provided where employees may be exposed to moving ground or cave-ins.
- Trenches <5 ft in depth shall also be effectively protected when examination of the ground indicates hazardous ground movement may be expected.

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Slide 6.14 – Weight of Soil

- 1 cubic foot of soil weighs approximately 120 pounds

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6.2 Sample Assignment Questions for Confined Spaces and Trenching

As manager of WEARESAFE Farms Inc., you are in charge of employees who must enter a storage tank in the citrus processing plant portion of the corporation. The tank's capacity is one million gallons. The tank has been emptied for needed maintenance, cleaning, and repairs.

Find the applicable OSHA Regulation from the OSHA website. Provide the Web address where it is located (you do not need to print the entire document).

Identify the steps that must be followed before entry is allowed into the tank.

Identify the hazards that exist in the tank.

Read the CDC MMWR about trenching-related deaths: http://www.cdc.gov/MMWR/preview/mmwrhtml/mm5315a2.htm.

Summarize the case studies and describe the factors involved that lead to the collapse of the trenches. What preventive measures should have been taken?

If a facility has confined spaces, open trenches, or grain facilities, why is it necessary for *all* employees and not just those actually working in those areas to have an understanding of the hazards involved. What is a common scenario when there is an injury or death in these situations?

True or False: If someone is trapped in a trench collapse or in grain, their safety is assured if we can keep their head above the surface of the soil or grain. _____ Why or why not?

True or False: Rescuers can "rapidly" get the victim out by tying a rope under their arms and lifting them out. _____ Why or why not?

An internal combustion engine is being used for pumping excess water out of a confined space well pit area. The engine has stopped. Is it ok to *assume* the engine is out of fuel and that it is safe to enter the area to refill it? _____ Why or why not?

You are the safety officer for Tangy Citrus. The processing facility has 10 storage tanks for processed juice. Each tank has a one-million-gallon capacity. There are 75 employees at the facility. Ten of the workers have had the required permit-entry training for entering and working in confined spaces. Why is it necessary that some general training related to confined spaces be provided for the other 65 employees?

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Confined space entry requires an OSHA _____ process. This includes monitoring the _____ conditions of the space.

List five factors that can decrease soil stability.

Why is it important to keep with the records of any property a map of where and when any trenching or digging activities have taken place?

Explain how carbon dioxide, which exists safely in the atmosphere around us, can be fatal in a confined space.

What is the difference between a confinement system and a confined space?

FFA soil judging teams and archeological groups can be placed at risk when _____.

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6.3 Activities for Confined Spaces and Trenching

Evaluating a Trenching Incident

Tom is having a trench dug on his ranch in order to connect the water supply to a new cattle barn. Four-year-old son Andy, is playing on the soil pile (located along the sides and edge of the trench), delighting in throwing clumps of the sandy soil back into the trench. In the midst of the playful activity, Andy's companion, Daisy, the family dog, slides off the pile and ends up at the bottom of the 6-ft-deep trench. Furthermore, it has started to rain, and now, the trencher operator has just broken a water pipe.

The salesman for the local seed and feed has just entered the yard, and Tom's wife Jane has just come out in the yard to remind Tom of the Extension beef production and ag safety meeting he was planning on attending at 7 pm (it is now 4:30 pm). Today's mail contained an overdraft notice from the bank as well as the yearly property tax bill. The property tax has increased by 10%. A prize cow has gone into labor, and three others have gotten out and are in the hay field.

a. Evaluate the total scenario described. Identify three incidents waiting to happen that can result in serious injury or death. For each, identify where and how the chain of events can be broken.
b. Identify three underlying factors (i.e., not physical hazards) that can contribute towards disastrous consequences.
c. Identify four factors affecting the stability of the trench.
d. What does OSHA require for trenches greater than 5 ft deep?

Trenching Incident Case Study

OSHA PROBES CAVE-IN
Investigator says he wouldn't get down in trench where two died
By Douglas Neumann
Cedar Rapids Gazette, June 11, 1995

A trench that collapsed, killing two construction workers, was dug in unstable ground and apparently was not sloped or shored up, according to an investigator.

The incident at about 7 pm Friday took the lives of Chad Hendryx, 19, of

Alburnett and Roger Pasker, 21, of Central City. Medical authorities said the two probably died instantly when one side of the 10-ft-deep trench caved in and buried them beneath tons of dirt.

A third man in the trench, Steve Graham, 19, of Alburnett was rescued and has been released from St. Luke's Hospital in Cedar Rapids. His father, Don Graham, remains in serious condition at St. Luke's, where he was taken after suffering chest pains during the rescue. Don Graham was operating a backhoe at one end of the trench when the incident happened.

Gary Bowser, an investigator with the Occupational Safety and Health Administration, said an OSHA ruling on whether there were safety violations could be ready in a couple of weeks. Bowser spent more than an hour at the site Saturday, taking measurements, photographs, and soil samples. He also will talk with witnesses and with the job contractor, Don Graham, before filing his report. Bowser said the trench still looked unstable, even after being shored up with plywood and braces by rescuers. "I would not get down in it," said Bowser, who took his measurements from the top. Most soils in Iowa are classified as "C" soils, the least stable, Bowser said, and shoring and sloping are required for virtually all trenching operations. "I don't think there was either here," he said, adding that such violations are widespread.

Previously buried sewer lines and cables also could have contributed to the instability of the ground, he said. But the soil is drier than he expected, indicating recent rains may not have been a factor.

The incident and subsequent deaths will have no bearing on the amount of any fines that might be imposed for violations, he said.

Don Graham, owner of Graham and Son Trucking, and the three younger workers were installing a sewer line to service a six-unit apartment complex being built along Alburnett's Main Street.

Joe Rasmussen, mayor of the central Linn County community of 459, said the incident happened as the crew was starting to fill in the hole over a completed section.

Volunteers were working Saturday to repair the sewer line and fill part of the trench so the closed lane of the street could be reopened.

"This will hit a town like this hard," said Rasmussen. "This really does rate as a

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> tragedy in a town this size, not only because of the loss of life and the age of the two men lost, but because of the Graham family as well."
>
> Don Graham serves on the City Council and has been involved in much of the recent residential development in town.
>
> "You'd have a hard time going around town finding someone that hasn't been helped at some time by Don Graham." Rasmussen said, "They're a big part of the community."

(Postscript: Don Graham died the following Tuesday as the result of a heart attack.)

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CHAPTER 7

Livestock Handling and Zoonoses

7.1 PowerPoint Slides

Slide 7.1 – Objectives

- To identify and understand concepts of hazards when working with animals

Slide 7.2 – Examples

- Rabies
- Lyme disease
- Trichinosis
- Ringworm
- Tuberculosis
- Brucellosis

Slide 7.3 – Prevention and Control

- Use a safe water supply
- Sanitary waste disposal
- Assure meat safety
- Reduce contact with diseased animals
- Remove ticks
- Pasteurize milk

Slide 7.4 – Animal Handling

- Avoid dramatic changes of an animal's routines
- Be alert when working with animals
- Keep groups of animals together for better control
- Maintain a dominant role

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- Understand maternal instincts
- Understand territorial protection (especially when feeding)

Slide 7.5 – Problem Areas

- Delay in getting rescue vehicles to the site
- Wounds contaminated with fecal organisms
- Antibiotic-resistant infections may result from the cattle being treated with antibiotics
- Needlesticks
- Respiratory problems in confinement systems (hogs, poultry)

Slide 7.6 – Safety Measures

- Immunizations
- Leave yourself an escape route when working in close quarters
- Avoid exciting, teasing, or abusing (it can take 30 seconds to get them riled up and 30 minutes to calm them down)
- Make animals aware of your approach so you do not startle them

Slide 7.7 – Safety Measures (cont'd)

- Good housekeeping
- Keep drugs and chemicals in a secure place and in original containers
- Keep heaters away from combustible materials
- Keep pens, gates, and fences in good repair and free from protrusions
- Genetics; cull ornery animals

Slide 7.8 – Safety Measures in Confinement Systems

- Respirators
- Ventilation
- Dust control
- Hearing protection

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Slide 7.9 – Resources

- Temple Grandin's website, including design of facilities (www.grandin.com)
- NASD, including livestock handling, horses, beef, dairy, swine (http://nasdonline.org/)
- SART – State Agricultural Response Team (www.flsart.org)
- FEMA: Animals in Disasters (www.training.fema.gov/emiweb/downloads/is10comp.pdf)
- Biosecurity for Livestock Producers (https://www.sdstate.edu/vs/extension/biosecurity/upload/02_Biosecurity-Principles-for-Livestock-Producers.pdf)
- National Children's Center for Rural and Agricultural Health and Safety: *Agritourism: Health and Safety Guidelines for Children* (https://www3.marshfieldclinic.org/proxy///mcrf-centers-nfmc-nccrahs-agritourismhealthandsafetyguidelinesforchildren2011.1.pdf)

7.2 Sample Assignment Questions for Livestock Handling and Zoonoses

View the video, *Cattle Handling Safety*
(https://www.youtube.com/watch?v=5eEXomr8TJA)

- Identify five hazards associated with livestock operations. Provide a corrective measure for each.
- Would larger operations necessarily be more hazardous? Why or why not?
- Explain the flight zone concept. Explain how this may influence animal behavior differences for beef and dairy operations.

Rabies is a zoonotic disease. Discuss examples of how it can be transmitted to humans. (Information can be found on the Web.)

Access Temple Grandin's website.

- Select and discuss five items that are important to know about animal behavior and that can affect human safety.
- What needs to be considered when designing animal handling facilities?

Find three case studies of an animal-handling-related fatalities. (Google: NIOSH FACE reports) For each provide a summary of what happened and what could have been done to prevent it.

What is the primary health hazard that workers in confinement systems, such as swine and poultry, are exposed to? Identify two corrective measures.

What is the hazard that can develop if male calves that are bottle fed are allowed to grow up to be bulls?

What are the four gases produced at storage sites for manure or other decomposing organic matter, and what is the hazard involved with each one?

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7.3 Activities for Livestock Handling and Zoonoses

Find a "Fatality Assessment and Control Evaluation" (FACE) report online.

a. Identify factors of the environment, agent of injury, and the people involved that contributed to the event.

b. For the factors identified in (a), indicate which ones could be controlled, and discuss how they could be controlled — what could have been done to break the chain of events?

c. Discuss the "big picture" of the event — what are possible issues that are involved with this situation? (Issues can include costs, culture, social norms, perceptions, etc.)

d. Identify long-term consequences of this event.

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CHAPTER 8

Grain and Materials Handling

"The deadliest hazard is the perception that there is no hazard"

8.1 PowerPoint Slides

Slide 8.1 – Objectives

- To identify and understand concepts of hazards related to grain and materials handling

Slide 8.2 – Health Hazards

- Respiratory (dusts, molds, etc.)
- Noise (equipment)
- Allergies

Slide 8.3 – Grain Handling Facilities

- Confined space rules apply
  – Grain elevators
  – Feed mills
  – Flour mills
  – Rice mills
  – Dry corn mills
  – Soybean flaking operations
  – Dry grinding of soycake

Slide 8.4 – Leading Causes of Death

- Suffocation
- Falls

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Slide 8.5 – Hazards

- Produce carbon dioxide which displaces oxygen (especially when wet)
- Silage produces nitrogen dioxide (silo gas), which is extremely toxic
- Flowing grain
- Grain bridging
- Engulfment

Slide 8.6 – Flowing Grain

- Upward force = 0 (i.e., nothing to hold a person up)
- Can be immobilized in 4 seconds (up to knees)
- Can be buried in 7-8 seconds
- Even if head is exposed, the victim will suffocate due to pressure on lungs
- Average adult — 2,000 lb pressure exerted

Slide 8.7 – Other Hazards

- Grain auger-elevator
- Transportation from field to market/storage

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8.2 Assignment Questions for Grain and Materials Handling

Identify two major health (chronic) risks associated with grain handling and the corrective measures that can be taken.

How long does it take for a person to become helpless in flowing grain? _____

When grain is flowing, the resistance (upward) force is _____.

True or False: If someone is trapped in a trench collapse or in grain, their safety is assured if we can keep their head above the surface of the soil or grain? _____ Why or why not?

True or False: Rescuers can "rapidly" get the victim out by tying a rope under their arms and lifting them out? _____ Why or why not?

– Bill and Ted are unloading grain from a storage bin. Ted leaves to go to the shop for additional tools. When Ted returns, he finds the equipment turned off, and Bill does not appear to be in the area.

– True or False: Since they really need to get the job done, Ted should resume the unloading process. _____ Why or why not?

What procedure should be used if one of them has to enter the bin?

When grain is harvested with a high moisture content and stored, the chemical reaction causes more carbon dioxide to be given off. Why has this led to several grain bin-related deaths?

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8.3 Activities for Grain and Materials Handling

Find a case study of a person killed on the job in a grain bin situation. Explain what happened and what the penalties were. (Use the Web, library, or any other resource.)

Access fact sheets about grain handling safety from the Web. Explain how, as a manager of a grain elevator, you would make use of this information for your employees.

Grain and Trenching Entrapment Lab Activity
(Instructions for this activity can be found under Search 4 Safety in the appendix Other Course Materials.)

At the barrel with sand, students should pull on the rope (attached to a disc) to simulate rescuing someone who is buried.

Questions:

1. Was it possible to pull out the disc?

2. What is the magnitude of the forces holding someone buried in grain or soil?

Problem Solving: Using a Grain Storage System as an Example

The purpose of this activity is to get you thinking about a real-world problem and how to identify criteria that needs to be met in order to find solutions. Divide the students into at least three groups, and ask them to consider the following scenario:

> Given the situation where the ladder with access to the top of the grain bin goes all the way to ground. This has allowed for children or others to climb to the top. (Note: This is also a problem for owners/managers of grain elevators as well as managers of farms with multiple grain storage sites.)

The three groups should

a. Identify the problem
b. Liability concerns with unrestricted access
c. Problem is not just kids but any access to potentially hazardous and or damaging equipment by unauthorized persons

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Each group takes a different approach to solving this problem:

Group 1: Develop a solution that does not require significant costs in terms of time and money

Group 2: Develop a solution that may require a significant outlay of time and money in the development stage — but once developed, can be adapted for commercial production and marketing. (Note: Place an asterisk (*) by essential-to-identify items that need to be considered for liability reasons before the design could be marketed.)

Group 3: Your only limitation is that the solution is realistic and doable.

Groups should address the following issues in developing their solutions. Each group must show a matrix of solutions and criteria.

– What criteria must be considered in developing a solution?
– Who needs access to this ladder?
– Size, strength, physical limitations
– Access to it? If cut it off, will have a permanent temporary one next to it
– Frequency of need to access?
– Amount of time willing to allow when access is needed
– If an existing design are there appropriate standards?
– If a guard is built how locked and access controlled?
– How to insure it won't fold back up?

8.4 Resources for Grain and Materials Handling

National Education Center for Agricultural Safety offers training programs in several related topics (http://www.necasag.org/safetytraining/)

Purdue University Agricultural Safety and Health Training (https://engineering.purdue.edu/~agsafety/ASH/Activities/leaderTraining.html)

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CHAPTER 9

Hazardous Materials

9.1 PowerPoint Slides

Slide 9.1 – Objectives

- To identify and understand concepts of hazards related to hazardous materials

Slide 9.2 – Use Categories

- Application
- Mixing and Loading
- Transporting
- Storing
- Handling
- Equipment Maintenance
- Disposal

Slide 9.3 – Pesticides

- Insecticides
- Herbicides
- Fungicides
- Rodenticides
- Fumigants (gases for killing insects and other organisms in a confined space)

Slide 9.4 – Routes of Entry

- Oral
- Inhalation
- Dermal
- Ocular

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Slide 9.5 – Dermal Rates of Absorption

- Rates Compared with the Forearm = 1.0
  – Palm of hand 1.3
  – Abdomen 2.1
  – Scalp 3.7
  – Forehead 4.2
  – Ear canal 5.4
  – Groin area 11.8

Slide 9.6 – Avoiding Exposure

- Safety systems (closed handling, filtered cabs, etc.)
- Personal protective equipment
- Wash hands frequently
- Discarding contaminated clothing

Slide 9.7 – Toxicity

- Toxicity is a measure of the ability of a pesticide to cause harmful effects.
- Factors affecting toxicity
  – Type and amount of active ingredient, carrier or solvent, and inert contents
  – Type of formulation

Slide 9.8 – Classes of Health Problems

- Acute Effects
- Delayed Effects
  – Repeat exposures
  – Single exposure but the reaction occurs later (flu-symptoms)
- Chronic Effects
  – Cancers
  – Changes in genes or chromosomes

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Slide 9.9 – Worker Protection Standard (WPS)

WPS is a set of regulations from the EPA designed to protect agricultural workers from pesticide exposure. It must be followed when pesticide use is part of the agricultural production of plants on a farm, nursery, or greenhouse.

Slide 9.10 – Know the Law!

The label is the law.

Slide 9.11 – Protect Yourself and Others

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9.2 Assignment Questions for Hazardous Materials

The two types of fit testing for respirators are: (a) _____ and (b) _____.

– Which type is easier to perform?

– Which is more accurate?

Why should your home have a CO detector? What should you look for when purchasing one?

Identify the three ways that pesticides enter the body.

The hazardous material used in agriculture that is usually secured from theft by people who want to use it for meth production is _____. It is a vapor at _____ degrees Fahrenheit. The parts of the body most subject to immediate injury are the _____.

Identify two factors that need to be considered when selecting and using PPE.

What are the four gases produced at storage sites for manure or other decomposing organic matter, and what are the hazards involved with each one?

Why is it important for all employees or family members to be aware of the risks posed by these chemicals or gases even if they are not directly involved in working with them?

While doing your field operations, you are driving uphill applying anhydrous ammonia. The tractor stalls, leaving you without hydraulics, power steering, or brakes. The tractor rolls backwards and jackknifes, breaking the anhydrous hose.

– What is your first reaction?

– What factors should you consider upon evaluating the situation?

– After thinking it through, what do you do?

Chemicals and gases are often not readily seen or noticed. As an employee why do you need to be aware of the possible gases that can develop (for example, due to the decomposition of organic matter), and what precautions do you need to take?

Identify the three areas of the body most susceptible (highest rates) to pesticides entry via absorption.

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Explain the proper laundry techniques for clothes worn during pesticide application.

Identify symptoms of pesticide poisoning.

What procedures should be followed in the event of a pesticide spill?

How can pesticides be **PROPERLY** disposed of?

As an agribusiness manager, explain your role and responsibility with the Worker Protection Standard.

Discuss how identifying risks based on "Low, Medium, or High Potential" can be used for improving the safety of your business and workers. Provide an example for each category. See Farm∗A∗Syst and Home∗A∗Syst programs and fact sheets. (Farm∗A∗Syst publications can be found http://extension.psu.edu/plants/nutrient-management/farm-a-syst; Home∗A∗Syst publications can be found at https://www.bookstore.ksre.ksu.edu/pubs/HOMEASST.pdf.)

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9.3 Activities for Hazardous Materials

Respirator Fit Testing and Air Quality

Fit Testing of a Respirator

The two types of fit testing for respirators are: (a) _____ and (b) _____.

Which type is easier to perform?

Which is more accurate?

Pesticides

Select a pesticide label. For the label you selected, identify the following (Mannequin used is PAPA*):

a. Name of the pesticide _____
b. Minimum PPE required:

For the PPE items listed above, match each with its identifier from the PPE on the PAPA mannequin.

c. What other safety cautions need to be taken with this chemical?
d. When is it safe for workers to go back into the fields? _____

   That time is known as _____
e. What can be used to help alleviate heat stress when PPE is required during extremely warm and humid weather?

* PAPA stands for “Proper Attire for Pesticide Applications.” The PAPA mannequin is a mannequin or other framework dressed in PPE appropriate for pesticide use.

CHAPTER 10

Emergency Preparedness and Security

10.1 PowerPoint Slides

Slide 10.1 – Objectives

- First-on-scene first-aid response
- Define agroterrorism
- Understand how to develop a security and preparedness plan
- Understand how to develop and use table-top simulations
- Understand post-disaster stress
- Identify four significant resource sites for security and preparedness planning in agriculture

Slide 10.2 – First-on-scene Farm Injury First-Aid Response

- Know basic first-aid
- Victims may be in a remote area
- List of questions to answer for preparedness planning

Notes
Iowa State University Publication (www.extension.iastate.edu/Publications/PM1563K.pdf)

Penn State Farm Rescue Training (http://extension.psu.edu/business/ag-safety/farm-emergencies/rescue-training)

Slide 10.3 – Agroterrorism

The malicious use of plant or animal pathogens to cause devastating disease in the agricultural sector. It may also take the form of hoaxes and threats intended to create public fear of such events.

Notes
Resources that may be helpful if one wants to go into agroterrorism in more depth:

The Center for Food Security and Public Health at Iowa State University (www.cfsph.iastate.edu)

Courses that are offered on the EDEN site (see later slides)

Slide 10.4 – Need for Preparedness Planning

- Natural disasters
- Man-made disasters
- Disasters are local events

Slide 10.5 – Examples

- Sioux City crash of United Flight 232
- Weyauwega, Wisconsin train derailment

Notes
Sioux City crash of United Flight 232
http://en.wikipedia.org/wiki/United_Airlines_Flight_232
Report by the Flight 232 Captain, Al Haynes: http://clear-prop.org/aviation/haynes.html

Weyauwega, Wisconsin, train derailment
Train derailment resulted in an 18-day evacuation
http://en.wikipedia.org/wiki/Weyauwega,_Wisconsin_derailment

These examples show the need for a preparedness plan even for the unexpected. The Sioux City Gateway airport typically did not handle large planes such as the DC-10. However, they drilled for the event of handling a large plane incident – their first drill was total chaos and took four hours to triage victims. When an actual crash occurred there two years later, they triaged and transported victims within 46 minutes. This also required cooperation with neighboring rescue units – not only involving neighboring communities, but adjacent counties as well as adjacent states (Sioux City is in the NW corner of Iowa so there were neighboring communities in South Dakota and Nebraska).

Weyauwega had a train derailment that resulted in leaking propane tank cars. Hence people were evacuated for what ended up being 18 days. This example shows that even in the event of not having a chemical plant, a community can be exposed to hazardous materials due to highway, railroad, or other transportation-related incidents.

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Slide 10.6 – Table-top Simulations

The table-top simulation is an educational tool that provides an opportunity to apply knowledge about preparedness and potential disaster situations through formal discussion of a described scenario.

Slide 10.7 – Table-top Simulations Used for:

- Preparedness exercises by community emergency personnel
- Schools (drills may not be practical)
- Public health professionals
- Business community, re: computer security issues

Slide 10.8 – Simulation Scenarios Require:

- A context or story-line that includes:
  – Identified HAZARD
  – Areas of VULNERABILITY
  – Levels of RISK that people are willing to assume

Slide 10.9 – Necessary Items in Scenario Implementation:

- Nature of the disaster and impact
- Constraints, rules or logistical factors
- Roles of the participants
- Objectives to be reached
- Complications, set-backs, and possible secondary hazards (aka: what else can go wrong!)

Slide 10.10 – Examples of Businesses and Scenarios from Risk Management

Fertilizer Sales*	The high-school junior was left in charge of the store for a few hours. Strangers came in, purchased fertilizer and paid cash.
Local Beef Slaughterhouse*	Processed meat was found to be contaminated. This was used 3 weeks prior to the BSE case in Washington state.
Beef Cattle Ranch*	Approaching wildfire

* Denotes simulations that are included in the activities section of this chapter.

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Notes

These are examples that were developed and used in an agricultural risk management class that the author taught at the University of Florida. Scenarios with an * are included in this chapter's activity section.

Slide 10.11 – Examples of Businesses and Scenarios (cont'd)

Wine Distribution Company*	Employee took fellow employees hostage.
Veterinarian	Theft of drugs used by people for recreational purposes. The kid that bought the drug on the street had a severe, almost fatal reaction.
Lemonade Stand	Kids stole sugar and made a bomb!
Organic Farms*	Non-English speaking workers were left alone in the fields. One rode on the tractor fender to get to the truck. He fell off and was run over by the rotary mower.
Comprehensive Environmental Remediation Company*	Contaminated soil was dumped in a landfill that had not been approved for dumping hazardous materials.

* Denotes simulations that are included in the activities section of this chapter.

Slide 10.12 – Examples of Businesses and Scenarios (cont'd)

Feed Company*	A worker in a grain bin drowned in grain when the auger started up. The confined space entry procedure was not followed.
Aerial Application Company*	A temporary pilot for the day ended up stealing a plane loaded with chemicals.
Nursery*	A disgruntled employee began shooting.
Unspecified Business*	Hurricane warning
Ice Distribution Company	Contaminated ice was used at an NFL football game.
Aquaculture	Diseased tropical fish were sold.

* Denotes simulations that are included in the activities section of this chapter.

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Slide 10.13 – Business Strategies Learned

- How to respond to media interest
- How to ensure business continuity
- Maintaining company credibility
- Avoiding business failure if a product recall is required
- Uninsured costs and impact on business
- Response to rumors

Slide 10.14 – Business Strategies (cont'd)

- Safety and security of employees
- Securing facilities and equipment
- Think in terms of worst case
- Crisis planning needs to be regularly reviewed and updated
- Communication is critical for making informed decisions

Slide 10.15 – Significant Resource Sites

- Extension Disaster Education Network (EDEN)
- Florida's State Agricultural Response Team (SART)
- UF Disaster Handbook Website
- FEMA

Notes
These resource sites may be changed to indicate local or other state's sites.

Slide 10.16 – EDEN

- EDEN is the Extension Disaster Education Network (eden.lsu.edu).
- Up to date and current information
- Training courses

Slide 10.17 – SART

The State Agricultural Response Team (SART; www.flsart.org) is an interagency, coordinated

effort established to foster better communications within the current disaster management and planning framework. Its mission is to empower Floridians through training and resources to enhance animal and agriculture disaster response.

Slide 10.18 – UF Disaster Handbook

- The University of Florida's Disaster Handbook website contains information for a wide variety of disasters as well as materials for agricultural chemical security (http://disaster.ifas.ufl.edu).

Notes
PowerPoint presentations and lesson plan books are available at: http://disaster.ifas.ufl.edu/agroChemSecurity.htm for the following:

– Unit 1: Introduction: Agrochemicals and Security — Why It Matters
– Unit 2: Chemicals and Safety
– Unit 3: Homeland Security and Fertilizers
– Unit 4: Homeland Security and Pesticides
– Unit 5: Security and Anhydrous Ammonia
– Unit 6: Developing a Hazard Mitigation Plan

Slide 10.19 – FEMA

- FEMA Independent Study Course IS 139: *Exercise Design* http://training.fema.goviemiweb/is/is1391st.asp
- FEMA Independent Study Course IS 241: *Decision Making and Problem Solving* http://training.fema.gov/emiweb/is/is241.asp

Notes
FEMA offers many courses on-line at no cost. Upon passing the on-line test, students receive a certificate. See http://training.fema.gov/is/ for the complete listing of courses.

Slide 10.20 – FEMA Courses

- Business Continuity
- Animals in Disasters
- Livestock in Disasters
- See http://training.fema.gov/is/ for a complete listing.

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10.2 Assignment Questions for Emergency Preparedness and Security

Explain what ag-producers need to know and do to be better prepared for agricultural security and terrorism. See http://disaster.ifas.ufl.edu/products.htm#disMit.

Identify seven sources for obtaining information about safety or disaster preparedness and recovery.

Discuss how a table-top (TT) simulation can be beneficial for a company or community to work through.

Explain what is meant by post-disaster stress and why is it important to have an understanding of it.

Explain why it is important to encourage pet-friendly shelters and/or hotels/motels during an emergency evacuation.

Explain why it is necessary for even small privately owned rural businesses to have preparedness plans.

Discuss the need for risk management planning on the part of an entire community. Even small communities with no hazardous industries need to plan and prepare.

United Flight 232
Information for the following can be obtained from articles on-line about the crash of United Flight 232 in Sioux City. Excerpts from the video *A Thousand Heroes* can also be used as it is a pretty accurate description of what went on in the Sioux City Community.

Describe the scene at the beginning of the Sioux City video during the first drill? [total chaos]

How long did it take to triage and dispatch the drill's victims? [4 hours]

Describe the scene when an actual crash occurred two years later? [organized; people knew what to do]

How long did it take to triage and dispatch the actual victims? [46 minutes]

As a result, what was the fate for 185 of the 296 passengers? [survival]

10.3 Activities for Emergency Preparedness and Security

Table-Top Simulations
Each team is given a table-top simulation to read through. To read more about table-top simulations, see www.joe.org/joe/2007august/tt4.php.

1. Teams will be given a real-life disaster-related scenario. Remember that disasters can be natural or man-made. Each scenario is outlined by phases. Work through the steps guided by the questions. Do not limit yourself to the questions that are presented.

2. Each team will give a presentation about their business, their scenario, and their response to the questions and the situation. Each team will hand in a written summary which will include their responses to the questions and their plans.

3. As teams are giving their presentations, other students are to identify at least three items (additional questions) that should be addressed for that situation.

Also identify three items that you wouldn't have thought about as being a part of a business preparedness plan.

These scenarios are offered as table-top exercises in the following pages:

- Hazardous Materials Scenario: Aerial Pesticide Application
- Zoonosis Scenario: Avian Flu
- Zoonosis Scenario: Beef Ranch Scenario: Is It Rabies or Worse?
- Wildfire Scenario: Spy Glass Cattle Company
- Machinery Hazards Scenario: Natural Choice Feed Company
- Agricultural Security Scenario: Fertilizer Sales Business
- Wildfire Scenario: Forestry Company
- Tractor Safety Scenario: Vero Best Organic Farms
- Workplace Violence Scenario: Hostage Incident
- Severe Weather Scenario: Hurricane
- Workplace Violence Scenario: Shooting at Fragrant Nurseries
- Environmental Contamination Scenario: Comprehensive Environmental Remediation Corporation (CERC)

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Hazardous Materials Scenario: Aerial Pesticide Application

The following scenario has been developed based on your team's aerial application business. Develop your risk management plan and focus on something like this happening.

Narrative

It was early Wednesday morning. Josh, owner of Flying T Aerial Application Services, was supervising a pesticide mixing operation for that day's job, dusting some large potato fields a few miles southeast of his Keystone Heights location. This was an important job. If these fields did not get dusted today, the likelihood of serious crop loss was imminent. His regular pilot, Janice, had been out all week with a serious case of the flu, and she would probably be out for another few days. She should have gotten the flu shot, he thought to himself. A lot of his business depended on her, and normally, she was 100% reliable.

All of Janice's regular backups were busy, but Josh had located Dan, who had a lot of flying experience and seemed to be working out as a replacement. Dan seemed serious, maybe sullen, to Josh, but he didn't think about it too much. Dan's performance so far was exactly what Josh was looking for in Janice's absence.

The mixing was finished around 9 am, and Josh's technician, Zac, took the job of loading the pesticide mix into the airplane on his own. Josh returned to the office. He had a lot of calls to make.

Josh looked out his window around 10:30 as Dan rolled into the parking lot. It was a little later than Josh had hoped for, but Dan had run a little late Monday and Tuesday, so it was nothing surprising. Dan went through his pre-flight routines quickly and was always out the door and on his way to the job on time.

Zac came into Josh's office around 11:30. He flopped down on the couch next to Josh's desk. Josh didn't even look up. He knew Zac had lunch on his mind, and any second, he would make a suggestion.

"Plane loaded?" Josh said offhandedly.

"You bet." Zac replied. "So what's up with Dan today?"

"What do you mean?" Josh asked.

"Well, you know how he's kind of down all the time?" Zac was trying to get more of Josh's attention.

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"Yeah." Josh was still focused on the spreadsheets on his computer screen.

"Yeah, well today he's in an extra special funk. I walked by the chart room a couple seconds ago, and he's just sitting there with a cup of coffee staring straight ahead. So I stuck my head in the door and said hi... "Zac stopped mid sentence.

Zac loved to tell a story without a point, and Josh was never sure how to respond, so he didn't, except to say, "So..."

Zac continued, "So... he didn't say anything. He just stared. I waited for a few seconds. I'm sure he heard me."

Josh commented, "He's a quiet guy."

"Josh, I think there's something going on with that guy. Makes these calls all the time on his cell phone. Either he calls a lot of people who aren't home or he's calling someone who doesn't want to talk to him."

Josh glanced over at Zac, "Zac... too much television."

"No, man, I'm telling you. Something's going on." Zac paused for a few seconds. "So, how about Ned's for lunch? Somehow, playing with pesticide gives me a taste for barbeque."

Josh chuckled and typed an entry into the spreadsheet. "Sure. Let's wait til Dan gets off the ground and then we'll go. He'll be gone a couple of hours."

"Sure. I'll get washed up." Zac jumped up and left the room.

* * *

Josh and Zac got back to the office around 2. They were at lunch longer than usual. Once again, Zac had provoked Josh into an argument about college football.

Josh half expected Dan to be waiting for them, maybe sitting around the chart room, staring and nursing a cup of coffee. It seemed to be his typical break routine. The building was empty.

Josh settled down at his desk and started to focus in on his spreadsheets again. The phone rang. Josh picked it up absent-mindedly and spoke.

"Flying T Aerial Application Services. Josh Taylor speaking. How can I help you?"

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The voice on the phone said, “Mr. Taylor, this is Sergeant Emily Townsend at Patrick Air Force Base. Are you the owner of an AT-802 Air Tractor, N2371?”

Josh was puzzled on the verge of alarm. Zac stuck his head in the door with a question on his mind, but when he saw Josh’s expression, he asked, “What’s up? Who’s that on the phone?”

Josh looked over at him and waved him in. Josh motioned for Zac to sit in the couch. Zac continued to mouth the words, “Who’s on the phone?”

Josh answered, “Yes, that’s my plane.”

The sergeant continued, “Mr. Taylor, there’s been an incident with your plane. Basically, it’s down on I-95 Southbound about 40 miles south of Cocoa Beach..”

Josh was stunned. Zac was gesturing wildly to find out what was going on.

The sergeant spoke, “Mr. Taylor?”

Josh responded, “Umm, just a second.” He held his hand over the mouthpiece for a second and said to Zac, “It’s Patrick Air Force Base. Our plane landed or crashed or something on I-95 near Cocoa.”

“What? Is this for real?” Zac said,

Josh motioned for Zac to calm down and returned to the phone. “Sergeant Townsend, I don’t know what to say. Is this for real? Uh... Where’s the pilot?”

“Mr. Taylor, I know this will seem incredible, but apparently your pilot, Mr. Hawkins, filed a flight plan for some crop dusting this morning, but instead he headed straight down the coast. I’m not sure what he was planning...”

Josh interrupted, “Where is Dan, uh, Mr. Hawkins? Is he alright?”

“Mr. Hawkins is in serious condition in Holmes Memorial Medical Center in Melbourne. He was flying somewhat erratically. We determined that he was flying without a flight plan when he was about 20 miles north of the Cape. A couple of jets were sent up to intercept him and force him down. He wouldn’t answer any radio communication. We were trying to direct him to an airfield but for some reason, as soon as he was south of Palm City, he just dropped down and picked a spot on the interstate.” Townsend paused.

Josh was now trying to sort out the events and their implications in his mind. “Was anyone else

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hurt?"

The sergeant answered, "No, luckily that stretch of the highway isn't too busy at that time of day, and everyone either slowed down or got off the road. But it has caused quite a mess. The wing clipped a truck that was trying to get off the road and the plane skidded. The belly hit the roadway, and we've got whatever was in the tank and fuel all over the road. Hawkins was banged around in the cockpit pretty good. We've got traffic rerouted, and the hazmat teams have the whole area cordoned off. Northbound traffic is OK."

"I don't even know where to start. What do you need from me?" Josh asked.

"At this point, the Air Force doesn't need anything. I'm calling you because we just happened to be the first to pick up on Mr. Hawkins' flight, and I became a pivot in the command system. But as I said, we've got hazmat teams and FDOT on the scene."

"What's going to happen to Mr. Hawkins?"

"Well, Mr. Taylor, Mr. Hawkins has broken quite a few laws and caused some fairly serious problems. We've already reported all this to the FBI and the FAA. I think law enforcement will be in touch with you shortly. If Mr. Hawkins recovers, he will face numerous criminal charges. Unfortunately, all that is going to be federal, so he's in very serious trouble," Townsend paused again to let Josh take in these new issues.

"What do you mean 'if he recovers'? How bad is he hurt?"

"I really can't say. The hospital won't release that information to anyone but a family member. I think the local police have probably contacted them by now, if the FBI hasn't. One thing I can tell you is that if you turn on CNN, you'll get a little more information with pictures. I work with media quite a bit; you should be prepared. National and local press are going to start calling as soon as the official report is filed. Probably later this evening."

Josh thought for a second and then spoke, "Do I need to come get my airplane?"

"No, Mr. Taylor. As far as I know, the airplane is a total loss as far as insurance goes, and because it is at the center of a hazmat incident, there won't be any salvage. It will be disposed of down here. And I can't really say what your liability is. There will charges for the clean-up operation, but how much of that will come back to you, I don't really know. I probably shouldn't even get into that... probably shouldn't even have said that much."

"I understand. No, that's fine. I'll try to contact someone up here about that part of it, and then, I guess I'll just wait for FBI to call me." The full impact of the conversation was beginning to

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settle in.

Townsend spoke, “I’m sorry about all this, Mr. Taylor. I think that’s all I have for you. Do you have any other questions?”

“No. Thanks for calling. I’ve got a lot to think about.” Josh spoke slowly.

“Very well, Mr. Taylor. Good luck. And if there’s anything you need from us, just call the Air Base Command Center, and ask for Sergeant Emily Townsend.”

“Uh, thank you. Good-bye.”

“Good-bye.” Josh hung up the phone and sat quietly, thinking.

Zac was about to explode, but he held it in as long as he could. Maybe one second?

“FBI?” Zac shouted. “What the hell is going on? Where’s Dan? Where’s the plane?”

Josh slowly reported to Zac everything he had learned from his conversation with Sergeant Townsend.

Zac sat in rare silence for a moment to try to take it all in. “So, what? We sit here and wait for the feds to call?” he said quietly.

Josh answered just as quietly, “I guess so.”

Study Questions for Discussion

1. Make a list of all the crimes and illegal acts committed by Dan Hawkins.
2. Add to the list in (1) agencies you expect to respond/act on those activities.
3. What are Josh Taylor’s personal liabilities?
4. What are Josh Taylor’s corporate liabilities?
5. What signs in Dan Hawkins behavior or attitude warned of the incident he caused?
6. What do you do?
7. How sensitive is your company to the negative publicity that may result from this incident?
8. How aware were you of this individual’s situation and its potential?
9. How do you deal with “damage control” for the customer who needed his potatoes dusted

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TODAY?

10. What changes might you make in your hiring and disciplinary policies?

Outcome

As a group, you are to determine the outcome of this incident.

Debriefing and Future Preparedness Strategies

The danger is now past. How prepared was your facility?

How will this experience change your policies/plans for future emergencies?

Consider stress management options.

Develop a protocol for employees reporting on "irrational remarks or behavior."

Zoonosis Scenario: Avian Flu

Reference link that may be helpful: www.eden.lsu.edu.

Narrative

KGKK Farms is a privately owned and operated family farm near Live Oak, FL. The main crop is tobacco along with corn, soybeans, strawberries and bell peppers. Additionally, there are four broiler houses in production at a capacity of 20,000 birds each. The farm managers feel that since this is a private family farm and a "close-knit" run operation that they pose little risk to the general public or to surrounding agricultural operations. In the past, they have felt that their work with machinery has been their largest risk.

The Live Oak area of the state contains several poultry operations and facilities. An inspection was conducted in the area yesterday. Other poultry operations tested negative for avian flu. However, avian flu was found in one of the broiler houses at KGKK Farms.

Study Questions for Discussion

1. What will have to be done with the 80,000 birds at KGKK farms?

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2. What plans are in place for disposing of the dead birds?
3. What about other poultry operations in the vicinity?
4. How is KGKK prepared to cover this loss?
5. How is KGKK prepared to deal with the community that may be affected?
6. What prior plans had been made for dealing with a major loss to the poultry aspect of the enterprise?
7. What plans and actions need to take place before this part of the enterprise can be "re-opened"?
8. What new security and safety measures and protocol may have to be implemented for this farm?
9. What recommendations do the farm owners have to prevent something this catastrophic in the future?
10. How does the farm deal with employees who are now out of a job?
11. How prepared was the operation to deal with this?
12. How does this experience perhaps indicate the need for a change in attitude, that even though KGKKJ is a small and private family farm, there are still risks to them as well as to the surrounding area?
13. What type of insurance/assistance may be available in this situation?

Zoonosis Scenario: Beef Ranch Scenario: Is It Rabies or Worse?

N**arrative**

Baldwin Angus Beef Ranch Company of Ocala, Florida, is a moderate size operation that primarily raises beef cattle for slaughter in their own facilities and sells to the local market. With 200 head of cattle and 11 employees, Baldwin has two main sources of revenue: (1) sales of their own beef, and (2) slaughter fees charged to other small producers who bring their cattle to regular slaughter days, usually around the first of each month. The annual gross earnings of Baldwin could be around $200,000.

Baldwin beef is not exactly organic, but they are well known with local restaurants and clubs for the quality of their beef and low chemical input. High growth in the Ocala area and their consistent reputation keeps demand for their beef steady. This growth has also increased the demand for local beef in general and had brought numerous people into the small-time beef cattle business with operations running anywhere from 5 to 20 head of cattle. Local

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slaughterhouses like Baldwin make this network of small and hobby operators viable.

The owner of Baldwin, Brian Smith, has lived in the Ocala area for many years. Many of the small operators who bring cattle to him for slaughter are friends or acquaintances from church or civic organizations. A growing number of these small operators, however, are newcomers to the area who have retired or are anticipating retirement in a few years. These newcomers often purchase 10-20 acres of land and want to have a few head of cattle, the sale of which will defray taxes and become a small source of income. Because they usually know less about ranching and about animals, they are more dependent on local veterinarians.

One such newcomer is Dan Johnson. Originally from a small town near Detroit, Michigan, Dan's parents had moved to southwest Florida in the 1980s. Now in his mid 50s, Dan wanted to be closer to his aging parents, but found the Ocala area more suitable for his family. It seemed like an ideal area for the insurance business that both he and his wife were involved with. They had done well in Michigan, and their children were on their own, so they could work the business at their own pace.

Most of their clients were pre-retirees like themselves and relatively new to the area. One of the benefits of their business was that they met a lot of people, and they had made some good friends. Several of their clients also had animals, mostly cattle, but there were also some horses and even one goat herd.

Dan and his wife Marlene purchased a beautiful tract of 32 acres, which was already fenced. In fact, the property was once part of a larger cattle operation, but had since been broken up into smaller parcels. There hadn't been any cattle on the land in some years, but Dan and Marlene both liked the idea of buying a few head of cattle and giving it a try. They were both the kind of people who thoroughly research their hobbies and rely on professionals to make up the difference in terms of their knowledge and experience. They have lived in the Ocala area for three years, and have brought cattle to Brian for slaughter on two occasions, most recently, on November 3, 2003.

On November 3, forty-two head were slaughtered. Twenty were Baldwin cattle, and the other 22 were from 8 small operators. Two of the cattle were from the Johnson ranch. All the beef had buyers waiting, and by the end of the day, the slaughterhouse was clean, the delivery truck was completing its deliveries, and the refuse was on its way to a rendering plant near Bartow.

On the evening of November 6, there was a severe wind storm. Many branches and a few aging trees were brought down. Dan's power was out for a few hours. In the morning, Dan hopped in the pickup to ride around and make sure that all the fence was in good shape. Marlene had a couple of insurance calls to make that morning and a breakfast, so she had left earlier.

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While riding the fence, Dan spotted something near a stand of trees in one of his pastures. He drove over to it and noticed a dead fox. It looked like it had been dead a few days. It seemed unusual to him, but he shook off his suspicious feelings, and chalked it up to his unfamiliarity with the country. He had only seen a few foxes in the area over the years, but he had never seen a dead one. There were 10 head of cattle in the pasture, and they were keeping well away from the stand of trees and possibly the fox carcass.

On November 8, Dan went out to the pasture in the pickup. The cattle were mostly gathered near the north fence, again, opposite the stand of trees where he had seen the dead fox. Dan walked over to the cattle. They were used to him, but nevertheless, they pulled together a little.

Dan could recognize all his animals. Being a "people" business made him look for and remember the little details that cause people to stick in the mind as individuals. He moved from animal to animal, stroking them and talking to them. Dan noticed that one of the animals was behaving oddly. Its lower jaw was covered with saliva. Dan went to the truck and got a halter and led the steer to a separate pen, with some difficulty.

Dan returned to the house and looked at the purchase records. The steer he has just segregated was one of three they had purchased about 16 months earlier. One of those steers had already gone for slaughter on November 3.

Dan's immediate suspicion was that the steer had rabies, but where would the steer have gotten rabies. He immediately called the veterinarian.

"Hi, Linda? ... Yeah, hi, this is Dan Johnson. ... I'm fine, thanks. But listen, I think I've got a steer over here that might have rabies. ... Sure. I went out to the pasture this morning, you know, to check the fences after the wind storm last night, and I came across this dead fox. Well, it had been dead a few days, it looked like to me. ... Yeah. That was a couple of days ago. Then today I went out to the pasture, and I was looking at the animals, and one seemed to be salivating a lot and acting kind of strange. ... I don't know. ... Yeah, think you could come out here? ... Uh, yeah, I'll be here all afternoon. ... Great. ... Yeah, it's in a separate pen. ... Twenty minutes? ... Yeah. I'll be here. Bye."

Study Questions for Discussion

Part I

1. Dan's veterinarian, Linda, has told Dan that she will be at his place in 20 minutes. This seems like a very urgent response. What might Linda suspect that Dan does not?

2. The incubation period for rabies can be very long, but the disease period is fairly short. Is the fox that Dan saw a likely source of the steer's problems?
3. If Dan's steer and the fox test positive for rabies, what is Dan's next step?

Part II

4. Dan is not very familiar with animals, but from his description, Linda feels she must see his cattle immediately to rule out foot and mouth disease (FMD).
5. What signs would give a tentative diagnosis of FMD? What would give a definitive diagnosis?
6. If Dan's steer has FMD, one the first places investigators will look is the Baldwin slaughterhouse. Why?

Part III

Assuming that Dan's steer is definitively diagnosed with FMD:

7. FMD is an extremely contagious disease with a short incubation period (< 1 week) and a relatively long contagious, disease period (-2 weeks). Five days ago, Dan took animals to the Baldwin slaughterhouse. Assuming FMD, what are the implications for Baldwin's operations?
8. What will happen to small producers?
9. Reread the narrative and determine the possible sources of FMD and the possible routes of transmission?

As a group decide on the outcome and what happens?

What is your crisis management strategy?

Use the "thought" questions posed as points to consider for your beef operation and situation. Select 10 of the questions from the list and provide a short answer for each.

Reference link that may be helpful: https://training.fema.gov/is/courseoverview.aspx?code=IS-111.a (Livestock in Disasters).

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Wildfire Scenario: Spy Glass Cattle Company

Narrative

The North Central Region of Florida has had three straight years of drought. With the dry grasses and depleted water resources, the area is ripe for wildfires. There have been several fires in rural areas of these regions caused by lightning, arson, and electric fences coming in contact with dry grass. Firefighting equipment is being used heavily in these areas, but these resources are limited. Dry conditions are predicted to remain the same. The fire threat level remains at the highest level.

At 8 am this morning, there was an emergency announcement on the radio that fires had sprouted up in western Alachua and eastern Levy counties. The wind is from the west. Predictions are that this line of fires will not be easy to put out. An evacuation of residents in the western part of the county has begun.

Study Questions for Discussion

1. Who (by job title) is on your crisis management team?
2. How did you arrange to meet with them this morning? (Communication protocol)
3. Are there water sources for firefighting?
4. How old is your facility?
5. What community agencies may you want to contact at this time?
6. Have any prior plans been made for back-up of company records/electronic files?
7. What do you plan to do with the feed and equipment?
8. What plans are in place for replacing property fences after the fire? (One of the main problems that people in Florida had to deal with after the fires of 1998 was replacing fences destroyed by the fire or by the firefighting equipment. Remember, if everyone is dealing with the same situation, fencing supplies may not be readily available.)
9. What protection do you have to prevent animals from being hit by cars on the roads? What liability issues do you need to have covered in case someone in a car is injured or killed due to animals on the road?
10. When is “the last possible moment” to decide to leave? Who is responsible and accountable for this decision? What do you take with? What do you plan to do with the animals? The prized bulls?
11. Assuming that your employees experience significant losses, how will this impact your

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operation even if the facility is relatively unharmed?

12. What are your plans for securing your product and your facility?
13. What is your plan for power outages? Are there products that need continuous power, such as refrigeration, computers, security systems, etc.?
14. What risk management strategies are in place for the person(s) who make the final decision for leaving?
15. What policy has been established if the company errs on the conservative side, i.e., prepares, secures, and leaves, and the fire does not hit? Why does this possible outcome need to be considered?
16. What safety issues need to be planned for — especially for the clean-up and recovery phase?
17. What is your strategy for backing up the production records?
18. What is your plan for communicating with employees before, during, and after the fires?
19. What is the plan for disposing of damaged products, for example, chemicals, feeds, damaged equipment and fuel, dead animals? Think in terms of what damaged products your facility may have, including fuel and gas.
20. What is your plan to contact employees and get them back to work?
21. What is your plan for payroll? Off-site? On-site?
22. What are your plans for safety personnel to be able to access the site ASAP? Remember that fire departments and emergency units will have other priorities to respond to.
23. How is the company covered for financial loss?
24. What happens to the product data if the area is destroyed?

Debriefing and Future Preparedness Strategies

The fire-storm is now past. How prepared was your operation? How will this experience change your policies/plans for future emergencies?

What are some things you would not have thought of or considered before doing this exercise?

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Machinery Hazards Scenario: Natural Choice Feed Company

Resources

- OSHA lock-out/tag-out requirement
- Flowing grain hazards
- Death in grain bin
  http://www.cdc.gov/niosh/face/stateface/mi/03mi108.html
- Death of worker not properly using lock-out/tag-out procedure
  http://www.cdc.gov/niosh/face/stateface/ny/02ny096.html
- Confined space entry requirements
  http://www.osha.gov/SLTC/confinedspaces/

Narrative

The Natural Choice Feed Company production facility in Perry, GA, has a large grain storage facility for the production of animal feeds. The grain is removed from the bins via an outlet auger. It is moved along a mechanized system for processing.

A line manager and a coworker encountered a problem with grain not flowing onto the conveyor system. They theorized that there was a clog somewhere in the grain bin and that the grain was not able to be augered out of the bin. Another worker who was absent today was one of a few employees that had been trained on proper procedures for entering a confined space. However, they were currently running behind on the production schedule and so the manager decided to take a short cut. He quickly explained to his coworker how to enter the grain bin and how to use a rod to remove the clog. He would wait outside the bin in case anyone asked where the worker was and what he was doing. The worker was not equipped with a safety harness as required by OSHA. Additionally, the manager did not take other OSHA precautions for entry into such a system.

Shortly after the worker entered the bin, the auger started back up again (oops! forgot to lock out the power!). The employee's body was recovered later that day. It appeared that when he removed the clog, the equipment started working again. The resulting flow of the grain pulled the employee under and he would have been totally helpless within a matter of seconds and dead a short time thereafter. His body was not entangled in the auger.

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Study Questions for Discussion

1. What is the employer's responsibility for providing training for employees?
2. What were major infractions of OSHA regulations that Natural Choice Feed did not do?
3. What other factors contributed to this situation?
4. What liability issues does Natural Choice face?
5. What impact will this situation have on their ability to get Worker comp. insurance?
6. How will this experience change the company's policies and plans for future potentially hazardous situations?
7. What impact does this situation have on other employees of Natural Choice? How may this impact the productivity of the business?
8. What plans are in place for regaining the confidence of their employees?
9. What impact will this incident and the subsequent fines have on consumers purchasing feed from Natural Choice?
10. What changes need to be implemented by management?
11. What were the breakdowns in communication that led to this event?

Debriefing and Future Preparedness Strategies

How prepared was your operation? How will this experience change your policies/plans for future emergencies? What are some things you would not have thought of or considered before doing this exercise?

Agricultural Security Scenario: Fertilizer Sales Business

Summary of the Scenario

Two men walk in dressed in overalls. You notice the men have very expensive watches on, and their fingernails look very clean. They inquire about purchasing several bags of high nitrate fertilizer. You ask them what type of application they will be using the fertilizer for, and they give you a legitimate response. You give them the purchase price, and one of the men pulls out a large quantity of cash and begins counting it out to you.

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Narrative

It had been raining all week. Normally, Thursday morning would be slow at J.F. Copeland Farms Supply, but with the rain, this particular Thursday was dead. The owner, Bill, had some errands to run, and he thought maybe this would be a good time. He could leave Luke in charge for a couple of hours.

Luke had one more year of high school, and Bill had taken him on for the summer to help out around the warehouse. Luke had only been working there for a few weeks, but he could ring a sale, and Bill felt that probably there wouldn't be any business at all this morning.

"Luke," he said, "I'm going into town for a couple of hours. Go by the bank, run a couple errands... **I** can bring back some lunch. What would you like?" Bill and Luke talked over lunch ideas.

Bill asked, "Luke, do you feel comfortable being here on your own for a little while? It's pretty slow, but if someone comes in, I think you could take care of them."

Luke agreed. In fact, he was a little proud to be on his own. Yeah, he'd be running the place. He'd be manager for a couple of hours. He also thought chances were good that no one would come in.

"See ya, Luke. Should be back around 12, 12:30," Bill shouted back as he left the store. It was around 10:30.

With Bill gone, Luke felt the emptiness of the place. He turned on the radio and changed it to a favorite station. He got out the broom and started to sweep.

Bill had been gone about 15 minutes, and Luke was singing along with the radio and dancing/sweeping, when a couple of men came through the door. "Morning," one of them said. He had to speak loudly to be heard over the radio and get Luke's attention.

Luke looked up and immediately put down the broom. "Good morning. Can **I** help you?" he asked.

Luke walked over to the men, dusted his hands off on his coveralls, and reached out to shake their hands. The men seemed puzzled by the friendliness of Luke's gesture, but they shook hands with him.

The taller man answered Luke's question. "Yeah, we're – uh – looking to buy some fertilizer."

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Luke moved around behind the counter and turned down the radio. He pulled out a sales form and said, “Well, you’ve come to the right place.” Luke held a pen in writing position, looked up at the men and asked, “All right, now exactly what can I get for you?”

Again, the taller man spoke, “We’re looking for about a 1,000 pounds of ammonium nitrate, the high nitrate kind.”

Luke was happy to tell them, “We’ve got plenty. Comes in 100-pound sacks. Fifteen dollars a sack. Copeland’s the brand. That all right?”

“Oh sure, that sounds good. Got it right here? We got a truck outside, we were hoping to take it with us,” the tall man said.

“Sure, we got it. I can bring it up to the front and load it for you, or we got free delivery with any order of $100,” Luke said

The shorter man looked serious and glanced up at the taller man. The tall man spoke, “No, we’ll take it with us. It’ll save us some time, since we’re already here.”

“Okay”, Luke said, “But don’t tell Mr. Copeland I didn’t offer.”

Luke wrote up the sale and told the men. “All right, then, that will be $159 dollars. Oh sorry, maybe you have a tax number? I added the sales tax in without even asking.”

The taller man looked closely at Luke for a second, and said, “No. I don’t have a tax number.” He pulled a thick roll of bills out of his jacket and peeled off eight 20-dollar bills. He handed them to Luke.

Luke counted them, “20-40-60-80-100-120-140-160. All right.” He rang it up on the register and tucked the 20s in the drawer and pulled out a one-dollar bill. He handed it to the tall man.

“There you go. Your change is one-dollar even,” Luke said. He marked the sales form “Paid” and held out the copy. The taller man took it. Luke added, “If you gentlemen want to wait out front, I’ll bring your fertilizer around. Are you under the overhang?”

The men nodded yes and went out the front door. Luke went out the side. He drove the small pickup they used in the yard over to the shed with the fertilizer bags and loaded ten on the truck. He could see the men and their van. Luke had never seen the men before. He drove over to them with the bags.

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The men were driving a white van that looked brand new. They opened the back door. Luke stepped over to unload the bags, but they insisted on loading it themselves. Luke couldn't see in the back of the van clearly, but there seemed to be another person inside.

"Shame to load these dirty old bags of fertilizer in this nice van," Luke offered.

The men did not reply. They loaded the bags as quickly as possible.

"You guys just startin' up?" Luke asked.

The tall man glanced over at Luke for a second and said, "No. We've been buying from Bill for years."

The bags were loaded.

Luke asked, "So what do you guys grow?" Luke could see that they were in a hurry now.

The taller man said, "Ferns." The other man was already in the van starting the engine. The tall man hopped in and they drove away.

Luke watched them leave and then went back into the store. He turned up the radio again and looked at the clock. 11:30. He complained to the empty store, "An hour til lunch! Dang!"

It was quarter of one when Bill finally got back. He would have been back earlier but there was a wreck on the main highway that had slowed everything down.

Bill handed Luke a sub sandwich and an extra large iced tea. Luke was hungry. He unwrapped his sandwich with one motion and took a bite.

Everything was just as Bill had left it, but he asked, "Anything happen while I was gone?"

"Nah, not much. Did some sweeping. Some guys bought some fertilizer." Luke spoke casually through his munching, portraying that whatever had happened, it was just part of his normal day.

"Made your first solo sale, huh? Pretty good. Maybe I ought to leave you alone more often. Sales might pick up."

After lunch, Bill looked over the sales form. "This your fertilizer sale this morning?"

Luke looked over. "Yeah."

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"No address? No name?" Bill said.

"They paid cash and they took it with them," Luke said.

"Guess that's okay then. Thousand pounds, huh?" Bill was reassured, and a sale is a sale.

Luke added, "I didn't ask their names but they said they been buying here for a long time."

"Oh yeah? What did they look like?" Bill asked.

Luke described the two men — a tall one and a short one. Well dressed. Driving a new white van. Bill did not recognize the men from Luke's description.

"Did they say anything about their operation? Like what they grow?" Bill knew that the crop would narrow it down quickly.

"Ferns is what they said," Luke answered.

"Ferns? And 1,000 pounds of ammonium nitrate." Bill thought for a minute. "There's something not right about this, Luke. **I** think I better call the sheriff."

"Oh man. Mr. Copeland, did **I** do something wrong? **I** mean, maybe I shouldn't have sold them the fertilizer," Luke said.

Bill reassured Luke, but he felt very suspicious. Luke's description of the men, their clothes, the new white van... It was obvious they were not producing ferns, not with straight ammonium nitrate. Bill just wasn't sure. Could be legitimate, except that he did not have any customers that grew ornamentals. The fact that they told Luke they had been customers for years, just didn't square. And who picks up fertilizer in a van?

Bill called the sheriff and reported a suspicious purchase of ammonium nitrate fertilizer. Within a half hour, two deputies were at the ag supply operation to ask Tom and Luke more questions.

Study Questions for Discussion

1. List any factors that might have made Luke suspicious?
2. What could Luke have done if he had been suspicious of the men?
3. What should Bill do since the sale has already been made?

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4. How sensitive is your company to the negative publicity that may result from this incident?
5. How aware was your employees of the potential security risks with the products your business handles?
6. Has your company done any training or drills to handle a security risk type of situation?
7. How would Bill have handled the situation, as an adult and as the owner of the business?
8. Why is it important to know the company's clientele?
9. What are the possible outcomes of this situation?

Wildfire Scenario: Forestry Company

Narrative

The Panhandle and Central Regions of Florida have had three straight years of drought. With the dry grasses and depleted water resources, the area is ripe for wildfires. There have been several fires in these regions caused by lightning, arson, and electric fences coming in contact with dry grass. Firefighting equipment is being used heavily in these areas, but these resources are limited. Dry conditions are predicted to remain the same. The fire threat level remains at the highest level.

At 8 am this morning, there was an emergency announcement on the radio that fires had sprouted up in Taylor county. Predictions are that this line of fires will not be easy to put out. An evacuation of residents in the western part of the county has begun.

Study Questions for Discussion

1. Who (by job title) is on your crisis management team (you do have one, don't you)?
2. How did you arrange to meet with them this morning? (Communication protocol)
3. Are there water sources for firefighting?
4. How old is your facility?
5. What community agencies may you want to contact at this time?
6. Have any prior plans been made for back-up of company records/electronic files?
7. What do you plan to do with the equipment?
8. What are your plans for the lands that you are managing? How do you look to regrow the

timber lands? Could this actually be a business opportunity rather than a disaster for your business in the long run?

9. What are your risks in closing the facility vs keeping it open?
10. When is "the last possible moment"? Who is responsible and accountable for this decision?
11. What are the costs associated with completely stopping your operations?
12. Assuming that your employees experience significant losses, how will this impact your operation even if the facility is relatively unharmed?
13. What are your plans for "securing" your product and your facility?
14. What is your plan for power outages? Are there products that need continuous power, such as mixing, refrigeration, computers, security systems, etc.
15. What risk management strategies are in place for the person(s) who make the final decision for shutting down?
16. What policy has been established if the company errs on the conservative side, i.e., shuts down and the fire does not hit? Why does this possible outcome need to be considered?
17. What safety issues need to be planned for — especially for the clean-up and recovery phase?
18. How many workers will it take to close/secure the facility? How long will that take?
19. When can you leave the facility to take care of your own affairs?
20. What is your plan for communicating with employees before, during, and after the fire-storm?
21. What is the plan for disposing of damaged products, for example, chemicals, contaminated soil, etc.? Think in terms of what damaged products your facility may have, including fuel and gas? When are your raw materials or products unusable/unsaleable or recoverable?
22. What is your plan to contact employees and get them back to work?
23. What is your plan for payroll? Off-site? On-site?
24. What are your plans for safety personnel to be able to access the site ASAP? Remember that fire departments and emergency units will have other priorities to respond to.

As a group, you are to determine the outcome of this fire-storm threat.

Debriefing and Future Preparedness Strategies

The fire-storm is now past. How prepared was your facility? How will this experience change

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your policies/plans for future emergencies?

Tractor Safety Scenario: Vero Best Organic Farms

Narrative

Vero Best Organic Farms has seven Hispanic workers who tend to maintenance of the groves. Two of these workers do not speak English very well, but they are good workers and rely on the other five bilingual workers to translate messages and signs for them. On a hot July afternoon, Jose and Juan (the two non-English-speaking workers) were working in the grove. The others had left early to get supplies and other needed equipment in town. Jose was operating the tractor with the rotary mower attached. Juan was to check on trees in another part of the grove. Rather than take the truck to the other part of the grove, Juan asked Jose if he could ride along on the tractor. Although the farm owns newer tractors equipped with ROPS, the tractor used on this particular day was an older tractor that was used for more chore-type tasks, such as mowing. The tractor did not have a cab, so it was hot and muggy work.

Even though the employer had posted a sticker on the tractor that read “No Riders,” Jose agreed to give Juan a ride to the trees further down the row. Since he still needed to get the work done, he continued to mow as Juan rode along on the fender. The tractor hit a tree branch that had fallen and was hidden in the long grass. This sudden lurching of the tractor caused Juan to lose his grip on the fender. He fell off the tractor and into the path of the mower. He was killed instantly as the mower severed his body into several pieces.

Jose stopped the tractor and turned off the power take-off and the tractor engine. He was not sure who to contact for help. He finally ran back to the truck and headed to the main office. There he found someone who could understand his Spanish and who went with him back to the grove. Local officials were called to the scene.

Investigators later cited Vero Best Organic Farms with failure to be in compliance with the OSHA regulations for their employees. With the death of the employee and the lack of compliance, Vero Best was fined heavily.

Study Questions for Discussion

1. What is the employer’s responsibility for providing training for employees? What about if they do not understand English, but can do the work properly?
2. What major infraction of OSHA regulations did Vero Farms commit concerning the tractor?

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(See Safer Tractor Operations publication.)

3. What other factors contributed to this situation?
4. What liability issues does Vero Best face?
5. What impact will this situation have on their ability to get Worker comp. insurance?
6. How will this experience change the company's policies and plans for future emergency situations?
7. What impact does this situation have on other employees of Vero Best? How may this impact the productivity of the business?
8. What plans are in place for regaining the confidence of their employees?
9. What impact will this incident and the subsequent fines have on consumers purchasing citrus from Vero Best?
10. What changes need to be implemented by management?

Debriefing and Future Preparedness Strategies

The emergency is now past. How prepared was your operation? How will this experience change your policies/plans for future emergencies?

What are some things you would not have thought of or considered before doing this exercise?

Workplace Violence Scenario: Hostage Incident

Phase 1 – Time 10:20 am, Wednesday morning

A foreman brings you the news that an employee has taken an unknown number of fellow workers as hostages. Apparently, his job performance has been steadily worsening, due to a combination of domestic problems and substance abuse. Yesterday, he was given a choice of seeking treatment for substance abuse or termination of employment. No one is sure if he is high or drunk currently, but he is heavily armed. He is an accomplished hunter.

Study Questions for Discussion

1. What do you do?

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2. How sensitive is your company to the negative publicity that may result from this incident?
3. How aware were you of this individual's situation and its potential?
4. Did you call the police?
5. Should you evacuate the facility and/or stop operations?

Phase 2 – Time 10:40 am

He has barricaded himself and his hostages in a rather inaccessible stockroom. The room has a phone, but no one has called out. Several people who know him had heard him make some irrational remarks the previous day. They feel that he will wait to be contacted.

Your employees are very upset, and some are angry. Some feel this worker's situation should have been handled differently. As people check among themselves, there seems to be either four or five workers unaccounted for, including the individual's supervisor.

You are confronted by an angry worker with the accusation that you caused the situation and with the question, "Do you know how many other people here feel exactly the same way that guy with the guns does?"

A coworker discovers a suspicious package near the back loading dock of the building.

Study Questions for Discussion

1. Do you have a crisis management team?
2. What drills have you done that prepared you for this situation?
3. How do you handle the confrontation?
4. How are you feeling at this point?
5. What do you do with the rest of the employees? (Evacuate?)
6. Who remains on the scene? (I.e., who are considered essential personnel?)
7. What production processes are going on that cannot be shut down? How will those be handled to allow for continuous operation?

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Phase 3 – Time 10:50 am

The first police car arrived around 10:30, but more continue to arrive. After consultations, the police request a SWAT team and a hostage negotiator. There has been no contact with the captor. The police want to know who should make the first contact.

Coworkers seem to confirm that four coworkers are missing. Discrete calls to the homes of those who might be hostages helps confirm that four are unaccounted for; the fifth had left work unexpectedly and has turned up at home.

Time 11:15 am

The SWAT team and the hostage negotiator arrive. The negotiator speaks with you and several of the captor's acquaintances. The negotiator makes the first phone call.

Study Questions for Discussion

1. What are the possible outcomes of this situation? For the captor? For the hostages? For the company?
2. Should you make changes in the disciplinary procedures as a result of this incident?
3. How does the arrival of the SWAT team affect the workers?
4. How do you handle phone calls for families trying to find out information about family member(s) working at the facility. (Provide rumor control hotline? Central crisis number?)

Phase 4 – Time 11:30 am

Three news crews have arrived. They are looking for interviews.

The negotiator says that the captor is extremely angry and somewhat incoherent. The negotiator asked what the captor wanted, but did not receive any specific requests. The captor often repeated the phrase, "You don't know the cost!" The negotiator feels that at least the supervisor is in extreme danger.

Time 11:45 am

The captor's wife, an older child, and his brother arrive at the facility. The wife speaks with the press, indicating that she and her husband have separated, but she can't believe that he would

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hurt anyone. The brother is concerned that the captor will be killed by the SWAT team; he believes that he can talk the captor out of the situation. The police advise against this.

The police recommend shutting the facility and sending everyone home rather than letting them stand around waiting for word.

The police secure the facility.

Study Questions for Discussion

1. Corporate management is on the phone. Your facility is off-line and on television. What do you tell them?
2. A reporter who has already spoken to several coworkers asks you what changes you will make in the disciplinary procedures as a result of this scenario. (Select one of the participants to conduct a brief but demanding interview.)
3. Should the families of the hostages be contacted? Who should do that? What do you anticipate their feelings or actions might be?

Phase 5 — Debriefing and Future Preparedness Strategies

The danger is now past. How prepared was your facility? How will this experience change your policies/plans for future emergencies?

Consider stress management options.

Develop a protocol for employees reporting on “irrational remarks or behavior.”

Severe Weather Scenario: Hurricane

Phase 1 – Introduction – Time: 6:00 am, Tuesday morning

You and your crisis team are at the facility early to discuss the approaching hurricane.

A Category 4 hurricane has been moving slowly across the Gulf. The diameter of the hurricane is approximately 600 miles. If the storm continues on its current course, it will make landfall just south of Tallahassee in just under 36 hours.

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Evacuation of coastal areas will begin in a few hours if there is no course change.

Study Questions for Discussion

1. Who (by job title) is on your crisis management team (you do have one, don't you)?
2. How did you arrange to meet with them this morning? (Communication protocol)
3. Will 35 hours from now coincide with high tide? Why is this important?
4. Is your facility in the flood plain? How can you find out? Should you have known this before there was a potential flood-situation? How old is your facility? Is it hurricane-resistant?
5. What community agencies may you want to contact at this time?
6. Have any prior plans been made for back-up of company records/electronic files?

What Major Decisions/Actions Need to Happen?

Phase 2 — Time: 8:00 am, Tuesday morning

You are now at the point where you have to decide whether to close your facility.

Study Questions for Discussion

1. What are your risks in closing the facility vs keeping it open?
2. When is "the last possible moment"? Who is responsible and accountable for this decision?
3. What are the costs associated with completely stopping your operations?
4. What does it mean to completely stop? How long will it take to "cold start" your operation?
5. Assuming that your employees experience significant losses, how will this impact your operation even if the facility is relatively unharmed? What are your plans for "securing" your product and your facility?
6. What is your plan for power outages? Are there products that need continuous power, such as mixing, refrigeration, computers, security systems, etc.
7. What risk management strategies are in place for the person(s) who make the final decision for shutting down?
8. What policy has been established if the company errs on the conservative side, i.e., shuts down a multi-million dollar operation and the storm does not hit? Why does this possible

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outcome need to be considered?

9. What safety issues need to be planned for — especially for the clean-up and recovery phase?

What Major Decisions/Actions Need to Happen?

Phase 3 — Time: 11:00 am, Tuesday morning

No change in course. Landfall in 31 hours. Employees need time to prepare their homes and families and to evacuate, if necessary. They are now anxious and hoping you will close the facility at lunch time. You announce that the facility will close at noon.

Study Questions for Discussion

1. Thirty-one hours seems like a long time. Is it?
2. What is the wording of your announcement? In what other ways will it be made public.
3. How many workers will it take to close/secure the facility? How long will that take?
4. When can you leave the facility to take care of your own affairs?
5. How many shifts does the company operate?
6. What is your plan for communicating with employees before, during, and after the storm?

What Major Decisions/Actions Need to Happen?

Phase 4 — Time: Late afternoon, Tuesday

At 4:00 pm, I-10 in Leon County is closed. Air traffic will be stopped within two or three hours. Your trucking company notifies you that you will receive no shipments for at least three days, possibly more, depending on the severity of the hurricane and the extent of damage to the area.

Study Questions for Discussion

1. If your facility is severely damaged, how long might it take before you are again producing something? What products can be brought back on-line quickly? Which ones will take

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longer?

2. Should your company consider relocating the facility because it is flood-prone? What should you consider to decide to relocate? To stay?
3. What is the plan for disposing of damaged products, for example, chemicals, dead animals, contaminated soil, etc.? Think in terms of what damaged products your facility may have, including fuel and gas? When are your raw materials or products unusable/unsaleable or recoverable?
4. What is your plan to contact employees and get them back to work?
5. What is your plan for payroll? Off-site? On-site?
6. If your company has hazardous materials that have been released into the air or water, what is your procedure for working with the media? Are the media friends or enemies?
7. What are your plans for safety personnel to be able to access the site ASAP?
8. Remember that fire departments and emergency units will have other priorities to respond to.

What Major Decisions/Actions Need to Happen?

Phase 5 — Outcome

As a group, you are to determine the outcome of this storm threat.

Phase 6 — Debriefing and Future Preparedness Strategies

The storm is now past. How prepared was your facility? How will this experience change your policies/plans for future storms?

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Workplace Violence Scenario: Shooting at Fragrant Nurseries

This fictional news story is based on a real case in Boynton Beach, FL.

ASSAILANT IN NURSERY SHOOTINGS HAD RECORD OF VIOLENCE

> Court records obtained by a local news source show that the assailant in the July 28 shootings of three people at Fragrant Nurseries in Gainesville, Florida, had a long history of domestic abuse against his wife and at least one son but had failed to complete court-ordered domestic violence counseling. Nursery co-owner Bob Smith and employees Juan Cortez and Carolina Ramirez were shot to death in the incident. Authorities say Carlos Casarrubias, 44, the estranged spouse of Ramirez, walked into the nursery at about 11:40 a.m. that day armed with a semi-automatic handgun. Ramirez was the mother of their six children. Cortez was described as an innocent bystander. Smith was shot and killed after he stepped in between the assailant and his apparent intended target, a co-worker Ramirez had been seeing. "Domestic violence is not unique to any racial, ethnic, or age group," Attorney Chris Robinson of Fisher and Phillips LLP in Fort Lauderdale, Florida, notes. He adds: "Employers must be prepared to handle such situations before they occur. Creating a zero-tolerance policy on workplace violence and developing an action plan to address situations that may arise are both critical for the conscientious employer. Taking action in a crisis is too late."

Study Questions for Discussion

1. What do you do?
2. How sensitive is your company to the negative publicity that may result from this incident?
3. How aware were you of this individual's situation and its potential?
4. Did you call the police?
5. Should you evacuate the facility and/or stop operations
6. Do you have a crisis management team?
7. What drills have you done that prepared you for this situation?
8. How do you handle the confrontation?
9. How are you feeling at this point?
10. What do you do with the rest of the employees? (Evacuate?)

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11. Who remains on the scene? (I.e., who are considered essential personnel?)
12. What production processes are going on that cannot be shut down? How will those be handled to allow for continuous operation?
13. What are other possible outcomes of this situation?
14. Should you make changes in the disciplinary procedures as a result of this incident?
15. How do you handle phone calls for families trying to find out information about family member(s) working at the facility. (Provide rumor control hotline? Central crisis number?)
16. Corporate management is on the phone. Your facility is off-line and on television.
17. What do you tell them?
18. A reporter who has already spoken to several coworkers asks you what changes you will make in the disciplinary procedures as a result of this scenario. (Select one of the participants to conduct a brief but demanding interview.)
19. How should the families of the victims be contacted? Who should do that? What do you anticipate their feelings or actions might be?

Debriefing and Future Preparedness Strategies

The danger is now past. How prepared was your facility? How will this experience change your policies/plans for future emergencies?

Consider stress management options.
Develop a protocol for employees reporting on “irrational remarks or behavior.”

Environmental Contamination Scenario: Comprehensive Environmental Remediation Corporation (CERC)

Narrative

Tucker hung up the phone with a smile on his face. He had just landed another job for CERC. This time they were contracted by the state to clean up a former military reservist base. The main area to be targeted was the firing range. Significant lead contamination had already been identified, although CERC would confirm this prior to doing any remediation. Tucker got Sam, his best crew manager, on the phone.

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"Hey, guess what?" Tucker quizzed him.

"Don't know, but I bet you're going to tell me anyway," Sam joked.

"We got that military base job I was telling you about. I want your crew on this one. If we can get more government jobs, that would be great for the company to show diverse projects," Tucker explained.

"We'll do our best," Sam promised, "When do we start?"

"As soon as you are available. Come to my office before you leave today, and I'll have the keys and documents ready from the base to get you guys on the site," Tucker said.

"Ten-four. I'll see you later on then," Sam concluded.

Sam arrived at the base with his crew at 0700 hours the following day, papers in hand. The surly front gate MP did not seem too pleased with him, but Sam figured he was like that with everyone. The officer overseeing the project from the military met the crew and took them around to explain what was expected, how the site was laid out, etc.

"We have already arranged for the disposal of the contaminated soil at the dump here in town," Sarge explained, "So basically all your firm needs to do is remove it all at the bid price. We negotiated a special, no-surcharge dump fee with this dump, so all you need to do is present this work order to the attendant over there and your guys will be good to go."

"Sounds good," Sam replied, "You removed a huge part of the work by getting us a dump so close. We should be completed and out of your hair in no time."

Sam arranged for his crew to bring in the work vehicles needed for the clean-up for that afternoon. Lab technicians would also be out that afternoon to perform the necessary sampling and testing so a plan could be drawn up and executed. By tomorrow, the crew would be ready to commence.

The next day, at 0700 hours, Sam and his crew rolled up to the base and were greeted by the same MP. Once signed into the log, they were off to work. For three days, they removed contaminated soil at the site and hauled it to the dump. Some final soil tests were completed, and the site was cleared. The smoothness with which the job had gone made the papers served to Tucker seem all the more unbelievable.

"Are you Tucker DeGraw?" the officer asked Tucker. Tucker nodded his head and the officer

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handed him the envelope, “Thank you. Consider yourself served.”

Tucker opened up the envelope to find court papers. He was being served for, from what he could tell, was environmental contamination! He called Legal and asked what was going on. CERC’s head counsel, Belinda, came over and read the paperwork.

“Does a Greenville City sound familiar, Tucker?” Belinda inquired.

“Yes, that’s the town where our crew doing the military reserve base clean-up was instructed to dump the contaminated material. Why?” Sam said.

“Well, apparently that dump was not eligible to receive such refuse. CERC’s now being charged with several counts of environmental contamination.”

Tucker’s mind raced trying to absorb the reality of what this meant for CERC.

Study Questions for Discussion

1. How could this situation have been prevented?
2. What liability do Sam and Tucker face as a result of these actions?
3. What liability does CERC have in the face of this type of situation?
4. What liability would the military reserve base have in the face of this incident, if any?
5. How will the organizations (base, dump and CERC) be affected by this incident?
6. How will this experience change CERC’s policies and plans for future emergencies?
7. What impact will news of this have on potential future clients?
8. What is being planned in order to win back client confidence?
9. How aware are your employees of the potential risks for working with the products frequently dealt with while doing remediation?
10. What plans are in place for CERC’s dealing with the media? What slant do you think the media will take?
11. What background checks should CERC be doing before determining where they will dump?
12. What documentation should have been gathered prior to starting the job?

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Debriefing and Future Preparedness Strategies

How prepared was your operation? How will this experience change your policies/plans for future emergencies? What are some things you would not have thought of or considered before doing this exercise?

10.4 Resources for Preparedness and Security Issues

Florida's State Agricultural Response Team (SART) Program: An interagency, coordinated effort established to foster better communications within the current disaster management and planning framework. SART's mission is "to empower Floridians through training and resources to enhance animal and agriculture disaster response." For information and training materials, see www.flsart.org.

Study of Perceptions of Florida Beef Cattle Producers towards Agroterrorism (http://ufdcimages.uflib.ufl.edu/UF/E0/01/18/63/00001/degraw_j.pdf)**:** Beef cattle producers indicated they felt that an act of agroterrorism could occur in the U.S. and also that it could occur in Florida. However, they felt such an act was not likely on their operation, and they did not feel prepared for it.

Specific Audiences: Information is available that targets farmers, 4-H**,** and FFA members, Extension personnel, federal, state and local emergency public safety, law enforcement, emergency response, emergency medical (including hospital emergency facilities), and related personnel, agencies, and authorities.

Course Material: Provides a basic understanding of agroterrorism, including the definition of agroterrorism, vulnerabilities of crops, livestock, and food supplies, appreciation of the risks associated with consolidation of agriculture and food production, the difference between 'an intentional and unintentional event, measures to plan for and respond to problems in the food supply or agriculture, things you can do to prevent, detect, and respond to problems, pests and pathogens that could be used by terrorists to cause plant health disorders, animal diseases that could be used in agroterrorism attacks, what to do at home, school, or work to prepare for emergencies, and how prevention and preparedness measures work at local, state, and federal levels.

Resources available through the Cornell University Agrosecurity and Agroterrorism Web site (http://emergencypreparedness.cce.cornell.edu/agrosecurity/Pages/AgrosecurityResources.aspx.)

Security Issues with Chemicals, Pesticides, Fertilizers, and Anhydrous Ammonia: Instructional materials are on the University of Florida Disaster Handbook website. Visit http://disaster.ifas.ufl.edu, and click on Other Disaster Products.

Emergency, Preparedness, Security Related Independent Study Courses: Are available at no cost and on-line from FEMA — including handling of livestock and animals in disasters. For a list of courses, see: http://training.fema.gov/EMIWeb/IS/crslist.asp.

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Business Continuity: Business continuity describes the processes and procedures an organization puts in place to ensure that essential functions can continue during and after a disaster. Business continuity planning seeks to prevent interruption of mission-critical services, and to re-establish full functioning as swiftly and smoothly as possible. The first step in business continuity planning is deciding which of the organization's functions are essential, and apportioning the available budget accordingly.

Agritourism: The practice of attracting visitors to an area used primarily for agricultural purposes. It is similar to eco-tourism in that it is small-scale, low-impact, and in many cases education-focused. Risk management planning when inviting others onto your farm or business needs to be a major consideration.

Agritourism is a great publication from Virginia Extension (http://pubs.ext.vt.edu/310/310-003/310-003.html).

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CHAPTER 11

Fire and Electrical Safety

11.1 PowerPoint Slides

Slide 11.1 – Objectives

- To identify and understand hazards related to fire and electrical safety

Slide 11.2 – Fire Triangle

- Heat source
- Fuel
- Oxygen
- [Figure: fire triangle]

Slide 11.3 – Absorption of Heat Principle

- The more finely divided a substance is, the more rapidly it absorbs heat
- Ex., grain dust explosion, mist putting out a fire
- DeBruce Grain Elevator Explosion: https://www.osha.gov/SLTC/grainhandling/geeit/

Notes
Site for video clip of dust explosion:
http://www.angelo.edu/faculty/kboudrea/demos/lycopodium/lycopodium.htm

Slide 11.4 – Vapor Density Principle

- Use an index of 1 for the density of air
- Vapors with a density <1 will be dispersed in the air
- Vapors with a density >1 will be found along the ground
- IMPORTANT TO KNOW WHERE THE VAPORS ARE

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Notes
Vapors can be far from their source and still find an ignition source (e.g., gasoline and all petroleum products are heavier than air).

Slide 11.5 – Flashpoint Principle

- The lowest temperature at which a flammable liquid gives off vapors and can ignite

Notes
Flashpoint tells you when vapors are present, and vapor density tells you where they are!

Slide 11.6 – Flashover

- Rapid initiation of combustion of objects near a fire because of extreme heat.
- Can occur within 3 minutes from when the fire started — not from the time it was discovered

Notes
NIST clip of Christmas tree fire and flashover
(https://www.youtube.com/watch?v=t_eHBqVYa8A)

Slide 11.7 – Classes of Fire

- A (ash) Wood, paper, etc.
- B (barrel) Oil, gasoline
- C (current) Electrical
- D Metals
- K (kitchen) Cooking oils

Slide 11.8 – Types of Extinguishers

- A
- B
- C
- D
- K

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- ABC
- Remember the one extinguisher rule!

Slide 11.9 – One Extinguisher Rule

- *"If it takes more than one RUN!" **
- [Figure: If it takes more than one run]

Ryan Burley, AOM Safety Class 2007

Slide 11.10 – P.A.S.S.

- Technique for extinguishing a fire:
- Pull the pin
- Aim at the base of the fire
- Squeeze the trigger
- Spray at the base

Slide 11.11 – Heat Sources

- Electric motors
- Trouble-light bulbs/heat lamps
- Portable heaters
- Electrical wiring

Notes
Internal heat or arcing from electric motors; animals can bump heat lamps near straw; portable heaters in shops and barns can be knocked over or can be too close to combustible materials; electrical wiring in agriculture is in a harsh environment and subject to corrosion or the covering being chewed off by animals or vermin; extreme temperatures; etc.

Photos from left to right: example of a wiring mess; barn burned from heat lamp; lightning; and wildfire.

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Slide 11.12 – Heat Sources (cont'd)

- Mechanical friction
- Bearings
- Lightning
- Chemical processes (spontaneous combustion)
- Cigarettes
- Static electricity
- Welding

Notes
Florida is the number one state for lightning strikes; wet hay heats up due to microbial activity and can start fire spontaneously; static charge when filling gas cans — special risk if filling in plastic pickup bed liner — fill cans on the ground

Slide 11.13 – Sources of Fuel

- Chaff/debris
- Vapors
- Grease
- Flammable liquids
- Surrounding field/brush/forest

Notes
Chaff/debris near hot engine parts on combines and cotton harvesters — keep equipment clean. See *Landscaping in Florida with Fire in Mind* (http://edis.ifas.ufl.edu/fr076).

Slide 11.14 – Examples

- Welding on fuel tank
- Kids with cattle prod
- LRB on tractor exhaust
- Friction spark — underground storage tank
- Welding on wheel — tire exploded
- Wet haystack covered with tarp
- Pinched fuel lines

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Slide 11.15 – Planning Questions

- What to do with animals
- How are areas of the farm or site accessed
- What and where are nearby water sources
- Chemical and hazardous materials storage
- Fire department numbers for other farms or sites

Notes

Animals — Example: Horses will try to return to their stall. Remember, you can't combine stallions in one corral.

Do a walk-around with the fire department so they know what is stored in sheds and barns. Example: Acetylene tank stored in an old barn that is burning is an explosion hazard and danger to firefighters. Know emergency numbers (have them posted) for all farms and locations — numbers may be different (don't assume all locations can access 911).

Slide 11.16 – Other Points

- Shut off electricity to abandoned buildings
- Keep maps of underground wires and gas lines with the property papers
- Prevention is key — especially in rural areas where response time is longer

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11.2 Assignment Questions for Fire and Electrical Safety

Explain “lock-out/tag-out.”

As an employee in a packinghouse, how does this policy affect you (if you have to work on electrical equipment).

On the Web, access the California Nurse Project Case Study, “Fatal Electrocution in Poultry Processing Plant.”

- Briefly describe the incident.
- As safety manager of the facility, you also need to be concerned about the safety of private contractors that come on-site. What steps could have been taken to have prevented this tragedy?
- When working at different farmsteads, fields, or work sites what are things that need to be taken into consideration re: electrical safety?

Explain the significance of knowing the flashpoint for a given liquid.

A 1,500-ton haystack, consisting of approximately 2,000 large square bales, was drenched in about 10 inches of rain before the owner was finally able to put a tarp over the stack. Subsequently, the hay was destroyed by fire. What caused the fire?

Explain the significance of knowing the vapor density of a flammable liquid.

Explain the principle that is involved in grain bin explosions.

Give five examples of fires in agriculture, and identify how each could have been prevented.

The flash point for any flammable liquid is the _____ temperature the liquid will produce _____.

Flash points in degrees F are given for the following liquids: Gasoline (-45); Ether (-49); alcohol (55); and diesel fuel (100). Which is the “safer” liquid and why?

The vapor density for substance A is 1.5 and the vapor density for substance **B** is 0.8. Where will the vapors for the substances be? Why is this important to know?

A room can be totally engulfed in flames within _____ minutes of the fire starting. Explain the significance of that statistic in terms of being proactive for fire prevention.

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When using a fire extinguisher, where do you aim?

Identify three things that must be considered by businesses and people in rural areas for fire rescue.

How many locks are on a system that has been “locked-out”?

What do tree limbs contain that helps make them conductors of electricity?

Explain the “one extinguisher principle”?

Who is liable for damages if an underground utility is damaged due to digging?

a. if one-call is not called and
b. if one-call is contacted.

The more _____ a substance is, the more _____ it absorbs heat. An explosive example of this principal shown in class was:

What is meant by back-feeding? (Electricity running both ways. A generator should not be plugged into an outlet, or it can send power back to the mainline and injure workers. From the house to the line, the voltage would be stepped up to 7,200 volts when passing through the transformer.)

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11.3 Activities for Fire and Electrical Safety

Fire Extinguisher Demonstration

a. What is PASS?

b. What are the classifications of fire extinguishers?

CLASSIFICATION TYPE OF COMBUSTIBLE

c. Which extinguisher is considered the all-purpose extinguisher? _____

Electrical Safety

a. Explain how wood can conduct electricity?
b. If power lines were on your car and you did have to escape — how should you keep your feet and why?
c. If you see a line on the ground, is it safe to touch?
d. Who needs to be called before you do any digging? _____If they are not called, how costly could this be for you?
e. If a power line is lying across your driveway, is it safe to move it with a tree limb?
f. What is the danger when using a generator during a power outage?

Balloons have led to power outages and wild fires. What is the material they are made from, and how does it lead to outages or fires? [Mylar: metallic coating causes sparks when in contact with the power lines and can cause the breaker to blow; the burning balloon can then fall to the ground and spread the fire.]

Lock-Out/Tag-Out

a. What is lock-out/tag-out?
b. If six people need to enter an area to perform maintenance, how many different locks and keys are required? _____
c. Lock-out is used to protect equipment start up by other people as well as by _____.

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Appendices – Other Class Materials

A. Sample Undergraduate Syllabus

The next four pages contain a sample of the syllabus I give my students at the beginning of the semester.

AOM _____
Safety in Agriculture
Dept. of Agricultural and Biological Engineering
The University of Florida
Instructor: Dr. Carol J. Lehtola

Web Resources
National Ag Safety Database: http://www.nasdonline.org
Electronic Library of Construction Occupational Safety and Health: http://www.elcosh.org

References
Safety and Health for Production Agriculture, Dr. Dennis Murphy, ASAE, 1992
Farm and Ranch Safety Management, 4th ed., Deere and Co., 1994
Safety Management for Landscapers, Grounds-Care Businesses and Golf Courses, 1st ed., Deere and Co., 2001

Required Reading
Rhythm of the Seasons, Marilyn Adams, Sta-Kris, 1997 (available on loan from instructor)

Optional Extra Credit Reading
A Measure of Endurance: The Triumph of Steven Sharp, William Mishler, Lindisfarne Books, 2008 (available on loan from instructor)

Class Objectives
1. To understand the basic concepts of Occupational Safety and Health
2. To apply occupational safety and health concepts to agricultural and construction operations
3. To understand how to develop effective intervention strategies to reduce or eliminate

safety and health hazards and risks

4. To understand how to educate and influence society to adopt safety, health, and environmental policies, practices and procedures that prevent and mitigate human suffering and economic losses arising from preventable causes

Safety in Agriculture Topic Schedule	
Session	**Topic**
Intro	Intros
1	Process of Hazard and Issue ID and Correction
2	Introduction to Agricultural and Construction Safety
3	Introduction (cont'd) Examples of Intervention Activities/Certifications Hazard Hunt Lab
4	Principles of Occupational Safety and Health
5	Agrability Program Maximizing Abilities Lab
6	Accessing and Analyzing Safety Resources
7	Worker comp, Job Safety Analysis, Analyzing Case Studies
8	TBA
9	Test 1
10	Livestock Handling and Zoonoses
11	Trenching and Confined Spaces/Permit Entry
12	Grain and Materials Handling
13	Tractors, Machinery, Heavy Equipment
14	Tractors, Machinery, Heavy Equipment (cont'd)
15	Power Tools, Scaffolding, Misc. Construction Related
16	Topic Catch-up Review for Test
17	Test 2
18	Preparedness and Emergency and Security
19	Preparedness and Emergency and Security Cyber security/Business Continuity

20	Site hazard evaluation and control
21	Portfolio presentations
22	Chemicals/hazardous materials
23	Test 3 PORTFOLIO DUE
24	TBA
25	TBA
26	Search 4 Safety Lab Part I
27	Search 4 Safety Lab Part II
28	Last Day of Class — Summary/Wrap-up

Grading:	**Points**	**% of Total**
Portfolio	600	32.4%
Tests, 3 @ 200 points each	600	32.4%
Attendance (non-test sessions), 25 @ l5 points	375	20.3%
HW, Activities, Pop Quizzes, 9 @ 25 points	225	12.2%
Rhythm of the Seasons	50	2.7%
TOTAL	1850	100%

93-100 = A	90-92 = A-	88-89 = B+	83-87 = B	80-82 = B-
78-79 = C+	73-77 = C	70-72 = C-	68-69 = D+	63-67 = D
60-62 = D-	< 60 = E			

NOTES: Late homework will be accepted only until that assignment has been handed back. Make-up exams may be allowed **ONLY** if the student has contacted the professor prior to the test time. *Failure to participate in class activities can result in a lower grade even if total possible points have been accumulated.*

All materials handed in are to be checked for spelling, grammar, and proper usage. Failure to do so can result in the assignment being rejected. Remember that these are university-level assignments.

NO PHONE (INCLUDING TEXTING) OR COMPUTER USE DURING CLASS! NOT "BEING IN CLASS" WHILE IN CLASS CAN RESULT IN DISMISSAL FOR THE REMAINDER OF THAT CLASS PERIOD AND LOSS OF ATTENDANCE POINTS OR LAB POINTS.

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EXTRA CREDIT! Options:
NOTE: A maximum of 50 points may be applied towards your grade from extra credit.

Extra Credit will be allowed at a maximum value of 25 points each for the following:

Field Trips: Submit a report including what the trip was about and the safety items observed (both good and bad practices).

Speech Classes: Use an aspect of ag/construction safety or disaster preparedness for a speech. Hand in an outline of the speech, and the grading/critique sheet. Describe the general audience reaction to your presentation.

Writing Classes: If you write a paper on a safety related topic, provide a copy of the paper including the instructor's comments and grade.

Readings: Read a book. Either, *A Measure of Endurance,* or *Home In One Piece* available from your instructor. Complete the assignment sheet that comes with the book.

Read a book related to a safety issue in agriculture or construction — discuss with your instructor to get approval prior to reading it.

Other: Discuss with the instructor.

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Other Course Materials

B. Sample Graduate Level Course in Safety Management

Course Description
This course is designed for graduate students interested in the advancement of safety in the workplace. It is applicable for managers, health professionals, and engineers. The focus is on ways of developing positive safety attitudes and cultures. Students will be expected to understand occupational safety and health concepts, study current issues, and literature, and be able to apply principles and concepts to "controlled" work environments, i.e., industrial, as well as "uncontrolled" work environments, such as privately-owned and operated farms and ranches.

Objectives
The following objectives will assist students in their overall development as safety managers/engineers. Students are to develop an understanding of the concepts and be able to develop applications for the topics covered. The student will:

1. Understand occupational safety and health concepts
2. Understand the role of management and teamwork towards developing a positive safety attitude
3. Understand the concept of the impact of the safety culture and work environment on employee's safety performance and attitudes
4. Develop a "toolkit" of effective strategies for improving safety attitudes and making positive changes in managers and employees beliefs and perceptions towards safety
5. Develop a personal philosophy for administering safety in the workplace
6. Be introduced to international workplace safety issues, problems and approaches in developed and in developing countries
7. Be able to recognize the current issues, recent research, relevant journals, etc. for workplace safety and understand how to make use of this information.

References
Readings will be taken from the following texts.

Aherin, Robert A., Dennis J. Murphy, and James Westaby. (1992). *Reducing Farm Injuries: Issues and Methods*. St. Joseph, MI: American Society of Agricultural Engineers.

. . . . . .

Geller, E. Scott. (2001). *The Psychology of Safety Handbook*. Boca Raton, FL: Lewis Publishers.

Geller, E. Scott. (2002). *The Participation Factor*. Des Plaines, IL: American Society of Safety Engineers.

Murphy, Dennis J. (2003). *Looking Beneath the Surface of Agricultural Safety and Health*. St. Joseph, MI: American Society of Agricultural Engineers.

Websites
OSHA – www.osha.gov
National Ag Safety Database – www.nasdonline.org
Electronic Library of Construction Safety and Health – www.elcosh.org
Florida Ag Safety Network – www.flagsafe.ufl.edu

Topics
Introduction
Occupational safety and health concepts
Difference between controlled and uncontrolled workplaces
Role of management and teamwork towards developing a positive safety attitude
Define safety culture
Safety culture and work environment – effect on safety performance and attitudes
Examples of good and bad safety cultures
Administrative controls; Engineering elements and controls
Enforcement and impact of regulations; Public health model
Economics; Loss control analysis
Investigative analysis of injury events and close calls
Incentives
Evaluation measurements and strategies
Personalization strategies
Understanding the human factor, use of personality testing instruments, workplace distress
Teamwork development, impact of peers
Screening of workers, ethics and worker rights
Case studies
Interactive computer-based training
BMP approach to safety
International safety issues – developed countries
International safety issues – developing countries
Using story telling for injury prevention – personal stories and narratives
Crisis planning and communication; Business Continuity
Developing the "toolbox" of strategies for a safer workplace (putting it all together)

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Other Course Materials

C. Term Project

The purpose of the term project is to enable you to develop a safety intervention that can ultimately have an impact for improving safety and health in the agricultural workplace. The following comments were written by Dr. Steve Casey of Ergonomic Systems Design, Inc., as part of an editorial in a recent issue of the *Journal of Agricultural Safety and Health*. These two statements can be studied as we focus on how we can, as individuals, best promote a safer agricultural workplace.

> "How can the products of my work be used to advance the cause of agricultural safety and health, and will the products of my work ultimately help to make agriculture a safer industry?"
>
> "We must each strive to:
>
> - work on relevant issues
> - grasp the objectives of our own work
> - and to produce products that meet the needs of our audience.
>
> By envisioning the user of our own individual work, we can each help strengthen the field and further the broader goals of agricultural safety and health."

The objectives of the term project are:

1. To develop skills necessary for identifying potential hazards and risks.
2. To develop skills necessary for developing intervention strategies towards making agriculture a safer and healthier work environment.

Project Proposal: A 1-2 page typed (and proofread!) paper discussing what you plan to do and why you selected that project. Indicate your timeline for completion. If you are taking a certification course indicate where and when you will be taking it – register for it now!

Complete project and required report. (See below for requirements for the various options.)

In order for you to select a term project that will be meaningful and significant to you, several options are provided. You may work in groups or individually.

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Option A: Hazard Identification and Correction

1. Develop an overall safety plan for a farm/ranch or for a job workplace (agriculturally related) setting. The place selected must be one over which you can make changes and have some impact.
2. From the safety and health problems identified in step 1, correct or facilitate the actual correction of at least one problem area.

The overall safety plan shall consist of a written report or a narrated video. Items to be included are:

a. overall description of the operation
b. description of the observed hazards and/or safety violations
c. the reasons supporting your identification of the hazards and/or violations
d. recommendations (with supporting documentation as applicable) for correcting the situations noted.

The discussion of the selection and correction of an outstanding hazard or problem area shall include:

a. discussion of how and why the particular problem was selected (include or note supporting references)
b. development of a design or measure to correct the situation
c. discussion of how you implemented or facilitated the implementation of the changes and improvements
d. estimated costs involved and also comparison to benefits if applicable
e. “before and after” photos or video tapes of the project.

Option B: Annotated Bibliography

Due to the broad nature of this course, it is not possible to get more than a superficial overview of the many topics, theories, and issues that make up the area of agricultural safety. In order to get a more thorough understanding of at least one aspect within this field, an annotated bibliography is to be prepared. The articles selected need to have a common theme as related to safety in agriculture.

For this option, you will develop a summary of five (5) related articles. Choose and read five articles from at least three different sources and written within the past 10 years. For each article, include the following in your summary:

1. Complete bibliographic information (APA style)

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2. The type of article (research, informative, descriptive, opinion piece, etc.)
3. The population discussed (managers, workers, safety professionals, etc.)
4. The article's context (professional development, training, insurance premium reductions, safety strategies, etc.)
5. A minimum of one-page descriptive summary of the article
6. Your reaction to the article. This can include strengths, weaknesses, practical application, and usefulness
7. What you learned from the article.

Option C: Interview a Safety Manager

Perhaps you know someone who works as a safety manager or loss control specialist for a company or business. Perhaps there is a business that you are interested in working for. In order to get a more thorough understanding of what either of these types of people does, an interview (and/or shadowing experience) is to be conducted.

For this option, you will need to make an appointment for the interview. The following information is to be included in your report:

1. Name, title, position held, and contact information for the person interviewed
2. Name and type of business
3. A brief history of the business including:

   a. what the business does: is it an individual operation, franchise, multiple locations, etc.
   b. number of employees
   c. if applicable, number of shifts and hours of operation
   d. value: assets, revenues, importance to the community, etc.
   e. types of employees: professional, technical, laborers, etc.
   f. skill levels of employees, literacy and language barriers
4. Safety strategies
5. Preparedness planning: do they have emergency plans, provisions for business continuity, local agencies they work with, etc.
6. Requirements their insurance carrier has for them in order to keep their premiums at a manageable level. How have things they have done reduced their premiums?
7. Your reaction to the interview, the business, and the safety practices in place; what is their overall attitude towards safety? Include details applicable to this course.

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8. What you learned that you can apply personally and professionally

Option D: Training Program or Instructional Unit
Due to the broad nature of this course, it is not possible to get more than a superficial overview of the many topics, theories, and issues that make up the area of safety management. In order to get a more thorough understanding of at least one aspect within this field, a topic is to be selected.

The following information is to be included in your paper:

1. A background summary of the topic selected. Its definition, purpose, scope, intent, etc.
2. Select a minimum of five (5) references for the topic selected. Use APA style in your reference citations.
3. Identify target audiences who need information about the topic selected (managers, industry, employees, employers, general public, farm owners, land owners, urban or rural home owners, etc.).
4. Select one of the groups identified above and prepare a training unit on the topic that is appropriate for that audience (can be PowerPoint, fact sheets, etc.).

If this option is selected, target your PowerPoint presentation to be 15-20 minutes. A fact sheet or publication would be 2-5 pages. Either of these must show original thought and not just be copied.

Option E: Safety Certifications
Complete any one of the following. For each course, you are required to hand in (1) an outline of the course and (2) proof of certification.

First-aid/CPR Class (8-hr class; or two classes at 4 hr each)

Other safety courses and certification (boating, etc.)

Any of the independent study courses offered by FEMA – FEMA offers Independent Study courses that can be taken online. These are excellent courses that can be taken by anyone. They are free of charge. Upon successful completion of the test you will receive a certificate of completion. Courses can be found by searching for “emi independent study courses.”

Examples of courses include:

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- IS-5 Hazardous Materials – A Citizen's Orientation
- IS-10 Animals in Disaster – Module A Awareness and Preparedness
- IS-11 Animals in Disaster – Module B Community Planning
- IS-324 Community Hurricane Preparedness
- IS-393 Introduction to Mitigation
- IS-394 Mitigation for Homeowners

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Other Course Materials

D. Student-Led Discussions

Students not presenting on a given day will have an assignment in class based on the presentation given (25 pts). MAKE-UP OF THIS ASSIGNMENT WILL NOT BE ALLOWED!

Students, in teams of four (will vary depending on number of students in the class) will sign up for and lead class discussions.

The objectives of this exercise are:

- to involve students in the design, development, and implementation of the class
- to develop a further appreciation for "issues" involved with agricultural safety.

Duties of discussion teams include:

1. Each team **will be responsible for a class period of 45-50 minutes.** Prepare a brief (approx. 20 minutes) mini-lecture on the topic issue signed up for. Each team will select a topic of their choosing. Topics selected should be issue oriented, i.e., there may not be a cut and dried, one-size-fits-all solution. Another option for topics would be developing and including the class in a table-top exercise for a disaster situation involving an agribusiness.

2. In class, after the mini-lecture portion, teams are to plan some type of exercise for the class to do. For example, controversial topics could be debated (if so, the team will have to organize the debate in class) or discussed in small groups who then present particular findings, opinions, or conclusions to the class for continued discussion. *Be creative!* Avoid questions that require yes/no answers — we want discussion. The classroom is equipped for computer and video (let the instructor know beforehand what AV needs you may have to insure that they are ready to go).

3. Consider finding outside resources, such as experts in the community or on campus, and have them come in as a guest speaker for a part of the class. If they can't come in, perhaps you could arrange a video interview. However, do not let this be the entire presentation.

   Discussion teams will be judged on the degree to which the class becomes engaged in the discussion exercise and on the ability of the discussion leaders to focus the class on critical and meaningful discussion related to the issue topic.

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4. Hand in: Typed report of your presentation, including facts, the class activity, along with a copy of the PowerPoint or other materials used.

List References and Resources used — a minimum of **FIVE (5).**

FAILURE TO PARTICIPATE EQUALLY WITH THE REST OF YOUR TEAM CAN RESULT IN RECEIVING NO POINTS. TEAM MEMBERS MAY VOTE SOMEONE OFF THE TEAM FOR FAILING TO COMPLETE ASSIGNED RESPONSIBILITIES!

GROUPS NOT READY ON THEIR ASSIGNED DAY WILL RECEIVE ZERO POINTS!

PLEASE DRESS PROFESSIONALLY. NO CAPS AND NO CHEWING TOBACCO!

Topic Ideas

- Children in the agricultural workplace
- Who pays for safety when farmers are price getters not price setters
- Should there be a statute of repose for farm machinery (i.e., after a certain amount of time, the manufacturer cannot be held liable)
- Licensing requirements for tractor operators on public roadways (currently in most states, a six-year-old could legally drive a tractor on the road!)
- If a child is hurt or killed in the ag workplace, should the parents be held accountable for child endangerment?
- Should agriculture be more heavily regulated as are other types of industries? What are the enforcement issues?
- Should ROPS be mandated for all tractors?

*NOTE: This assignment accounted for 15% of their total grade.

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Other Course Materials

E. Rhythm of the Seasons

Rhythm of the Seasons Reader Response Worksheet

Read the book *Rhythm of the Seasons* by Marilyn Adams, and answer the following questions.

1. Provide a description of the event that happened to Keith.

2. a. Can we assume that people are aware of the many hazards around them?

   b. Explain your answer.

   c. Explain the importance of education in injury intervention.

3. This book describes real people and serves as a reminder that behind every injury or fatality statistics there is a family undergoing similar feelings. Discuss the impact this book had on your over-all safety attitude and perspective.

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Other Course Materials

F. Professional Portfolio Assignment

The Professional Portfolio assignment has been a very good project for the students. They typically will note in their reflections page that when they first received the assignment, the idea of interviewing someone was very intimidating — but that is typically the portion they get the most out of. They typically will comment on the fact that what they are doing in the real world for safety is what we are being taught in class!

The Professional Portfolio has varied somewhat over the years. At first, students were assigned one interview, and later, a special project was added. Special projects could include lesson plans, hazard identification and correction, work-site analysis, etc. However, a lot of students would wait until the last minute and did not take the time to do a quality project. I found that having students do two interviews and making comparisons seemed to provide a higher quality professional learning experience.

Purpose
The purpose of the Professional Portfolio is to increase the student's understanding of agricultural and construction safety management through independent research and practical application. Additionally, it serves to enhance ties with industry by making the Agricultural Operations Management program more visible to industry as well as by increasing the student's awareness of industry.

Objectives
1. To develop and complete a Professional Portfolio demonstrating a student's experiences and strengths in agricultural and construction safety management. This can be used as a tool when seeking employment.
2. To write and organize a technical report.
3. To develop a quality professional looking product that can be used in the workplace.

Procedures
As a project in undergraduate agricultural safety, each student will develop a Professional Portfolio. The development and presentation of the portfolio will guide the student to expand their understanding of agricultural and construction safety management. The portfolio is a summarization of the student's occupational safety and health experiences.

The portfolio is to be submitted in the form of a three-ring binder with a **labeled tab** defining

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each section. Sheet protectors are to be used, with items inserted as instructed in each section. Note that any part of the portfolio may be selected by the instructor for retention and future use by the faculty, staff, and students of the Department of Agricultural and Biological Engineering. These materials will be used for the enlightenment of current and future Agricultural Operations Management majors.

Double spacing and 12-point font are preferred. **All materials presented are to be checked for spelling, grammar, and proper usage. Failure to do so can result in the portfolio being rejected. Remember this is a term-long university-level assignment.** This is something that you would be willing to show to a potential employer. *Quality counts. If you don't care, neither will they!*

Contents

Section 1 – Cover Letter: This will be written towards the end of the term. It is to be written in business letter format to a safety manager at the type of company where you would like to work. (Names of the manager and the company may be fictitious). Describe why and how the *safety background* that you have will be a desirable quality in considering you for employment. **(1 page maximum)**

Section 2 – Safety Philosophy: This will be written towards the end of the term. It is a summary of your philosophy about your *safety* attitudes and visions for safety applications. Comment on how your philosophy towards the end of the term may be different from what it was at the beginning of the term. **(2 page maximum)**

Section 3 – Safety Certification: For each certification received, include a page that has a copy of the certificate on the front. The back of the page is to contain a *summary of the content* of the course, who (agency or organization) it was taught by, where it was accessed or attended, how long it was, and if there was a cost. These can be FEMA courses, CPR/First-aid classes, boating safety, etc. Certifications must be completed during this term (i.e., past certifications will not count).

Section 4 – Interviews: Interview two people with safety responsibilities from different companies. It is preferable if one is from a larger company and one from a smaller one. Interview a company's safety manager, loss control person, or someone else who has responsibility for safety. This can include a manager or owner of their own business who, in addition to their other responsibilities, has to also be responsible for safety. Perhaps there is a business that you are interested in working for. In order to get a more thorough understanding of what safety or risk management professionals do, an interview (and/or shadowing experience) is to be conducted.

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You will need to make appointments for the interviews. Dress and act professionally. You and a couple of your classmates may conduct an interview together; if so, indicate who was on the interview team. Each student has to submit their own report. Introduce yourself and mention that you are doing this as a college research project for the Agricultural Operations Management Program and that, in your future, careers you may be involved with safety-related management decisions in either agriculture or construction.

The write-up must show depth and critical thinking. Compare the similarities and the contrasts of how safety is managed in the two companies. Also compare the attitudes towards safety. Note your feelings about the differences and similarities.

FOLLOW-UP BY SENDING A PERSONAL THANK YOU NOTE. (This is a recommended practice after a job interview — so practice!)

As applicable, the following information is to be included in your report. (Note: not every business will fit this mold.)

1. Name, title, position held and contact information for the person interviewed
2. Name and type of business
3. A brief history of the business including:

   a. what the business does: is it an individual operation, franchise, multiple locations, etc.
   b. number of employees
   c. if applicable, number of shifts and hours of operation
   d. value: assets, revenues, importance to the community, etc.
   e. types of employees: professional, technical, laborers, etc.
   f. skill levels of employees, literacy and language barriers
4. Safety strategies
5. Preparedness planning (do they have emergency plans, provisions for business continuity, local agencies they work with, etc.)
6. Requirements their insurance carrier has for them in order to keep their premiums at a manageable level. How have things they have done reduced their premiums?
7. Your reaction to the interview and overall impressions, the business and the safety practices in place; what is their overall attitude towards safety? Include details applicable to this course
8. Compare the similarities and the contrasts of how safety is managed in the two companies. Compare the attitudes towards safety.

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9. What did you learn that you can apply personally and professionally?
10. List of questions you prepared and asked.
11. Copy of thank-you letter you sent.

Section 5 – Journal: A journal is to be kept of weekly entries of safety observations. This includes the weeks of _____ through _____.

The purpose of the journal is to increase awareness of how you look at things from a safety point of view.

These can be from anywhere – whether working, on campus, in traffic, on vacation, TV shows such as "Dirty Jobs," etc. Observations are not limited to agriculture or construction. Include ***safe practices as well as unsafe practices*** that you have observed (or done) during the week. Photos can be included. The journal can be hand-written and inserted into a page protector. **Journals may be randomly called upon for checking in class — so keep them up to date.**

Section 6 – Reflections: Discuss new information about safety management that was gained by completing the portfolio. Include your feelings about the process in completing it as well as any other relevant information.

Section 7 – Resources: Identify a **minimum of five key resources** that will be of help to you in your career. These are sources to go to when you need to obtain safety information. (Do not limit the list to only sources used in the portfolio.) For example, www.nasdonline.org, www.elcosh.org, and www.osha.gov are ones that should be included. ***For each site, include a paragraph summarizing the information that is available at the website.***

In-Class Presentation: Each student will provide 5–10 minutes of "sharing with the class" information about their certification and their interviews. They may also want to share other observations they noted from doing the portfolio assignment.

*NOTE: This assignment accounted for 33% of the total grade.

Grading Criteria

The Grading Criteria sheet is included with the professional portfolio assignment so that students can use it as a checklist when completing the portfolio. They are given the grading criteria sheet when they receive the assignment, typically the first week of class. They sign and date and this sheet and turn it back in. This way, they have no excuse and cannot say that they did not get the assignment! The grading criteria sheet is then used in grading the portfolio.

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Course: Agricultural Safety
PROFESSIONAL PORTFOLIO
GRADING CRITERIA
600 Total Points

Name _____ Date I received this assignment _____

Late portfolios will be deducted **15 points for each weekday** (M–F) they are late. Portfolios will not be accepted by e-mail. Portfolios are to be handed in in their entirety – individual sections will not be accepted.

DUE: APRIL 1

RECEIVED WHEN DUE: Yes No Number of days late _____ x 15 = – _____ points

(25) SECTION 1 – Cover Letter
Spelling/grammar/proper business letter format (including date, address to business, and your contact info)
Summary of safety experience
Highlight trainings and certifications
Good first impression

(25) SECTION 2 – Philosophy
Spelling/grammar
Philosophy specific to safety
How has it changed over the semester?
Specific and sincere for the student — not just a bunch of one-liners taken off the Web!

(150) SECTION 3 – Certification
Credible provider
Proof of passing and certificate received during the current class term
Relevance of the certification
The student's **write-up summary** is accurate and complete (50/150)

(200) SECTION 4 – Interviews
Proof the interviews were conducted in a professional manner
Relevance of questions asked
Significance of responses
Over-all impressions and evidence of learning from it
In-depth analysis and comparison of the interviews
Thank-you letters (25/125)

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(50) SECTION 5 – Journal
Is kept current (subject to random checks in class)
Includes *both good and bad* safety observations

(25) SECTION 6 – Reflections
Spelling/grammar
Sincere expression

(25) SECTION 7 – Resources
Minimum of five significant resources are identified *with a minimum paragraph description* of what each one provides. These are not limited only to sources used in making the portfolio.
Credible sources

(50) OVERALL GRAMMAR, SPELLING, NEATNESS, PROFESSIONAL APPEARANCE — If it is felt that more than 50 points should be deducted for a lack of professionalism, the portfolio will be deemed unacceptable.

NOTEBOOK WITH LABELED TABS IDENTIFYING THE SECTIONS AND WITH SHEET PROTECTORS, PROPER ORDER, I.E., FOLLOWED THE INSTRUCTIONS!

(50) IN-CLASS PRESENTATION

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Other Course Materials

G. Search 4 Safety

Instructor's Guide

Subject: To expose 4-H youth to several topics related to safety. Examples relate to personal, home, and agricultural (as an example of occupational) safety.

Introduction
This Instructor's Guide and Activity Sessions are the basis for a 3–4 hour program providing hands-on applications that will expose 4-H youth to a better understanding of the concept of hazards and the need for safety. All worksheets are included in the Activity Sessions Section.

Workshop Outline

Part 1 – Introduction to Safety PowerPoint (20–30 min)

Part 2 – Hazard Identification Activity (30–40 min)

Part 3 – Working with a Disability Activity (30–40 min)

Part 4 – Various Activities (1–2 hr)

(A menu of options is provided, depending on ages, resources, time, location, etc.)

Part 5 – Summary and Wrap-up (10 min)

Total (2.5–3.5 hr)

Specific Learning Objectives

For Leaders
After going through the Instructor's Guide, leaders will be able to:

1. Present a safety workshop to youth
2. Discuss the importance of reducing hazards and risks for improved personal, home, and occupational safety
3. Identify key resources to further their knowledge and training capabilities relative to safety programs for youth.

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For Youth
At the end of the unit, youth will be able to:

1. Understand what hazards are and how to recognize them
2. Understand how to reduce risks of exposure to hazards
3. Identify the three leading causes of unintentional injury and death to youth in their general age group in the U.S.
4. Identify the three leading causes of unintentional injury and death in the home in the U.S.
5. Identify the three leading hazardous occupations in the U.S.
6. Accomplish the objectives denoted for each specific activity completed.

Part 1 – Introduction to Safety
Time: 20 minutes
If the youth do not know each other, then allow time prior to the intro for ice-breakers.

Part 2 – Hazard Identification
Activity Time: 30–40 minutes
Objective: To be able to learn how to identify hazards and learn to look at things to see how they may have the potential for injuring someone

Hazard Hunt Instructions
1. Assign groups of 4–5 students (be sure to have a leader with each group).
2. Assign area to look for hazards (must not overlap).
3. Ask students to identify up to 15 hazards.
    a. Give 15–20 minutes.
    b. For each hazard, identify the hazard and the potential for injury (use included worksheet, the questions are shown below)/
    c. The recommendation(s) for correcting the hazard (if known)
    d. The category of the hazard

4. Discuss findings when students return.
    a. Questions

        What did you find?
        What is unsafe about it?
        How could it be improved or prevented?

    b. For corrections to be made, the following items must be identified (these can be put in

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the form of a checklist or chart)

What is the hazard?
How it can be corrected?
Who is responsible to see that it gets done?
Target date for getting it done?

Worksheet Instructions: *Find the category of the hazard and write it in the space provided.*

- Electrical:
- Structural:
- Fire:
- Surfaces that would contribute to slips and falls:
- Traffic (pedestrians, automobiles, bicycles):
- Health hazards (atmospheric and noise):
- Persons doing something in unsafe manner:

Part 3: Working with a Disability
Activity Time: 30–40 minutes
Objective: To gain familiarity with performing routine tasks while being physically disabled and to think of possible solutions to problems incurred by people with disabilities.

The following are the questions to ask students and items to do in the activity. The complete activity sheet to copy is in the Activity Section.

1. What are secondary injuries?
2. Why is it important to have an understanding of physiology when corrective measures (for working with a disability) or assistive technologies are developed?

Station 1: Arm Amputation
Simulate having only one arm by placing your dominant arm behind your back (i.e., if you are right-handed, place your right arm behind your back). If anyone has peanut allergies please do not do item g.

a. Start a nail
b. Remove the nut from the bolt with the wrench – put it back on and tighten
c. Change sockets on a ratchet wrench
d. Push a wheelbarrow (if available)
e. Scoop sand
f. Wash hand with bar of soap/dry with paper towel from towel holder

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g. Spread peanut butter on a slice of bread, fold in half, wrap in plastic wrap
h. Button a shirt

Station 2: Vision Loss
Paint-coated glasses or blindfolds are provided for you to perform these tasks. Please select a partner and take turns spotting for each other.

a. Start a nail
b. Locate a 3/4" socket in a tool box
c. Locate a 5/8" wrench in a tool box
d. As you take tools out of the toolbox, identify what they are
e. Seat yourself on the passenger side of a pick-up (if available)
f. Walk to a specified location (such as another room in the building)
g. Have your spotter drop the block of wood and by talking to you, guide you to find it and pick it up
h. Button a shirt making sure that the buttons are lined up with the buttonholes

Station 3: Loss of Mobility
Wheelchairs are provided in order to simulate loss of mobility. Please select a partner and take turns spotting for each other. NO HORSEPLAY – THIS IS A SAFETY LAB!

a. Maneuver around obstacles and other people
b. Scoop sand (if available)
c. You have dropped something (block of wood provided) — how do you pick it up?
d. Open a door, go through it, and close it
e. Get a drink of water from a water fountain

Conclusions
What did you find the most difficult station?
What are some ideas that you may have for making some of the tasks easier?

Part 4: Various Safety Activities
Time: 1–2 hours

Instructions for the following activities are included:

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- Find Your Reaction Time
- Grain entrapment
- Tractors and Machinery
- Lock-out/Tag-out
- Fire Extinguisher Use
- Electrical Safety City
- Eye Protection
- Hearing Protection

Find Your Reaction Time
Objective: To understand that no matter how fast a person thinks they may be, they still cannot react fast enough to avoid being hurt by a machine.

Reaction time can be taken on-line at many sites (Google "on-line reaction time") Directions for doing it yourself: http://www.flagsafe.ufl.edu/publications/reaction-timel.pdf
Note: the charts for the items in #2 are included in the PowerPoint

YOU MAY BE QUICK... BUT MACHINES ARE QUICKER!
MACHINES AND REACTION TIME ACTIVITY

1. My reaction time was _____ seconds.

   My height is _____.
2. For each of the following identify what would have happened to you in that amount of time:
   a. In that amount of time, how much "length" would have been entangled in a 6" auger at 400 rpm?
   b. In that amount of time, how much "length" would have been pulled into a belt and pulley traveling at 66 feet per second?
   c. In that amount of time, how much "length" would have been pulled into a power take-off (PTO) shaft rotating at 1000 rpm?
   d. In that amount of time, how much "length" would have been pulled into a PTO traveling at the slower speed of 540 rpm?
   e. I would have been cut _____ times by the rotary lawn mower.

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Grain and Trenching Entrapment

Objective: To understand that the forces on a person who may be buried or trapped in grain or soil are too extensive to be "merely" pulled out. To understand the importance of staying out of these situations in the first place.

You will need a five-gallon pail or a larger container if available, grain or sand to fill the container, a disk (plywood or heavy plastic lid) that is slightly smaller than the diameter of your container and that has a hole in the center, and a rope.

Place the rope through the hole in the disk, and tie a secure knot. Place the disk on the bottom of the container; fill with grain or sand (at least 30 inches). Instruct participants to use proper lifting techniques and try to pull the disk out from under the grain. The participants should not be able to pull the disk out – this demonstrates how hard it would be to pull out a person buried in grain.

Place a second disk on the ground by the barrel. This disk would be the same size as the one in the barrel. This shows them what it is they are trying to pull out.

At the barrel with sand, pull on the rope (attached to a disk) to "attempt" to rescue someone who is buried.

Was it possible to pull out the disk? What is the magnitude of the forces holding someone buried in grain or soil?

Tractors and Machinery

Objective: To understand how easily and quickly tractors can overturn. To understand the protection offered by ROPS and seatbelt.

Equipment needed: scale model tractors and eggs.

Instructions for the Mr. Good Egg overturn demo can be found at
http://nasdonline.org/995/d000982/the-quot-mr-good-egg-farmer-quot-model.html

a. Hitching above the drawbar makes it easier for the tractor to:
b. Use of the seatbelt and ROPS showed that the operator would be _____ in the event of an overturn.
c. How long does it take for a rear overturn to occur? _____

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How long does it take to reach the "point of no return"? _____

d. What is needed when a tractor is driven on the public roads?
   i. What color is it supposed to be? _____
   ii. This is used for vehicles that travel less than _____ miles per hour.

e. The instructional seat is fine when used _____. It should not be used for _____.

f. The three leading causes of tractor related fatalities are:

Lock-Out/Tag-Out

Equipment: Locks and lock-out devices and tags that indicate someone is working on equipment. This is a topic that perhaps someone experienced in that area may be called in to demonstrate. If the utility company is doing the electrical demonstration, they could also be asked to do lock-out/tag-out.

Objective: To understand the practice for preventing unintentional start-up of equipment. Especially if someone is working doing repair or maintenance.

a. What is lock-out/tag-out?

b. If 6 people need to enter an area to perform maintenance, how many different locks and keys are required? _____

c. Lock-out is used to protect equipment start up by other people as well as by _____.

Fire Extinguisher Demo

Objective: To be able to demonstrate proficiency in the use of a fire extinguisher.
Equipment: Fire extinguishers for the students to actually use — or else just one that someone shows them how to use it. The local FD may be available to come and demonstrate.

a. What is PASS?

b. What are the classifications of fires?

CLASSIFICATION	TYPE OF COMBUSTIBLE

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c. Which extinguisher is considered the “all-purpose” extinguisher? _____

Electrical Safety

Objective: To understand basic safety considerations when working with electricity or finding downed power lines. (An optional resource is to contact local utility company to come out and demonstrate with their “safety city” demo.)

a. Explain how wood can conduct electricity?
b. If power lines were on your car and you did have to escape — how should you keep your feet and why?
c. If you see a line on the ground, is it safe to touch?
d. Who needs to be called before you do any digging? _____. If they are not called, how costly could this be for you ?
e. If a power line is lying across your driveway, is it safe to move it with a tree limb?
f. What is the danger when using a generator during a power outage?

Eye Protection

Objective: To identify basic hazards that eyes can be exposed to and show various types of eye wear to protect them.

Identify the different types of eye protection available and explain how you would determine which type will provide the protection needed for a specific job.

Hearing Protection

Objective: To understand that noise exposure can lead to permanent hearing damage and there are measures to protect one’s hearing.

Equipment: Decibel meter, things to measure noise levels, even with a radio and at different volume levels; examples of hearing protection. (This activity requires a decibel meter. An option is to contact your local occupational medical resources to demonstrate what the exposure to certain noises causes.)

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Hearing protection video: http://nasdonline.org/4159/V000001/sound-advice-for-farming.html

Record the noise levels for the readings taken:

Measuring Noise Levels

The noise level readings are given in dBA. Look at the examples of hearing protectors (HP). The greater the Noise Reduction Rating (NRR), the more protection the HP provides. For examples of sound levels that a worker would be exposed to, select the appropriate hearing protection to be used. Actual exposure must be less than 85 dBA in order to prevent hearing loss.

a. What are the different types of hearing protection?

b. Identify likes and dislikes of the styles of hearing protection:

Answers: Pre-Post Test Safety Activity
1. b; 2. a; 3. f; 4. a

Background information for injuries and deaths in the home

Falls – Falls accounted for one-third of all unintentional home injury deaths, more than 40 percent of nonfatal unintentional injuries, and more than one-third of all nonfatal home injuries resulting in emergency department care. Seventeen percent of fall deaths were associated with stairs or steps.

Poisonings – Poisonings were the second leading cause of home injury fatality, resulting in approximately one fourth of all home injury, deaths. The highest rates of poisoning deaths were among males age 30–49, with nearly one-fourth of poisoning deaths being associated with heroin. Additionally, 22 percent of poisoning deaths were related to central appetite depressants (i.e., drugs used primarily for weight loss).

Fires/Burns – Fires and burns were the third leading cause of home injury death, with 90 percent of the fatalities and 57 percent of nonfatal injuries occurring in the home. The rates of fire and burn fatalities were highest among older adults (60+) followed by children younger than five.

Choking and Suffocation – Deaths from choking and suffocation ranked fourth among unintentional home injury fatalities. One-third of the home fatalities due to choking or

suffocation were associated with food, while 16 percent were the result of suffocations in beds or bedding. The highest death rates due to choking and suffocation were among children less than five years of age and adults 70 and older.

Drownings and Submersions – Nationally, drownings were the fifth leading cause of unintentional home injury death, with at least one-third of the unintentional home drownings occurring in bathtubs. Children younger than five had the highest rates of all age groups.

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Other Course Materials

H. Children in the Agricultural Workplace: An Exercise in Critical Thinking

NOTE: This approach could be adapted for other topics, including product liability issues.

The class will form teams of two persons each. Read through the materials you have been given. If you want to search the Internet for additional information, we can use the computer lab.

Together with your teammate, identify the issues around children in the ag workplace – this can include the obvious that you see as well as things not seen!

Some items to consider could include legal implications; views of society; attitudes of parents; and economics. You should also look beyond these items for other factors.

Be prepared to defend and look at "both sides of the fence" for the following question.

Should parents be held legally accountable (child endangerment) for agriculturally-related injuries to their own children?

This assignment requires reading the book *A Measure of Endurance – The Unlikely Triumph of Steven Sharp* by William Mishler (Lindisfarne Books, 2003). This book covers the issues of engineering liability and engineers' responsibility in product design.

A written report (typed) is to be handed in that answers the following questions. Please answer each question rather than running them all together in a report form.

1. What is the first inkling of potential trouble that is described in Chapter 4?
2. Provide a description of what happened to Steven on August 22, 1992.
3. How did the Sharp family link up with the law firm in Minneapolis?
4. What had just come in the mail from J.I. Case to the law firm at the time the Sharps called? What did that imply? Why had Case settled out of court?
5. Why did Case push to have the venue in Oregon rather than Wisconsin?

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6. What was the problem with the PTO on the Case 970/1070 series of tractors?
7. What were the 4 counts filed against Case?
8. Provide some examples where judges reminded the attorneys to uphold the dignity of the law.
9. What recommendation did the expert witness from Toro say that he would have made if it were one of their machines?
10. What is said about the company on p. 144?
11. What was Case's rationale for capping their proposed out-of-court settlement at $250,000 for the Sharps?
12. The expert witness from Toro indicated their engineers also had to consider what in the design process?
13. What did Attorney Manning find when searching through the Case documents? What were the implications for Case shown by this document?
14. What was Case's continued response anytime an incident occurred i.e., who was to blame?
15. What was the significance of the clothes selected for Steven to wear at the trial?
16. What factors were involved with determining the jury pool?
17. What is meant by "post-sale duty to warn"? How had Case handled this?
18. Summarize the actual trial? The atmosphere? Witnesses? The defense attorneys' attitudes and how they approached the witnesses? Other?
19. Summarize what the jury determined and what was the outcome?
20. How did the check from Case arrive? What did that perhaps imply?
21. What still remains a problem? In the event of another fatality or injury what are the implications for Case?
22. Discuss your overall thoughts/reactions to this case as you read through it?

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Other Course Materials

I. Developing Interactive Narratives

1. Your group has gone through a narrative story. These stories were developed based on composites of real situations.
2. A list of several situations has been handed out. Each group is to select one of the situations.* Situations are based on real events. For the situation your group has been given, develop a narrative story. Make the story interesting and usable for a real teaching situation. Develop the story with different possible outcomes – that is, looking at different scenarios of the "chain of events." For the different possible outcomes, make a newspaper article describing the outcome. (example, two people killed in tractor overturn; a person escaped death due to overturn since the tractor was equipped with a ROPS).
3. Develop questions to use for teaching and discussion. Develop the answer key that explains the answer. Develop a fact sheet about the situation you were given.
4. Each group is to hand in their completed story. Each group will discuss their story for the class. Stories should be typed. If there is an "artist" in your group, include illustrations.

NOTE: Please list any reference sources that you used. You can find background and supporting information on NASD or on the Florida Ag Safety Website. There are more examples of narrative stories on NASD under Kentucky and Community Partners and Simulations.

* If your group is familiar with a different real situation that you would prefer to use, you may do so.

Scenarios for Interactive Stories

1. Both husband and wife work in town. They recently purchased five acres in the country. They plan to clear some of the land that is now in trees so that they can build a horse barn. They see an ad in the paper for an older (pre-1970) tractor that is a small utility size tractor.

2. The grandchildren, ages three, five, and seven get to spend two weeks on their grandparent's farm in Georgia. Grandpa thinks it will be a great chance to bond with the kids and to show them what is involved with farming.

3. Dad is busy with harvest. Mom works in an office in town. Their three-year-old son has a

slight cold and cannot go to the daycare center. Mom cannot take off work due to a pressing deadline.

4. Two sons, 12 and 13, live on a beef cattle ranch. They will be showing steers at the upcoming fair. Mom and Dad are in town running errands. The boys feel the steers need more work (e.g., training with the halter and lead; show formation; etc.) before the fair.

5. A father works as a fire fighter. He is on duty two 24- hour shifts and off 48 hours. He has two sons, ages one and two. His wife works in an office. When he is off-duty he does chores around the house and yard, including mowing the lawn with a riding mower. He is also in charge of taking care of the boys when he is off-duty.

6. A "hobby" farmer is interested in finding an older, small tractor to do miscellaneous chores on his 10-acre acreage. He has looked at the ones available at the local tractor dealership, has checked some newspaper ads, and plans to go to a farm auction next week.

7. Two employees of the grain elevator cooperative are working near a bin to get it ready to be emptied. One goes off to take a break. When he returns, he does not see his coworker. However, he does notice that the auger is all set up and ready for emptying the bin.

8. The three-year-old and five-year-old enjoy playing around the farm equipment. Dad lets them ride on the front-end loader bucket of the tractor. This is usually just for short distances in the yard. Today, he has to go to the field – this includes driving a mile on the public road. His wife is at work.

9. A 13-year-old boy, visiting relatives, wants to visit his cousin who lives 2 miles away. The boy does not have a bike or car. He also is under-age and does not have a driver's license. He decides to use the tractor as his "vehicle" to get to his cousin's house.

10. The setting: sweet corn packing house; conveyor mechanism; packing boxes of sweet corn; pay based on amount of boxes an individual packs; dust; noise; June; south Florida; not all workers speak English. Pay day was yesterday. Jose celebrated his 25th birthday last night with several coworkers. During a recent inspection, the emergency shut-off switch for the conveyor was not working; however, no situation has occurred in the past three years where it had to be used. Drinking water is located at one end of the packing house. The packing house is covered, but not enclosed, so it is not a climate-controlled environment. Trucks unload and load the corn adjacent to the outside of the packing house.

11. The setting: sugar cane harvesting; transporting of sugar cane from field to mill; driving along field roads bordered by canals and onto the highway to the mill; harvesting is done by machine; wagons are towed by tractors; the cane fields are burned prior to harvest; high

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temperatures; high humidity. The company is now going to night harvest (i.e., 24-hr. harvest). One-third of the workers do not speak or read English. Workers will get paid as they leave their shift at 6 pm. It is currently 4:30 pm. The second shift arrives at 6:30 pm.

12. The setting: beef cattle ranch in Highlands county; nearest town (medical facility) is 45 miles away; the rancher's 20-year-old son and two of his neighbor friends (also 20 years old) are branding and inoculating calves; livestock handlers are using horses to herd the cattle; some of the cows (mothers of the calves) are longhorns; wooden corrals that are 15 years old; older squeeze chute; there are snakes in the wooded part of the pasture; temperature is 85 degrees and 80% humidity; the boys want to get done and be home by 5:30 pm to get ready for their Saturday night dates. The last three calves are being particularly obnoxious.

13. The setting: privately owned and operated family farm in the panhandle; beef cattle (on pasture), small grain, corn, hay, and peanuts. Mom works full-time in the county courthouse; Dad works part-time for a tractor dealership; they have two boys, ages 12 and 16, and a girl age eight. They have two tractors without roll bars and one tractor with a cab (a roll bar is part of the cab structure). The older children are getting their steers ready to show for the county fair, which will be in two weeks. A field of hay has been cut and needs to be baled before it rains (rain is in the forecast). The eight-year-old girl has brought two of her friends home for a slumber party (the friends are from town).

Assignment

You have been assigned a specific topic and a specific audience. Use the Web to find three articles that are relevant to the topic and appropriate for the audience you have been assigned. (Attach the articles).

Develop an outline of a safety PROGRAM that is appropriate for the topic and the target AUDIENCE you have been assigned. Indicate on the outline the program's timeline (e.g., is it 1 hr/wk for 3 weeks; 1hr/yr, etc.)

Describe the setting and the methods to be used for the program. For methods, also identify who will conduct the program (workers themselves, safety trainers, management, etc.).

Develop a safety message outline or fact sheet (1-2 pages) that would be effective in getting key points (for the topic you are assigned) across to the audience you are working with. You can include illustrations. However, there must be indications of original thought, i.e., don't just copy 1 or 2 of the articles you have found!

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Assignment
Identify the two leading scenarios for tractor-machinery collisions with motor vehicles on public roads.

Prepare a public service announcement of 100-200 words that could be used by a radio station for informing the motoring public about these hazards. Include suggested corrective measures that motorists can take in order to ensure safe traveling when using the same roads as tractors/machinery.

Find an article that discusses efforts for improving mining safety, such as programs, funding, emphasis on it, etc. (since links change just do a search and find a recent article).

Review Farm and Agricultural Injury Incident Reports.

Other info to note: There has been relatively little government funding for farm safety compared to other industries: a line item of $1 million in the U.S. budget was allocated for farm safety – this amounted to $20,000 per state per year – this was cut several years ago. There is funding through NIOSH for agricultural injury centers, but somewhere in the total amount of $10-20 million. The comparable amount for mining is several hundred million dollars.

In 1985 (last time for which a comparative study was done), federal money spent per worker for safety was 30 cents per agricultural worker and $182 per miner. This amounted to $606 per agricultural worker death and $363,366 per miner death.

Comparing the societal outrage for the recent mining events and the data for agriculture write either:

a. A proposed letter to a member of the U.S. Congress making comparisons between the two industries and asking why does agriculture always get the “back seat” compared to other industries when looking out for worker safety and health issues. Agriculture is an industry and should be viewed accordingly.
b. A proposed letter to the editor of a newspaper making comparisons between the two industries and asking why does agriculture always get the “back seat” compared to other industries when looking out for worker safety and health issues. Agriculture is an industry and should be viewed accordingly. How would you suggest bringing this to the media’s attention in order that they may make this issue more public than it currently is?

Question for thought: What is the real price agriculture pays “from field to fork”? Would society be outraged if they knew what was really going on?

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Other Course Materials

J. Debate the Issues/Mock Trial

Activity Instructions
The purpose of this assignment is to develop a "student friendly" interactive activity for conducting a mock trial to be used in the classroom.

The objectives are:

- To raise awareness of the critical thinking thought processes involved in developing effective learning strategies for the intended audience (in this case college undergraduate students)
- To raise awareness of trial procedures
- To raise awareness of issues of children in the agricultural workplace.

In groups of 3-4, you are to review the materials you have been provided. Identify items that would be needed to make this more "student friendly." What pieces are missing? What directions, instructions, additional background information, etc. are needed? How would you envision this being implemented effectively, e.g., number of class sessions, amount of work assigned to students to be completed before the trial, or how to bring proper closure to the trial (especially if there are time constraints).

The materials provided include drafts of:

- State vs. Parent Case Scenario
- Trial Procedure
- Plaintiff Attorney Assignment Sheet
- Defense Attorney Assignment Sheet
- Juror Assignment Sheet

The assignment sheets have been numbered as to the priority for your group to look at and discuss. Begin with discussing your #1. If you have time, go on to #2 and then to #3. By seeing all 3, you may have ideas for the "big picture" items that need to be addressed as well.

We will discuss your ideas and recommendations at the latter part of the class. Make complete notes of your group's recommendations. Each group is to hand in recommendations at the end of the class period.

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If you feel that your group would like to carry this out further and spend more time on this, you may do so (it could qualify as a topic for Round 2 of student-led discussions).

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Scenario

Rusty Parent was a three-year-old little boy living in Panhandle City, Florida, in September of 2015. His parents are Dick Parent (a farmer) and Jane Parent (a bank teller). Rusty has an older brother and sister.

On Friday, September 29th, Dick was using a grain auger to move grain from a bin into his pickup truck. Dick left Rusty in the back of the pickup as he went to the tractor to shut off the engine so that they could go for lunch. After he got on the tractor, Dick felt something and looked back. He saw Rusty caught in the auger. Dick shut off the equipment and called for help.

Rusty's arms had been severed at the shoulder by the auger. His tiny arms had gone through the auger with the grain. Emergency workers found his arms in the bed of the truck. Rusty was airlifted to The Medical Center where his arms were reattached. However, due to infection the arms had to amputated four days later. In the future, Rusty can use prostheses.

After the incident, a fund was set up to cover Rusty's medical expenses. Also, other farmers volunteered to harvest the family's crops.

Almost a month later, Rusty still does not remember the event. It was felt that Rusty might have tripped over a piece of plastic holding the grain.

In April of 2016, the State of Florida formally charged Mr. and Mrs. Parent with child abuse. Prosecutors brought charges under §39.01 (45), which is a negligence provision. The trial is scheduled to begin in the summer of 2016.

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Trial Procedure

Opening Arguments

- plaintiff (State)
- defendant (Parent)

Plaintiff Case in Chief

- plaintiff's witness 1

  1. direct examination by the State
  2. cross-examination by the Defense

- plaintiff's witness 2

  1. direct examination by the State
  2. cross-examination by the Defense

Defense Case in Chief

- defendant's witness 1

  1. direct examination by the Defense
  2. cross-examination by the State

- defendant's witness 2

  1. direct examination by the Defense
  2. cross-examination by the State

Closing Arguments

- plaintiff
- defendant

Jury Deliberation

Verdict

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Juror Assignment Sheet

Your assignment is to decide the case based on the evidence presented to you. For your homework assignment, answer the following questions on the factors that may influence a jury.

1. What do you feel are the advantages and/or disadvantages of using a jury for a trial such as this?
2. If you were the plaintiff's attorney, what would you look for in a prospective juror and what questions would you ask?
3. If you were the defendant's attorney, what would you look for in a prospective juror and what questions would you ask?
4. What do you feel a juror would look for in an expert witness?
5. What factors do you feel would influence a juror's decision?

Jury Instructions
The jury has a maximum of 30 minutes to deliberate.

1. Decide on a jury foreman. This person's responsibilities include taking votes, organizing the discussion, and announcing the verdict.
2. Take a vote. If the jury has decided an outcome before any discussion, then there is no need to deliberate and the verdict can be given. Go to #7.
3. Deliberate. This is your chance to get your thoughts out. If there is a tie vote, then discussion may change someone's mind.
4. Take another vote.
5. If necessary, deliberate.
6. If necessary, take another vote.
7. The jury can stop deliberating once it has come to a decision. The decision could be a verdict of guilty or not guilty if made by a unanimous vote. A hung jury could be declared if a unanimous decision cannot be made which would result in a mistrial.
8. Foreman announces the verdict.

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Witness Assignment Sheet

You have been assigned to act as one of the witnesses in this case. At the trial, you will be asked questions based on the witness's deposition you received. For your homework assignment, answer the following questions.

1. Outline the position you will take as a witness. Try to determine what you will be asked and how you will respond.
2. Discuss what you feel would make a good expert witness.
3. Discuss the part you think a non-expert witness might play in a case like this.
4. How might a witness influence the jury or judge?

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Plaintiff's Attorney Assignment Sheet

Your duty is to present the State of Florida's case for trial. Your assignment is to develop an opening and closing argument and to present evidence to the jury through direct or cross examination of witnesses. Direct examination is conducted on the witnesses you call to the stand. You cannot ask these witnesses "leading questions." Cross examination is conducted on the witnesses called by the defense. You can ask these witnesses "leading questions."

You will present your case in the order described on the trial procedure sheet. In planning your case, keep in mind the following time limits: opening arguments/5-7 minutes (what you intend to prove), plaintiff case in chief/30 minutes, and closing arguments/5-7 minutes (show how you proved your case). You will be given some questions that can be used to examine the given witnesses. You will not be limited to these questions however the questions must be based on facts in each witness's deposition. You are also allowed to create your own "surprise" witnesses to build up your case, but it will be your responsibility to develop the questions and answers for that witness.

If the defense comes up with a "surprise witness", then you will be allowed to cross examine her. However, the questions must be related to the information brought up on the direct examination. For any of the defense's witnesses, you will not have to cross examine them. You can just address their statements in your closing arguments.

NOTE: Make sure that you ask your witnesses about their qualifications or experience to inform the jury that they are experts in their respective fields.

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Defendant's Attorney Assignment Sheet

Your duty is to present the defense for Mr. and Mrs. Parent against the charge of child abuse in this trial. Your assignment is to develop an opening and closing argument and to present evidence to the jury through direct or cross examination of witnesses. Direct examination is conducted on the witnesses you call to the stand. You cannot ask these witnesses "leading questions." Cross examination is conducted on the witnesses called by the defense. You can ask these witnesses "leading questions."

You will present your case in the order described on the trial procedure sheet. In planning your case, keep in mind the following time limits: opening arguments/5-7 minutes (what you intend to prove), plaintiff case in chief/30 minutes, and closing arguments/5-7 minutes (show how you proved your case). You will be given some questions that can be used to examine the given witnesses. You will not be limited to these questions however the questions must be based on facts in each witness's deposition. You are also allowed to create your own "surprise" witnesses to build up your case, but it will be your responsibility to develop the questions and answers for that witness.

If the State (plaintiff) comes up with a "surprise witness", then you will be allowed to cross examine her. However, the questions must be related to the information brought up on the direct examination. For any of the State's witnesses, you will not have to cross examine them. You can just address their statements in your closing arguments.

NOTE: Make sure that you ask your witnesses about their qualifications or experience to inform the jury that they are experts in their respective fields.

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Depositions
State's Witnesses 1

Dr. Mary Lloyd (M.D.)

Dr. Lloyd, UF medical school graduate, is a surgeon who has worked on the staff of The Medical Center for 16 years. She has performed surgery on many traumas that involve severed limbs. Dr. Lloyd headed all of Rusty's surgeries.

Dr. Lloyd states that Rusty's arms were severed at the shoulder. His right arm was much more severely damaged – the hand was cut off, a bone in the forearm was broken, and the right elbow was badly dislocated. In addition, both arms were badly crushed and repeatedly cut by the extremely sharp blades of the auger.

Rusty's arms were reattached the same day. Four days later, his right arm and left hand and wrist had to be amputated due to infection. He has had a minimum of 12 surgeries including one to remove skin and muscle from his back to replace tissue that had died on his left forearm during the effort to give him use of one elbow.

Sometime down the road, after Rusty's arms are healed and surgeons have done as much reconstructive surgery as possible, Rusty will be fitted with prostheses. Young children adapt well to such devices, and he is already using his mouth and feet to do things he would have done with his hands.

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Depositions
State's Witness 2

Mr. Bo Radley

Mr. Radley is agricultural extension agent. He has been in this field for seven years. He has written four pamphlets on agricultural safety concerning children and has researched the field.

Mr. Radley states that farm groups estimate that more than 100 children are killed and 33,000 are injured each year in farming accidents in the United States. The National Safety Council ranks agriculture as among the most dangerous jobs in the nation. Tens of thousands of children live and work on the nation's two million farms.

The following accidents have taken place: a nine-year-old boy's arm was severed in a grain elevator while helping a farmer load a corncrib, a 10-year-old boy was killed after he was pulled into a silage chopper box, and a four-year-old girl lost her arm to a corn chopper when she wandered into the family's fields. There was a case involving an 18-year-old, John Thompson, who received the same injuries as Rusty because of an auger. After types of accidents, parents are receiving support in the forms of medical funds and help harvesting. It's like getting rewarded for not putting safety first.

The idea of the government telling the parents where kids can go on their farm is a sensitive issue. However, it bothers me to see these events described as "accidents." They are not accidents. They are predictable and preventable. There are other cases of parents being charged with child abuse. It's time to hold parents responsible for decisions that put children at risk. In Florida, the child abuse law is under §39.01 focusing on the neglect provision (45).

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Depositions
Defense's Witness 1

Professor Kelli Hayes (J.D.)

Professor Hayes is a law school professor at the University of Florida College of Law. She has taught the agricultural law course for five years. She has been called as an expert witness in over 11 agricultural law cases.

Professor Hayes states that the only law against having children out on the farm is §450.021. Rusty's parents own the farm plus he was not working in the field.

Under §39.01 (45), those circumstances should not be considered neglect if caused primarily by financial inability unless actual services for relief have been offered to and rejected by the parent.

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Depositions
Defense's Witness 2

Mr. Dick Parent (farmer and father of Rusty)

Mr. Parent states that Rusty was not working in the field. He took Rusty with him because he had nowhere else to leave him. Mrs. Parent was at work. He left Rusty in the truck while he went to shut off the tractor. They were only there for five minutes before the accident. The worst part was trying to decide what to do. I didn't want to leave him, but I decided to run to the shop and call for help on a portable phone.

This has been a painful time for the family. It's getting better, but there are times when I just keep reliving it. We're lucky he's alive, but I know it was an accident that didn't need to happen.

Rusty has made remarkable strides since he came home from the hospital. He had trouble balancing without arms, but has gotten better over time. One day he will get prosthetics for both arms. He gets frustrated sometimes and has become more demanding. His mother is worried about how other kids will treat him. It was an accident out of his control and she doesn't want people to blame him for it.

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Plaintiff's Questions

Direct of Dr. Lloyd

1. What are your qualifications and/or experience?
2. Please give the date that Rusty was brought to The Medical Center.
3. How did Rusty arrive at The Medical Center?
4. Was Rusty injured?
5. What were his injuries?

Direct of Mr. Radley

1. What are your qualification and/or experience?
2. Can you give any statistics on children injuries in farm related incidents?
3. Have there been any specific incidents similar to Rusty's?
4. What is the law in Florida concerning neglect in child abuse?

Cross of Professor Hayes

1. Didn't Mr. Parent have Rusty in a dangerous environment?
2. Isn't there evidence that Rusty's physical health was impaired?

Cross of Mr. Parent

1. Didn't you say, "it was an accident that didn't need to happen"?
2. Was it really a financial inability?
3. Isn't Rusty having a hard time adjusting to living without arms?

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Defense's Questions

Direct of Professor Hayes

1. Is there a law against children being in the field?
2. Does it apply to Rusty?
3. Does §39.01 (45) apply to Mr. and Mrs. Parent?

Direct of Mr. Parent

1. Do you own your farm?
2. Was Rusty working in the field?
3. Did you have anywhere else to leave Rusty when you went to the field?
4. How is Rusty doing now?
5. What will he be receiving in the future?

Cross of Dr. Lloyd

1. Didn't you say, "young children adapt well to prostheses"?

Cross of Mr. Radley

1. Wasn't John Thompson 18 years old when he was injured?
2. What age is old enough to be in the field?

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Other Course Materials

K. JEOPARDY! A Game Show for Agricultural Safety Classes

Purpose
The purpose of the Safety Jeopardy Game is to serve as a safety "refresher and review" of items that specific audiences need to know to work safely. If the answers are not readily apparent to the audience, this provides an opportunity for discussion. On the following pages, you will find a series of agricultural safety categories. For each category, there are two sets of questions. You can use them for "single" Jeopardy and Double Jeopardy, or two rounds of "single" Jeopardy.

On the Internet, there are many templates and instructions for creating your own Jeopardy game using PowerPoint or on paper. Creating the game or additional categories and answers can all be good student projects, but this approach can be useful with many audiences.

And it always adds to the fun to provide some prizes, maybe something silly or something delicious! Small prizes, like candy, can be given to everyone that responds correctly. Larger prizes – perhaps from local sponsors – can be given to winning individuals or teams.

Rules
The rules for Safety Jeopardy differ from those of the television game show.

1. Begin play by asking someone to volunteer to select a category and a dollar amount.
2. Participants raise hands if they know the answer. An assistant can identify which hand was raised first.
3. When a person answers correctly, he or she will be given a small prize (such as a piece of candy). They will also be given the dollar amount sheet from the board (which leaves a blank space on the board).
4. The person who gave the correct response chooses the next category and dollar amount. However, the entire audience may respond to the question, and as before, the person whose hand was raised first may respond to the question.
5. At the end of the allotted program time, the person with the highest total dollar amount may go to the prize table first and select a prize, and so on, in descending order according to total dollar amount won. Be sure to collect all dollar amount sheets.

Note: The questions that are provided can be used as guides. Feel free to get creative and add questions that relate to specific workplace rules for workers that are participating. The intent is also to incorporate some discussion with the answers if more explanation is needed.

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Safety Jeopardy Category: **HEAD OVER WHEELS** **(Tractor Overturn)**

Set 1

$100: What will protect the life of the operator in the event of an overturn?
[ROPS and seatbelt]

$200: Hitching a load above the drawbar can result in _____?
[A rear overturn]

$300: A rear overturn can occur in what amount of time?
[1.5 seconds]

$400: Who has the final responsibility for the safety of the tractor operator?
[The operator him/herself]

$500: The only time that the operator is not to use a seatbelt on a tractor?
[If the tractor does not have a ROPS]

Set 2

$200: What does ROPS stand for?
[Rollover Protective Structure]

$400: What is the leading cause of work-related death in agriculture?
[Tractor overturn]

$600: If a ROPS and seatbelt are not used, which type of overturn is almost always fatal?
[85% of rear overturns are fatal without ROPS and s/b]

$800: If the right front wheel of the tractor enters the ditch, what will likely happen if the operator tries to turn it back onto the roadway?
[Side overturn]

$1000: To prevent an overturn into a canal or ditch, the minimum distance the tractor should be from the edge is?
[As far from the edge as the ditch is deep; example if 8 feet deep, then a minimum of 8 ft from the edge]

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Safety Jeopardy Category: **ONE LUMP OR TWO** **(General PPE)**

Set 1

$100: What is PPE?
[Personal Protective Equipment]

$200: What is used to protect your head when working in areas where items can fall or where you could possibly bump your head on something hard?
[Hardhat or bump hat]

$300: What is to be used when you are working in noisy areas?
[Hearing protection]

$400: When working with pesticides, what tells you exactly what PPE must be used?
[The label or MSDS – Material Safety Data Sheet]

$500: What protective clothing should you use when using a chain saw?
[Chaps]

Set 2

$200: What type of clothing should not be worn when working with tractors or other equipment?
[Loose fitting or torn]

$400: What should not be worn on your hand when working with equipment?
[Rings]

$600: What should be worn when doing tasks such as grinding, sawing, or hammering?
[Eye protection – goggles or protective eyewear]

$800: What type of respirator may be necessary to use in a confined space atmosphere?
[Oxygen producing]

$1000: People with long hair should wear it in _____ when working with machinery?
[A cap]

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Safety Jeopardy Category: **POULTRY SEASONING** **(Hazards in the Poultry Industry)**

Set 1

$100: What can happen if a person is working in a grain silo while grain is moving? [Can be buried in the grain]

$200: An effective safety team includes members of management and supervisors, as well as representatives of _____? [The laborers/work force]

$300: Safety teams, safety training, keeping equipment maintained, providing proper personal safety equipment are all examples of things done that will lead to lower _____ costs? [Worker's comp insurance premiums]

$400: Exposures to gases, organic dusts, airborne microorganisms and toxins pose what type of hazard to workers? [Respiratory]

$500: A worker is more likely to be injured if, while lifting, the task also requires what type of motion? [Twisting]

Set 2

$200: If possible, facility layout should be designed in order to keep what type of maneuver by semis, tractors, and other equipment to a minimum? [Backing-up]

$400: Electrical systems need to be properly maintained in order to prevent what potential hazard? [Dust explosion]

$600: Identify one of the three tasks that have the highest potential for worker injury? [Collecting eggs on floor level; manual cleaning of the interior of the facility; and collecting the birds and transportation of cages]

$800: The procedure that needs to be used when a worker is repairing an item of machinery is? [Lock-out/tag-out]

$1000: Identify one of the five leading occupational hazards in the poultry industry? [(1) Overexertion of body part; (2) struck by falling or flying objects; (3) back injuries from lifting and carrying; (4) crushing injuries from doors or objects such as moving equipment; (5) slipping and falling caused by slippery surfaces or tripping over objects in the alleys or falling from a higher level]

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Safety Jeopardy Category: **SMOKE GETS IN YOUR EYES** **(Fire Safety)**

Set 1

$100: What item should be in the home to alert people of a fire?
[Smoke detector with a working battery!]

$200: If a home has any heat source that uses combustible fuels (wood, gas, etc.), what item should be installed to worn of the "silent killer"? [Carbon monoxide detector]

$300: Putting a lid on a pan that is on fire from cooking puts out the fire by removing which leg of the fire triangle? [Oxygen]

$400: An example of the principle, "the more finely divided a substance is, the more rapidly it absorbs heat" is? [Dust explosion, e.g., grain dust]

$500: What needs to be considered when fire departments are called to fires in rural areas?
[Water source]

Set 2

$200: Identify two of the three things necessary for a fire? [Oxygen, heat source, and fuel]

$400: Vapors of a fuel (e.g., LPG, gasoline) that are heavier than air will be found where?
[Along the ground or lowest level]

$600: Why is it important to know the lowest temperature at which a flammable liquid will give off vapors? [It is the lowest temperature at which it can ignite]

$800: What is recommended to do when changing the clocks in the spring and the fall?
[Check and/or change the battery in your smoke detector]

$1000: The proper procedure for using a fire extinguisher is known as PASS. Which is?
[Pull the pin;
Aim the "nozzle" at the base of the fire;
Squeeze the trigger;
Sweep the area of the fire]

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Safety Jeopardy Category: **GOTTA GO JOE!** **(Shortcuts Don't Save Time)**

Set 1

$100: Every time a person takes a shortcut (rather than the recommended safer way of doing a task), they run the risk of _____. [Injury or death]

$200: Shortcuts when working with machinery are especially dangerous due to _____.
[The power and speed of the machines…a person can become entangled in a split second]

$300: What shortcut procedure should be avoided when getting off a tractor?
[Use the steps, don't jump down]

$400: A common shortcut is to step over the operating PTO rather than walking around the tractor to get to the other side. If this is 3 seconds faster than walking around the tractor, how much time is supposedly saved for 100 repetitions? [5 minutes]

$500: What should never be used to check for leaks in hydraulic or other high-pressure lines?
[Your hands]

Set 2

$200: A tractor operator should never step over this instead of walking around the tractor?
[Operating PTO]

$400: These must often be taken off for maintenance but need to be replaced before using the equipment. [Shields/guards]

$600: Before working on equipment what needs to be done?
[Turn it off; also may have to lock-out/tag-out if required]

$800: What short cut is often taken when people are mowing?
[Leave the mower/tractor running when picking up debris]

$1000: What can happen if a person takes the shortcut of not blocking hydraulic equipment that they are working under? [It can drop and crush the person]

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Safety Jeopardy Category: **HEAD OVER WHEELS** **(Tractor Overturn)**

GOT JUICE?
(Electrical Safety)

Set 1

$100: When working in any area, one needs to know the location of _____.
[Overhead power lines]

$200: Lights and switches used in dusty environments must be _____.
[Explosion proof]

$300: Circuit breakers must be _____. [Clearly labeled]

$400: What type of outlet/switch must be used in wet areas?
[GFI/Ground Fault Interrupter circuit]

$500: What should be done for each building and then kept with the facility records?
[Schematic wiring diagram]

Set 2

$200: Why do you have to call the utility company before any digging deeper than 18" is done? [Location of underground power lines and other utilities]

$400: Wood (such as a tree) cannot conduct electricity? [False]

$600: If you have to flee the scene of a downed power line, you have to keep your feet _____. [Together and jump from place to place]

$800: The danger posed when working with irrigation pipes is _____?
[Contact with overhead power lines]

$1000: What procedure needs to be used when working with repair and maintenance on electrical equipment? [Lock-out/tag-out]

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Safety Jeopardy Category: **ONE GOOD TURN DESERVES ANOTHER** **(Defensive Driving)**

Set 1

$100: Assume _____ when driving. [Nothing]

$200: The minimum distance between your vehicle and the vehicle in front of you is the distance you travel in _____. [2 seconds]

$300: What do you need to do before backing up?
[Check the area before getting in the vehicle, check mirrors and windows before backing]

$400: If possible park in such a way that eliminates what driving procedure?
[Backing up]

$500: Operation Lifesaver is a program that emphasizes safety between autos and _____. [Trains and RR crossings]

Set 2

$200: What should be used when you are going to turn? [The correct turn signal]

$400: What should be turned off after a turn has been completed? [The turn signal]

$600: Over ½ of collisions are incurred as a result of 3 common situations. Identify one.
[Intersections, following too closely, or backing]

$800: What do you need to check before changing lanes?
[Blind spot to make sure there isn't a vehicle alongside of you]

$1000: What can sometimes be used as a cue to anticipate if a light is going to change?
[Walk signal – if walk, still green; if flashing don't walk, will change soon; if solid don't walk – is ready to change]

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Safety Jeopardy Category: **TOO HOT TO HANDLE** **(Heat Stress & Sun Safety)**

Set 1

$100: Building up more heat than the body can handle is known as_____.
[Heat stress]

$200: Drink lots of _____ throughout the day. [Water]

$300: Identify one symptom of heat stress.
[Exhaustion, muscle weakness, headache, nausea, chills, dizzy or fainting, loss of coordination, severe thirst and dry mouth, confusion, including slurred speech, aggressive or irrational behavior]

$400: What weather condition kills more people in the US than hurricanes or tornadoes?
[Lightning]

$500: If you are in a greenhouse and it is struck by lightning or starts to burn, why should you immediately get out and seek other shelter? [The plastic used in many greenhouse structures is highly toxic when it burns]

Set 2

$200: The sun's rays are the strongest between _____ and _____.
[10 am – 3 pm]

$400: The parts of the body most susceptible to skin cancers are:
[Head, face, lips, and tips of ears]

$600: Look for changes in what 3 things of moles to screen for skin cancer?
[Size, color, shape]

$800: Sunscreen should have a SPF of 15 or higher. What is SPF?
[Sun Protection Factor]

$1000: 10% of people struck by lightning in the US were in what state when they were struck?
[Florida]

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Safety Jeopardy Category: **POTPOURRI** **(Miscellany)**

Set 1

$100: When working with chemicals, the _____ is the law. [Label]

$200: A bumper jack can safely be used to support a vehicle while someone is working under the vehicle? [False]

$300: What does the orange triangle seen on farm equipment mean?
[SMV – slow moving vehicle traveling 25 mph or less]

$400: Animals acting "strange" may be suffering from _____, which if transmitted to humans is fatal if not treated. [Rabies]

$500: Engineers can design safer equipment. However, machines cannot be totally guarded because _____.
[They need to perform the function for which they were designed]

Set 2

$200: The leading cause of injuries in the home is due to_____? [Slips, trips, and falls]

$400: Metal ladders should not be used near _____. [Overhead power lines]

$600: The top _____ steps of a ladder should not be used. [2]

$800: Talking on your cell phone when _____ can lead to an explosion.
[Pumping gas]

$1000: Activated cell phones that are no longer used, can be used to dial _____, provided the battery is charged. [911]

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Safety Jeopardy Category: **TWIST AND SHOUT** **(Strains, sprains, bending, lifting)**

Set 1

$100: A cause of serious back injuries is _____. [Improper lifting]

$200: Identify one of the 4 leading examples of improper lifting.
[Bending from the waist to pick up an object; lifting an object higher than chest high; twisting your body while you are lifting or carrying a heavy object; lifting when you are in poor physical shape]

$300: Lift with your _____, not with your back. [Legs]

$400: If an object is such that you cannot lift it alone, you need to_____.
[Ask for help]

$500: Each pound of weight you lift puts close to _____ pounds of pressure on your lower back. [7.5]

Set 2

$200: One possible option to make a load lighter for lifting may be to _____.
[Split the load into smaller loads]

$400: What types of injuries are the major cost in the workplace?
[Strains, sprains, and back]

$600: A cause of sprains and strains is that we tend to not _____.
[Warm up first, as do athletes]

$800: Work _____ and/or _____ that require workers to stand, stoop, reach, or twist improperly promote sprains and strains. [Stations or practices]

$1000: Your actions can cause your injuries, _____ can prevent them. [Your actions]

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Safety Jeopardy Category: **ALL DRESSED UP AND NO PLACE TO GO!** **(Confined Spaces)**

Set 1

$100: A confined space is an area large enough for a person to occupy, is designed for only short term work, and is _____. [Difficult to enter and exit]

$200: One example of a confined space is_____.

[Silos, grain bins, manure pits, storage vessels, wells, deep trenches, chemical tanks, cold storage rooms, hopper rail cars, tank trucks]

$300: Only people who are _____ should be allowed to enter a confined space. [Properly trained]

$400: One example of a physical hazard in a confined space is_____. [Falling objects, loose material that can break away and cover the person, wet surfaces, sloping sides]

$500: Gases such as carbon dioxide are not toxic, however, they can be fatal to a person entering a confined space since it displaces the _____. [Oxygen]

Set 2

$200: When working in or around a confined space, do not work _____. [Alone]

$400: Workers who have this psychological condition should not work in confined spaces. [Claustrophobia]

$600: If you find someone is in trouble in a confined space, what should you do? [Do not enter, find someone who is trained to enter and has the proper PPE]

$800: Cold storage rooms often have had _____ pumped out of them in order to help preserve the foods. [Oxygen]

$1000: A worker has entered a deep trench to check on a gas engine powered pump that has quit operating. The worker is later found in the trench dead. What was the cause? [The gas engine needs fuel, spark, and oxygen to operate. During combustion in the confined space, carbon monoxide was given off and displaced the oxygen in the area, thus the engine shut down due to lack of oxygen]