

LECCIÓN LESSON 5

Trabajando seguro con los químicos, espacios cerrados y los silos

Working Safely around Chemicals, Confined Spaces and Silos

Seguridad en las lecherías

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SUMMARY OF INSTRUCTIONS

Lesson Objectives

This lesson will help participants to:

1. **Recognize chemical hazards common on a dairy farm**
2. **Identify risks from silos and confined spaces**
3. **Describe basic safety practices when working with and around chemicals, confined spaces and silos**

Materials

The following are the materials and things you will need during this session:

- » **The Power Point Presentation and/or the Flipchart with the slides of the presentation.**
- » **Flip chart**
- » **Product Label: Iodine**
- » **Product Label: Copper sulfate (or footbath chemical)**
- » **Product Label: Sulfuric acid (or detergent chemical)**
- » **Copies of 2-3 SDSs of chemicals at the farm**
- » **Products: PPE - eye protection, rubber gloves, coverall**

Time

This lesson will take approximately 1 hour.

BACKGROUND INFORMATION

Why is it important to understand the risks from chemicals on the farm?

There are millions of chemicals in the world. Chemicals are all around us and can help us in many ways. On the farm, chemicals are commonly used to grow crops, clean equipment and buildings and prevent the spread of disease in animals.

Misuse, overuse, and unsafe practices when handling chemicals may harm or kill people and animals. It can also cause damage to the farm.

The law requires employers to train workers about the chemicals they use, how to protect themselves from overexposure to chemicals, and how to prevent injury or illness due to chemicals in the workplace.

What are chemicals?

Chemicals are made by a single ingredient or a mixture of ingredients. Chemicals can be a *liquid* (including ointments and mists), a *solid* (including powders, sand or granules), or a *gas* (including smoke, vapor, and fumes). Chemicals can be natural like air and water, or manmade like detergents and pesticides.

The Hazard Communication Standard 29 CFR 1910.1200 (also called the “HazCom” or the “Right to Know” standard) is a law stating that workers have the “right to know” about chemical hazards in their workplace.

Chemicals can be a physical hazard and a health hazard.

- a. *Physical hazard* -- Cause fires, explosions, or be corrosive.
- b. *Health hazard* – Cause injuries, illnesses and death. Harm can take place immediately or may appear over a longer period of time.

What kinds of chemicals are used on dairy farms?

Chemicals purchased for use on the farm

Some chemicals are purchased and brought to the farm to help with production. Medicines are chemicals used on the farm to prevent animal diseases. Disinfectants are chemicals that are used to disinfect and clean certain areas of the farm and equipment. Fuel and oil are chemicals used to power or lubricate machinery and equipment.

Iodine and hydrogen peroxide are common chemicals applied to the cow’s udder and teats to get rid of bacteria, manure and dirt, and to prevent mastitis. Phosphoric or sulfuric acids, and bleaching powder are examples of detergents used to clean the milking units, tanks, utensils, and the parlor area in general.

Copper sulfate, zinc sulfate and formaldehyde are examples of chemicals used for footbaths to prevent or treat cattle foot diseases. Feed additives are chemicals used to increase nutritional value or to prevent mold and spoiling of feed. Fertilizers are chemicals used to promote crop growth. Pesticides are used to control and get rid of flies, ticks, and rodents and unwanted weeds and crops.

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Some chemicals are used for maintenance, such as to handle and treat animal waste, sludge, and wastewater in the lagoon or for general maintenance such as hydrating lime often applied to free stalls.

What other kinds of chemicals are on dairy farms?

Confined spaces and chemicals

Some chemicals are produced as part of the normal processes on the farm. Silos, grain bins, manure pits, waste lagoons, and deep trenches are examples of confined or closed spaces that can produce hazardous gases.

Confined spaces have limited openings for entry or exit and are large enough for entering and working. They are not designed for workers to be there regularly. Confined spaces are dangerous and may produce hazardous gases. Sometimes confined spaces can create an atmosphere with too little oxygen, which we need to breathe.

Common gases found in confined spaces can include:

- » **nitrogen oxides: produced in freshly stored grain, can suffocate and damage lungs**
- » **methane: produced by fermenting animal waste, is flammable and can be explosive**
- » **ammonia: a product of animal urine, is very irritating**
- » **hydrogen sulfide: produced by fermenting animal waste can be deadly**
- » **carbon monoxide: produced by running fuel-powered motors, can be deadly in high concentrations**

Some gases are easily noticed such as ammonia, which most of us recognize, and hydrogen sulfide, which smells like rotten eggs. Other gases are odorless, such as methane and carbon monoxide.

Gases from manure lagoons and silos can cause headaches, runny nose, sore throat, excessive coughing, diarrhea, burning eyes, vomiting, chest tightness, suffocation, sudden loss of muscle control, asthma, immediate loss of consciousness, coma, seizures and death. These gases can be highly concentrated in closed spaces particularly after agitating and during manure removal.

Confined spaces must be clearly labeled and farms should have a confined space rescue plan. Workers must be adequately trained and knowledgeable about the confined spaces before entering. It is important to make sure the air is monitored and PPE or high volume ventilation with fresh air is used if workers must enter the confined spaces. Previous entries into the area in which no one was harmed should not be an indicator that it is safe to enter in the future. Always be sure you have a trained person stand nearby if workers must enter the confined space.

Chemicals are also released when operating machinery or in the machine shop or shed room where machines, equipment, and batteries can leak hazardous liquids and gases. Drivers can be poisoned with carbon monoxide when operating equipment or leaving engines running in closed environments. Also, hazardous gases and particles are produced when cutting, drilling, grinding or sanding materials.

What are the risks when working near or on horizontal silos?

Horizontal silos are also common on dairy farms. While they are not a confined space, they pose a risk to workers. There are several types of horizontal silos:

- » **Bunker silos – built above ground level with construction-grade materials for sides**
- » **Trench silos – cut into the earth with only the earth serving as sides**
- » **Pile silos – forage is dumped on the ground with no structural walls**

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Workers can fall from horizontal silos. They can also be crushed or even buried when working near or on horizontal silos. The forage can fall on the workers, and sometimes horizontal silos can collapse from within.

To protect themselves from getting injured, workers should:

- » **Never work near or on the bunker alone**
- » **Use proper unloading techniques and proper equipment such as a facer**
- » **Take samples from the bucket of the front end loader after the front end loader has been moved safe distance from the silos;**
- » **Only pile silage as high as the equipment can reach; and**
- » **Avoid leaving silage overhang on the front end.**

How can workers be harmed by chemicals?

Many chemicals on the farm can harm workers if not used correctly or if safety precautions are not taken. Effects of chemical exposure can be minor such as skin, eye, nose and lung irritation and inflammation. Other effects can be more severe and include burns, breathing problems, nausea, diarrhea, vomiting, seizures and even death. Exposure to some chemicals can cause health problems long term, such as cancer and reproductive and nervous system problems.

The severity of the harm varies. It depends on factors such as:

a. The dose or amount and the length of time or duration of being in contact with a chemical

The body is capable of getting rid of a chemical within certain periods over time. Larger amounts of a chemical entering the body in short periods of time exhaust the body's capability of getting rid of it. Repetitive exposures to a chemical during long periods of time also exhaust the body's ability to get rid of the chemical.

b. The way the chemical enters to the body

Chemicals enter the body by being breathed in through the nose and mouth, swallowed directly through the mouth, via drinks or food that contain the chemicals, or absorbed through the skin and eyes.

c. The type of a chemical

Some chemicals are more hazardous than others. A small amount of a very hazardous chemical can cause severe harm or even kill people.

d. Personal characteristics

Gender, age, nutrition, and pre-existing health conditions can impact how chemicals affect the body.

What are the other reasons workers can be harmed by chemicals?

The chances of being harmed by chemicals increase for other reasons, such as worker's beliefs, practices, and the lack of safety policies and procedures on the farm. Workers are at increased risk of being harmed if they:

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- a. Are unaware of or have not been trained about the risks of chemicals
- b. Ignore, don't understand, or do not check the information about the risks
- c. Have not been provided with the proper personal protective equipment (PPE)
- d. Do not use personal protective equipment (PPE) because it is uncomfortable or they do not believe it will protect them
- e. Are tired, distracted, or rushing when working with or around chemicals
- f. Think that a little bit of poison won't hurt them

Immigrant Hispanic workers may face increased risk because of practices common in their country of origin, problems understanding the language, and perception that risks must be tolerated in order to keep the job.

How can workers protect themselves?

Workers can reduce risks by learning about the hazards, attending trainings, and wearing appropriate PPE to reduce the risks of chemicals.

Toxic means that a chemical has the ability to harm people and animals.

Learning

Workers can learn about the risks of chemicals through the *label* on the product, the *Safety Data Sheet (SDS)*, and by attending trainings.

The Label. Information about the chemical is on the label that is printed on or attached to the container or to the outside packaging of the product. The label has six main parts:

1. *Product Identifier* tells the name of the main chemical or chemicals that make up this product.
2. *Signal Word* is used to emphasize the hazard.
 - » "Danger" is for severe hazards.
 - » "Warning" is for the less severe hazards.
3. *Hazard Statements* are standard phrases that describe the nature of the hazard, for example "flammable" or "corrosive."
4. *Hazard Pictogram* is a symbol that says what type of hazard it is such as a flame for flammability or a skull-and-crossbones for toxic.
5. *Precautionary Statement* tells what to do to prevent exposure such as "wear gloves," what to do in case of an accidental spill or exposure and how to store and dispose of the chemical safely.
6. *Chemical Manufacturer Information* tells the name of the company that made the chemical and how to contact the company.

The Safety Data Sheet (SDS). The SDS (previously called Material Safety Data Sheet-MSDS) is the written or printed material with information about the hazards of the chemical. The SDS for each of the chemicals used on the farm must be accessible to all employees.

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The SDS includes more detailed information than the label. The SDS is comprised of 16 parts. The SDS includes information such as first aid measures, fire-fighting measures, accidental release measures, and information about handling, storing, exposure controls, and personal protection. The SDS also includes the physical and chemical properties and the toxicological information of the chemical such as the toxic immediate or long-term health effects, symptoms, and if it is carcinogenic.

Attend Trainings

Employers should develop a hazard communication program. As part of that program, employers must organize trainings for workers explaining the risks and the SDS information of the chemicals utilized on the farm. Employers also should inform workers about the policies and rules and ensure workers follow safety practices, wear PPE, and know what to do and who to contact in case of an emergency.

Trainings should be done with simple language, graphics and drawings, and be conducted in the preferred language of the workers. New employees should be trained before handling chemicals.

Follow Procedures for Emergencies

The training and farm policies indicate what to do and who to contact in case of an emergency. Usually it is recommended to:

- » **Call 911 if a person is unconscious, has breathing difficulties, has convulsions, or is trapped.**
- » **The caller should try to have the following information ready:**
 - » **name of the chemical (if you can get it)**
 - » **address where the victim is located**
 - » **condition of the victim (conscious, unconscious, breathing, not breathing, etc)**
- » **Follow first aid directions on the SDS.**
- » **In case of a fire, get help, isolate the area, shut down equipment, evacuate animals if possible, and do not re-enter the place once evacuated.**
- » **Report any injuries or over exposure to the supervisor as soon as possible.**
- » **Call the Poison Control Center 1-800-222-1222 for first aid information.**
- » **Call the National Pesticide Information Center 1-800-858 -7378 for information about pesticides.**

Use Personal Protective Equipment (PPE)

Workers are responsible for wearing PPE when handling chemicals or working near areas where chemicals might be present, taking care of and maintaining PPE, and adhering to the hazardous communication program established at the farm. Workers should check if PPE is in good shape before wearing it and inform the employer if there is a need to repair or replace it.

PPE commonly used to protect workers from chemicals on the farm includes rubber or nitrile gloves, eye protection, and respirators. Additionally, workers should wear long sleeve shirts, pants, and hair protection to protect from being splashed by chemicals used in the parlor and for footbaths and when mixing or applying pesticides. Coveralls or aprons may help protect clothes and reduce skin contact.

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When the chemical label or SDS require PPE to be used with a chemical, the employer must provide workers with that PPE at no cost to the worker.

Protect your skin:

Neoprene or latex or vinyl gloves are best to protect from skin injuries with detergents, sanitizers, and disinfectants.

Protect your eyes:

Wear durable and comfortable eye protectors to prevent eye injuries and absorption of chemicals from splashes and dusts. Clean them often.

Protect your lungs:

Make sure you wear the required PPE for working with certain chemicals and when entering closed or confined spaces.

What can employers do to minimize worker exposure to chemicals?

Employers are responsible for minimizing worker exposure to hazardous chemicals by:

- » identifying the hazardous areas such as confined spaces and making sure they are clearly marked
- » training workers in language they understand about the chemicals on the farm and how to protect themselves
- » providing PPE listed on the SDS to workers at no cost
- » making sure workers know where the SDSs are located and that they can access them
- » developing a hazard communication program and confined space rescue plan for the farm

You can do it!

Workers and farmers must have and follow a program to communicate chemical hazards and how to handle chemicals safely to avoid accidents, injuries, illnesses, deaths, and economic losses. The basic steps to prevent harm and avoid incidents with chemicals are to:

Learn:

- ◇ The policies and procedures regarding chemicals on the farm
- ◇ The risks of handling or working near chemicals
- ◇ Ways to protect yourself from being exposed to chemicals
- ◇ What to do and who to call in case of emergencies
- ◇ Attend trainings

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Wear:

- ◇ PPE to prevent exposure to chemicals, and keep PPE clean and in good condition
- ◇ Appropriate clothing and boots

Practice safety at all times:

- ◇ Stop, look, and think about safety before doing
- ◇ Report any hazard or injury to your supervisor

Faciliator Guide and Presentation

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Working Safely around Chemicals, Confined Spaces and Silos

Safety in Dairy



1

Welcome participants and say:

Welcome, everybody. On the farm, we work with chemicals and around silos and closed or confined spaces all the time. However, these hazards can hurt workers, make them sick and even kill them. Chemicals can also do a lot of damage to the farm. Today, you will learn how to work safely around these hazards.

Conduct a quick activity to create a comfortable learning environment.

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We will Learn:

- Hazards of chemicals, confined spaces, and silos on a dairy farm.
- Basic safety practices when working around...
 - chemicals
 - confined spaces
 - silos



2

Say:

Today, we are going to learn:

- Common hazards from chemicals, confined or closed spaces and silos
- Basic safety practices when working with and around chemicals, confined spaces and silos

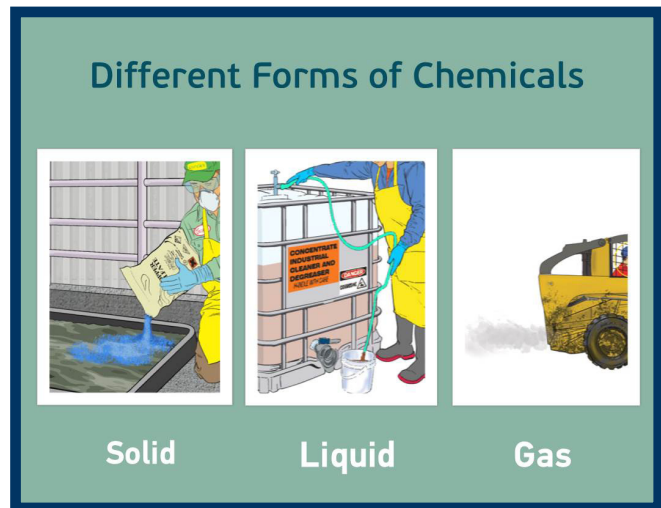
Ask and listen for responses:

What do you think of when you hear the word chemical?

Explain:

In order for us to keep ourselves safe around chemicals, let's talk about what chemicals are and how they can be hazardous.

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Say:

Chemicals can be natural such as water and air, or manmade such as soap, hand cream and chlorine, for example. Chemicals can be helpful but all chemicals can be dangerous. It depends on how they are used and the amount.

Chemicals are made by a single ingredient or a mixture of various ingredients.

Chemicals can be in the form of solid, liquid or gas. Solids can be different types like powders or pellets. And gas can be different types like fumes, smoke or vapor.

Ask and listen for responses:

Why should we worry about chemicals? What can happen if chemicals are not used and stored safely?

What can happen to you if you get exposed?

[Look for answers such as: being poisoned, makes people sick, kills people, causes explosions, catches fire, hurts the environment, etc.]

Say:

Exactly. You pointed out that there are two types of hazards.

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4

Say:

Chemicals can be a physical hazard. For example, chemicals can cause fire or explosions, or be corrosive.



5

Say:

Chemicals can be a health hazard. For example, chemicals can injure people and cause health problems.

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Do you know of someone who has been harmed or made sick by using chemicals at work?

6

Ask and write responses on the flip chart.

Do you know anyone who has been harmed or made sick by using chemicals at work? What happened? Why do you think the worker was harmed?

[Look for answers such as: Didn't know about the risk, didn't know how to use the chemical, wasn't wearing protection, the worker was new, was rushing, didn't have training, didn't want to wear PPE, thought a little bit of the chemical wouldn't cause any harm.]

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Say:

Each day, thousands of workers are exposed to chemicals at work. All chemicals under certain circumstances can be toxic. Toxic means that a chemical has the ability to cause injury, illness or death.

Say:

We cannot be harmed by chemicals unless we are exposed to them or come in contact with them. There are many factors that can influence whether or not we get sick or hurt, and we will talk about that in a minute. But first, let's discuss the different types of health effects.

Ask:

Can anyone give us some examples of immediate or short-term health effects of being in contact with a chemical?

[Look for answers like burns, breathing problems, diarrhea, vomiting]

Say:

Also, being in contact with a chemical can cause health effects that can appear many months or years after the exposure. This can happen after being exposed over and over again during a long period of time. Can anyone give us some examples of health effects that can occur many years later?

[Look for answers like cancer, reproductive problems or nervous system problems].

In summary, being exposed to chemicals can cause health effects that can be seen in the short term and also in the long term.

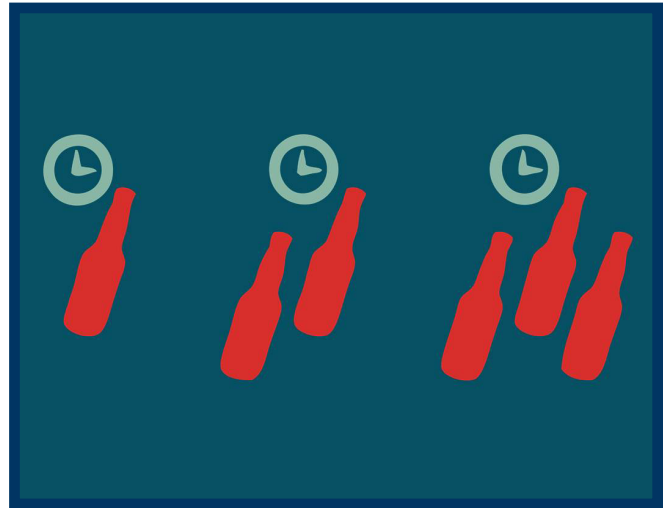
Say:

How sick you get from being exposed to chemicals depends on some things.

The first thing that influences how harmful the chemical is, is the amount of the chemical or the dose. The second thing is the length of time the person is in contact with that chemical.

The body has the ability to get rid of chemicals. However, greater amounts entering the body in a short period of time affect the body's ability to get rid of them.

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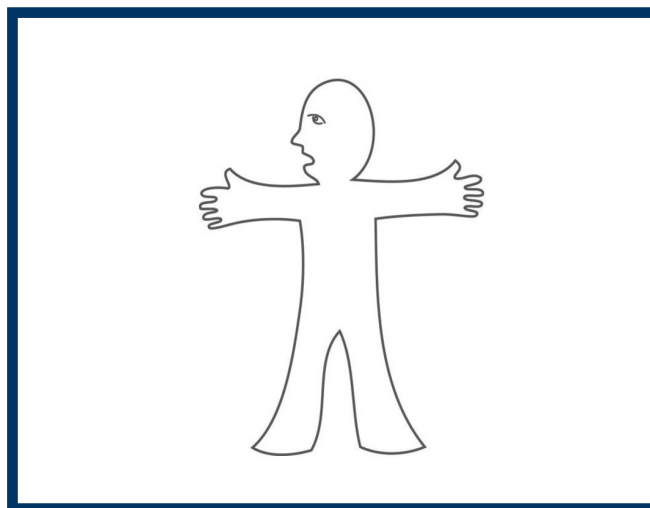
Ask:

Let's think about beer. What happens when you slowly drink one beer over the course of one hour? What happens if you drink three beers in one hour? What happens if you drink six beers in an hour?

Say:

The effect of the beer will differ depending on the amount you drink. But time makes a difference too. Drinking three beers in 15 minutes is going to affect you differently than if you drink three beers in three hours. Drinking a lot of beer in a short period of time means your body can't get rid of the chemical as needed.

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9

Say:

In addition to the amount of the chemical or how much time one is exposed, how the chemical enters the body also affects how toxic it will be. Let's think about how chemicals get into our bodies.

Distribute a handout of the body (as shown in slide 9) and markers to each group.

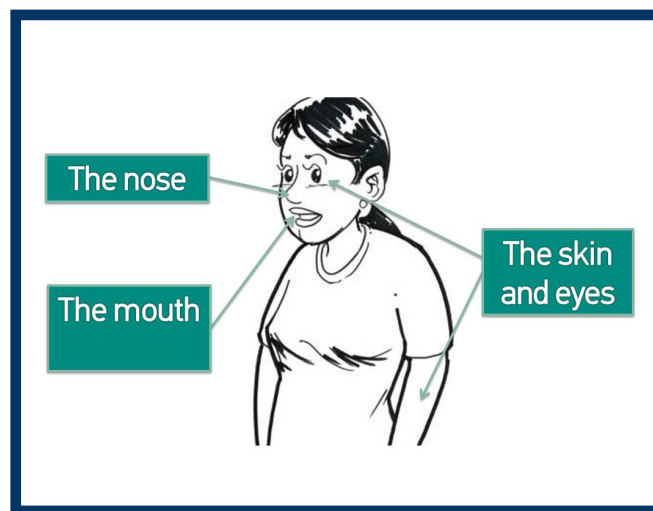
Say:

Please work in pairs or small groups. Now, mark the parts of the body where you think chemicals enter. Mark all the areas where chemicals enter the body. You have one minute to make your drawings.

Say:

Let's have representatives from each team show us their drawing and tell us where chemicals enter the body.

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Say:

The way chemicals enter the body is an important factor that determines how much harm they can cause. Chemicals enter your body by swallowing them, by passing through your skin and through your eyes and by breathing them in through your mouth and nose.

For example, it is more harmful if a spoon of chlorine is swallowed rather than if splashed onto your skin. Absorbing chemicals through the skin including eyes is the most common way workers on the farm are exposed to chemicals. Sometimes, you cannot see or even feel that a chemical is entering your body through your skin. For certain types of chemicals, your skin is like a big sponge.

Say:

I need two volunteers to put some hand cream on their skin. Who is willing to volunteer?

Give each volunteer a drop of hand cream on their hand and say:

Rub the hand cream on your hands.

Ask:

Where did your hand cream go after a few minutes of being applied? Did it just disappear? Was it absorbed through the skin?

Say:

Indeed, the hand cream was absorbed through your skin. That's how the chemicals enter the body through the skin.

Ask:

What other things could influence how much chemicals can harm you?

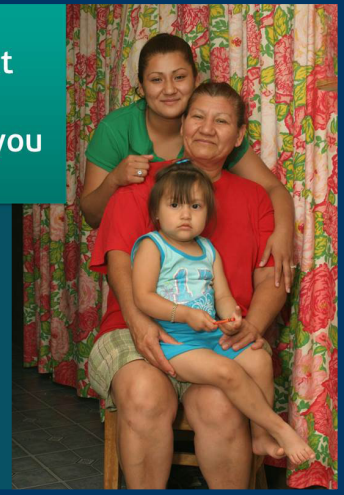
Say:

Another factor is the type of chemical. Some chemicals are more toxic than others. For example, water does not have the same toxicity as chlorine.

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Other factors that impact how chemicals harm you

- Type of chemical
- Gender
- Age
- Health condition



11

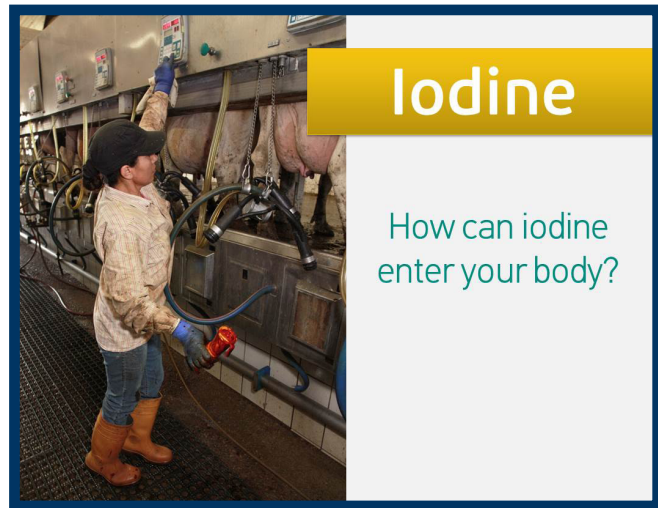
Say:

There are also more factors that affect how much harm a chemical can cause such as the person's gender, age and health condition. Children, older or sick people are more likely to be harmed than healthier adults.

Ask:

Let's brainstorm. What chemicals do you use on the farm?

[Look for answers such as pre-dip, post-dip, teat dips, iodine, detergents, cleaning chemicals, bleach disinfectants, medicines.]



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Ask:

Let's talk about iodine, a common chemical used to clean teats. Tell me how iodine can enter your body.

[Look for answers such as: hands, arms, face, eyes, neck and head, and indirect contact through contaminated clothes, gloves and hats.]

Ask:

What happens if iodine gets on your skin or in your eyes? What are the health effects?

Say:

Some of the injuries include skin irritation, swelling, itchiness, blisters and damage to the eye. Over the long term, iodine exposure can cause thyroid, liver and kidney problems.

Ask:

How can you protect yourself from iodine getting on your skin or into your eyes?



Personal
Protective
Equipment
for Iodine

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Say:

The personal protective equipment that can help workers avoid contact with iodine are rubber gloves and eye protection. Wearing long sleeves can also protect workers.

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14

Say:

Let's talk about the chemicals you use to disinfect and clean the parlor and milking units.

Ask:

How can detergents and disinfectants enter your body?

Say:

Workers are exposed to detergents and disinfectants when mixing, preparing or using them. These chemicals can come in many forms. They can enter the body through the skin, nose and mouth. Health effects of these chemicals can include irritation to the eyes, skin, lungs, mouth and nose. They can be deadly if swallowed.

Ask:

How can you prevent detergents and disinfectants from entering your body?



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Say:

The recommended personal protective equipment are eye protection, rubber gloves and rubber boots. Clothing such as long sleeve shirts and coveralls can also protect workers.



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Ask:

Let's talk about the chemicals used for footbaths. The chemical is often copper sulfate. What form does it come in here on your farm? How or when are workers exposed to footbath chemicals? How can this chemical enter your body?

[Look for answers such as: Chemicals used for footbaths can be powder or liquids; workers are exposed when mixing, preparing or working near the footbath; it can enter the body by breathing it in, through the skin or through the eyes.]

Say:

Workers can be exposed to copper sulfate while mixing, preparing, applying or being near footbaths. Copper sulfate can come in powder or liquid. It can enter the body through your skin, eyes, nose and mouth. Health effects include burns and irritated skin, and eye burns, irritation and damage. It can cause nose and throat irritation. If swallowed, it can cause vomiting and diarrhea. Copper is a metal and the body has a hard time getting rid of it. In the long term, it can cause liver and kidney problems.

Ask:

What PPE do you think would help protect workers from getting exposed to this chemical?



Say:

The personal protective equipment that can help workers reduce contact with footbath chemicals are eye protection, masks, rubber gloves and rubber boots. Long sleeves and coveralls can also help protect workers.

Say:

We have just talked about several chemicals and recommended personal protective equipment. Each chemical is different and the required PPE are always listed on the safety data sheets for each chemical. We will talk about these SDS later, but it's important to always know what chemical you are working with and how to protect yourself.



Say:

Medicines and vaccines are also chemicals used on the farm.

Ask:

How can you be exposed to these chemicals?

Say:

The medicines or vaccines that are used to keep animals healthy can enter your body in several ways. You can be exposed to them if you stick yourself with a syringe that contains medicine or vaccine. You may be exposed because you work near the medicines or vaccines.

Medicines that might be good for animals can harm you. Hormones and vaccines for cattle can have the same effects on you that they have on cattle. But these effects can be more powerful in you because of the dose you might get and the differences in size between you and the cow. They can also cause allergies and sometimes infections.

Ask:

Workers must practice safety at all times when handling medicines and syringes. What are some of the ways that workers can avoid being exposed to medicines and vaccines?

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Do not store food
in the same
location as the
medicines for
cattles

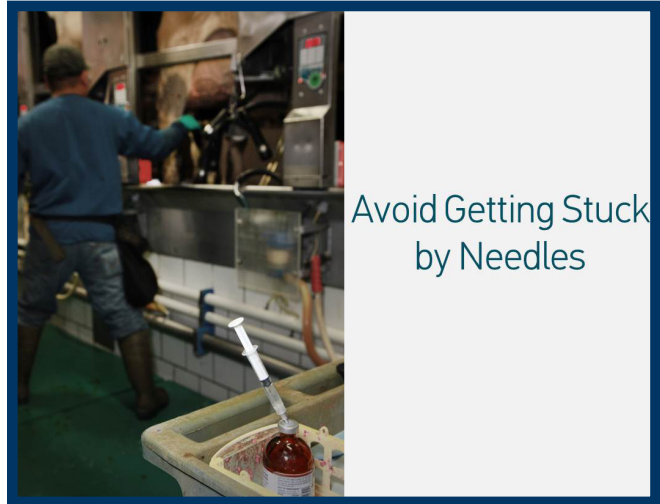


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Say:

Do not store the food you eat at work in the same refrigerator as the medicines used for cattle.

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Say:

It's important to take precautions to avoid getting stuck by needles:

- Slow down and don't rush when injecting cattle.
- Make sure the animal is properly restrained.
- Don't recap the needles.
- Don't keep the needles in your pocket.
- Use a sharps container to get rid of the used needle.

Ask and write responses on the flip chart:

Are the chemicals that we have talked about so far the only chemicals on the farm? Let's think. What other chemicals can be found on a farm?

[Look for chemicals such as pesticides, herbicides, weed killer, de-wormer, acids, corrosives, diesel, etc].



Say:

Pesticides are also chemicals used on the farm. Pesticides are used to get rid of pests including weeds, insects, ticks, flies and rats. These are used on the cows, in the barn and on the fields.

Ask and write responses on a flipchart:

Can you identify other chemicals that are created or released from the ongoing activities on dairy farms?

[Look for answers such as manure, the manure's gases and liquids.]

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Say:

Machinery and equipment can leak acids and fuels and produce gases that can be toxic. Workers are at risk from breathing in the gases.

Ask:

Carbon monoxide is a gas that you cannot see or smell. Some machines, cars and vehicles like skid steers, fork lifts and tractors release carbon monoxide when used. This gas can be deadly. How do you think you can avoid getting exposed to the carbon monoxide that is released from a skid steer?

[Look for answers such as: proper ventilation and keeping doors open.]

Explain:

Make sure that when using this kind of machinery indoors that the space is properly ventilated. Keeping doors open can help keep the place better ventilated.

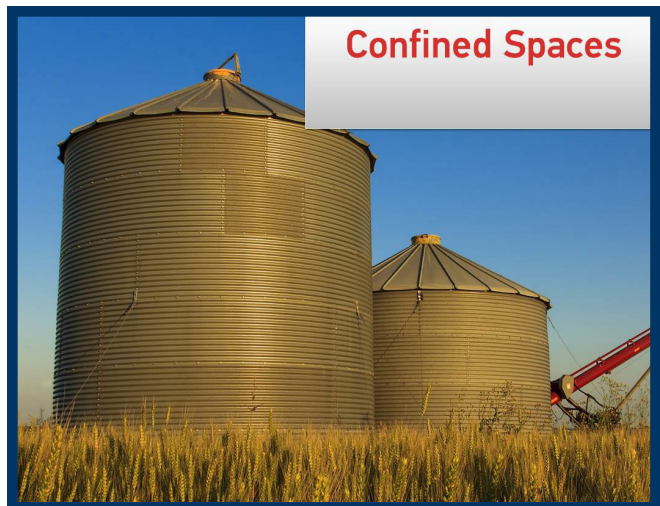
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Say:

Manure pits and lagoons release great amounts of gases that can harm or even kill workers when inhaled. Have you ever smelled something like rotten eggs near a manure pit? That is hydrogen sulfide, a toxic gas. Other dangerous gases found on a farm include ammonia, methane, carbon dioxide and nitrous oxide.



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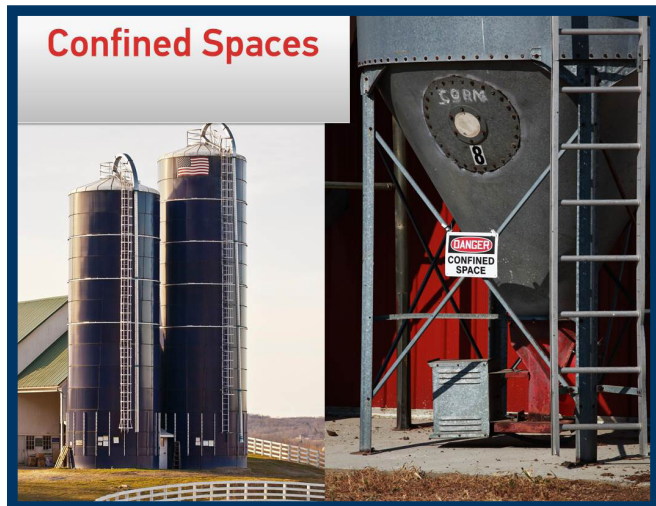
Explain:

This is an example of a confined space. It does not have a lot of openings. It is large enough to enter to work but it is not designed for anyone to work in there for a long period of time.

Confined spaces can include grain bins, digester pits, manure spreader tanks and silos.

Confined spaces are dangerous. Hazardous gases such as ammonia, nitrous oxide, methane and carbon dioxide can be in confined spaces. Sometimes, confined spaces can create an atmosphere with too little oxygen, which we need to breath.

LESSON 5



25

Say:

Gas meters must be used to check the air in the confined space prior to and during a confined space entry. The confined space should also be labeled not to enter.

Say:

All farms should have a confined space safety protocol. Only trained workers are allowed to enter confined spaces. In general, these are some ways to protect yourself from breathing in gases that can harm you: :

- Ventilate before or during machine operation or repair.
- Stay away from lagoons and manure pits particularly when being agitated.
- Keep out of confined spaces if not tested first with air monitors.
- Follow the rules outlined on the farm's confined space program.
- Never go into a confined space to try to rescue a trapped co-worker.
- Get help and wait for a trained person to rescue the worker.

LESSON 5



26

Ask:

These are images of bunker silos. In what way can workers get hurt working near or on these bunker silos?

[Look for answers that include: workers can fall, be crushed or be buried.]

Say:

That is right. Workers can fall from bunker silos, get crushed or buried. Sometimes, the bunker silo can collapse from within.

Safety and Horizontal Silos

- Never work alone.
- Use proper unloading techniques and equipment.
- Take samples only after front end loader is parked a safe distance from silo.
- Stay away from overhangs.

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Say:

To be safe:

- Never work near or on the bunker silo alone.
- Use proper unloading techniques and proper equipment such as a facer.
- Take samples from the bucket of the front end loader after the front end loader has been moved to a safe distance.
- Only pile silage as high as the equipment can reach.
- Avoid leaving silage overhang on the front end.

Say:

The Hazard Communication Standard 29 is a law. It is also called the “HazCom” or the “Right to Know” standard. It states workers have the “right to know” about the chemical hazards in their workplace. It’s your right.

Ask:

How can you learn or know about the hazards of the chemicals in your workplace?

LESSON 5



28

Say:

First, workers can learn about chemicals used on the farm through trainings. The law says that workers must receive training like this one in a language they understand. Training should include information about:

- chemicals used and released in the worksite
- PPE appropriate for the chemicals used
- what to do in an emergency

LESSON 5



29

Say:

Secondly, workers can learn about the chemical from the label on the container or in the package of the product.

Distribute an example of an actual label to the group.

Explain:

The label has 6 parts.

- The name of the chemical.
- A Signal Word – Danger is for severe hazards. Warning is for less severe hazards.
- A phrase that describes the hazard like Flammable or Corrosive.
- A symbol that describe the danger like the skull-and-Crossbones.
- A statement that tells you what to do to prevent exposure such as wearing gloves, what to do in case of an accidental spill or exposure and how to store and dispose of the chemical safely.
- The name of the company and how to contact the company.

Say:

Thirdly, workers can learn about the risks of a chemical from the Safety Data Sheet (SDS). This form used to be called the Material Safety Data Sheet (MSDS).

SDS



30

Say:

The SDS is a form that includes more detailed information about the chemical than the label.

The law requires farmers to inform workers about the place where the SDS are kept. We recommend that farms have SDS in Spanish but this isn't required by law.

LESSON 5

SAFETY DATA SHEET (SDS)	
COPPER SULFATE	
1. IDENTIFICATION	
Product Identifiers	Copper sulfate
Product Name	Copper sulphate, copper(II) sulfate, CuSO ₄ , cupric sulfate, copper (II)
Common Names	sulphate 5-hydrate, copper sulphate pentahydrate
Product Code	1234-01
Manufacturer Name	ABC Chemicals Company
Address	123 Main St Marshall, MI 44849
Telephone	715-555-0123
Fax	715-555-4567
Email	email@abcchemicals.com
Website	www.abcchemicalswebsite.com
Emergency Telephone	715-555-9999
Recommended Use of the Chemical	Laboratory chemicals
2. HAZARD(S) IDENTIFICATION	
Hazard Classification	Acute Toxicity - Oral Category 3 Skin Irritation Category 2 Eye Irritation Category 2A Acute Aquatic Toxicity Category 1 Chronic Aquatic Toxicity Category 1
Signal Word	DANGER
Hazard Statements	Toxic if swallowed. Causes skin irritation. Causes serious eye irritation. Very toxic to aquatic life with long lasting effects.
Pictograms	
Precautionary Statements	Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves, eye protection, face protection. IF SWALLOWED: Immediately call a Poison Center or doctor. IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Take off contaminated clothing and wash before reuse.

31

Say:

This is an SDS sample. The SDS contains lots of information that is on the label and has additional important information like the immediate and long-term health effects, first aid, what to do in case it is spilled or accidentally released, personal protective equipment and other information.

Distribute Handout: Spanish Safety Data Sheet for Copper Sulfate and say:

This is a safety data sheet for copper sulfate. It is utilized for cow footbaths. Can anyone find where it tells you what kind of PPE to use with this product? What kind of PPE is required for this product?

[Look for answers such as safety glasses, lab coat, respirator, and gloves.]

Emergencies



32

Say:

In addition to knowing the risks of a chemical and what PPE to use, it's important to know what to do in the case of an emergency.

Ask:

What do you have to do in case of an emergency on your farm?

Call 911

- Farm address
- Condition of injured worker.
- Name of chemical or explanation of accident.



33

Say:

In the US, no matter where you are, you can dial 911 and someone will help you with your emergency and send an ambulance or fire truck. Be calm. You will need to tell them the location of the victim. This will usually be the address of the farm. This is the location of your farm_____.

Try to tell them what chemical hurt the person. Tell them the condition of the victim, whether he is unconscious or not breathing, etc.

Always call 911 immediately if a person is unconscious, has breathing problems or convulsions, is bleeding excessively or is trapped.

Say:

The SDS will say what kind of first aid is needed in case of an emergency with a chemical. In a case of a fire, get help. Isolate the area, shut down equipment, evacuate animals if possible and do not re-enter any building once evacuated.

Report any injuries or poisonings to your supervisor as soon as possible.

LESSON 5

JEOPARDY!			
PPE	Toxicity	Information	Emergency
<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
<u>20</u>	<u>20</u>	<u>20</u>	<u>20</u>
<u>30</u>	<u>30</u>	<u>30</u>	<u>30</u>

34

Say:

Now let's have fun. Let's play the JEOPARDY GAME. Please select a category and the point value. And then we will ask you a question. If you answer it correctly, you will get the points.

PPE
10 points
How can workers prevent chemicals from entering their body?

u

35

How can workers prevent chemicals from entering their body?

By using Personal Protective Equipment:

- **Gloves, eye protection**
- **Hearing protection, mask**
- **Rubber boots, plastic sleeves, aprons, etc.**

LESSON 5

PPE

20 points

What Personal Protective Equipment should workers use when applying teat dip?



36

What Personal Protective Equipment should workers use when applying teat dip?

Workers should use eye protection and gloves.

PPE

30 points

Who should pay for Personal Protective Equipment or PPE?



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Who should pay for Personal Protective Equipment or PPE?

- **The employer should give workers Personal Protective Equipment free of charge.**
- **The PPE should be appropriate for the risks involved in the particular work task.**

LESSON 5

Toxicity

10 points

How do chemicals enter the body?



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How do chemicals enter the body?

Chemicals enter the body through the nose, mouth and skin, which includes the eyes.

Toxicity

20 points

Can chemicals cause long term health effects?



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Can chemicals cause longterm health effects?

Yes. Some chemicals can cause health problems seen a long time after being exposed such as cancer or blindness.

LESSON 5

Toxicity

30 points

Which factors influence how chemicals affect people?



40

Which factors influence how chemicals affect people?

- **Amount or dose of chemical**
- **The way a chemical enters the body**
- **Length of time exposed**
- **Other factors such as type of chemical, age, gender and health condition**

Information

10 points

Can cow manure and urine accumulated in a lagoon produce dangerous/toxic gases?



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Can cow manure and urine accumulated in a lagoon produce dangerous/toxic gases?

- **The combination of manure and urine in the lagoons and confined spaces produce toxic gases that can be harmful and even cause death.**
- **Some gases are hazardous even though they do not smell.**

LESSON 5

Information

20 points

How can workers learn about chemicals?



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How can workers learn about chemicals?

- **Attending trainings**
- **Reading labels on chemical containers**
- **Reading Safety Data Sheets (SDS)**

Information

30 points

What informations should be included in the label of a chemical?



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What information should be included on the label of a chemical?

The label must include six things:

1. **Name and identification number of the product**
2. **Hazard symbol**
3. **Warning words (such as Danger, Caution)**
4. **The type of hazard (such as Inflammable, Corrosive)**
5. **Preventive measures (such as “wear gloves”)**
6. **Manufacturer information**

LESSON 5

Emergency

10 points

What should workers do if they splash their eyes with teat dip?



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What should workers do if they splash their eyes with teat dip?

- **Wash their eyes with water or eye wash solution.**
- **If it is serious, call 911.**

Emergency

20 points

When should 911 be called?



45

When should 911 be called?

Call 911 if the injured worker:

- **Has fainted**
- **Is unconscious**
- **Has trouble breathing**
- **Has convulsions**
- **Has deep wounds and is bleeding a lot**
- **Is trapped**

LESSON 5

Emergency

30 points

What information should be given when calling 911?



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What information should be given when calling 911?

- **The location of the farm**
- **The condition of the injured worker**
- **The chemicals and hazards causing injury**

LESSON 5

You Can Do It!

Learn:

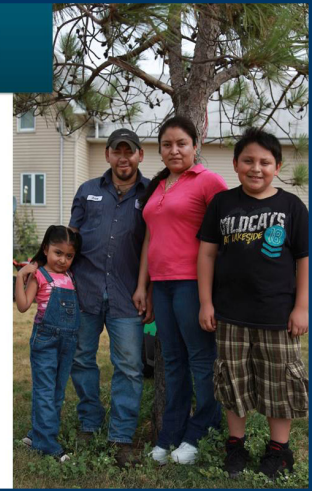
- ▶ Policies and procedures
- ▶ The risks
- ▶ What to do in case of emergencies
- ▶ Attend trainings

Wear:

- ▶ PPE
- ▶ Appropriate clothing and boots

Practice:

- ▶ Stop, observe, and think about safety before doing work
- ▶ Report any potential hazard or injury



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Say:

In summary, you can reduce risks with chemicals.

Learn:

- The policies and procedures regarding chemicals on the farm.
- The risks of handling or working near chemicals.
- Ways to protect yourself from being exposed to chemicals.
- What to do and who to call in case of emergencies.

Wear:

- PPE to prevent exposure to chemicals.
- Appropriate clothing and boots.

Practice safety at all times:

- Stop, observe and think about safety before doing work.
- Report any potential hazard or injury to your supervisor.

Thank You For Your Participation

National Farm Medicine Center
Occupational Safety and Health Administration
(OSHA)



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Handouts

LESSON 5

