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SAFETY RISK AREAS AT THE DAIRY FARM

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SLIPS, TRIPS AND FALLS (1)

These are the most common source of injuries in the workplace and make up the greatest number of workers' compensation claims. Serious injuries include sprains and strains.

Water or milk spills, algal build-up on concrete surfaces, oil spills in machine shop buildings, wet feed, and manure can all make a surface slippery. Tripping can be caused by different floor levels, broken concrete, and obstacles – including uneven walking surfaces, protruding pipes and hoses, uncovered

Figure 1.



Courtesy of University of Ballarat

drainage holes, and badly designed steps.

In addition, people working on roofs and platforms or climbing equipment such as silos and milk tanks are at risk for falls. Here are some prevention rules to avoid slips, trips, and falls:

1. Open drains or drainage holes should be covered with a firm, flush-fitting grate.
2. When spills occur during transport, handling, or decanting of chemicals, milk, or oils, clean them up immediately.
3. Updating lighting and ventilation in older facilities increases visibility, aids in floor drying, and inhibits algae growth.
4. Hoses and others obstacles must be secured to the walls and kept out of the way.
5. Discourage the practice of using the bucket of a front-end loader instead of a ladder.

Figure 2.



Courtesy of Hubbard Feeds, Inc.

THE FEEDING ALLEY

Driving in and out of the feeding alley while employees are working with cows or while the maintenance crew is doing work along the mangers is always a challenge for the feeder. Poor visibility and noise make the feeder unable to see or hear other people. Feeding cows is a stressful job, and the feeder is always in a hurry in order to get the cows fed on schedule. Employees must be aware of the feeder and take positions in the feeding alley where the feeder can see them.



Figure 3.



Courtesy of Hubbard Feeds, Inc.

Here are some recommendations:

1. When the feed truck is feeding cows, all work in the feeding alley should come to a temporary stop.
2. Make sure when backing up that the workers in the alley stand back and stop working. A buzzer installed at the rear of the feeding truck is very useful to warn people when backing up.
3. Keep the windshield and rear windows clean at all times.
4. Keep all lights in working condition.
5. To avoid skating and slipping when the roads are icy, make sure that the tires are fitted with the proper attachment.

THE SILAGE PILE

The silage pile is a hazardous area, and those not working at or on the pile should stay away. Danger increases at packing time, when human and machine traffic come together in a relatively small area and there is a rush to get the job done on time.

People involved in preparing TMR should exercise caution when moving their machinery around.

Figure 4.



Courtesy of Hubbard Feeds, Inc.

Here are some recommendations to prevent accidents at silage and feed commodity piles:

1. Machinery tipping over while pushing and packing feed is always a concern at the silage pile. Exercise caution.

2. High bunker silage faces can collapse and kill you instantly. If a pile or bunker looks unstable, stay away.
3. Vertical silos are potential farm hazards because they may contain toxic gases such as nitrogen gas and carbon dioxide gas. Always make certain that there is adequate ventilation when working inside these structures.
4. When covering silage, make sure that you have extra help. If the day is hot, dehydration might occur. Bring drinking water.
5. Be aware of the danger of falling when covering bunker walls.
6. Do not hesitate to ask for help. When alone, do not work on top of or around bunker faces.

THE HOSPITAL PEN

Zoonotic diseases are diseases that are transferable from animals to humans. It's very important for those who treat cows on the farm both to take the necessary precautions when treating sick animals and to protect themselves and the animals from cross contamination.

Diseases in dairy cattle like salmonellosis, brucellosis, anthrax, and leptospirosis can be transmitted through contaminated milk or by contact with blood, saliva, and urine. Human tuberculosis can be transmitted from humans to cows via airborne particles.

The effects of these diseases vary. Leptospirosis can cause severe flu-like symptoms. Salmonellosis can cause gastroenteritis and diarrhea. Toxoplasmosis can be transmitted by contact with the urine and feces of cats and rats living on the farm and can affect human fetuses.

Figure 5.



Courtesy of Hubbard Feeds, Inc.

The hospital pen and the treated pen are highly contaminated areas that farm personnel must be aware of when working with cows.

1. Unless properly protected, avoid contact with animal waste, carcasses, excretions, and offal.
2. Promptly dispose of dead animals.
3. Immediately treat and disinfect cuts, abrasions, and animal bites. If bitten, be certain of the animal's rabies status.
4. Maintain tetanus boosters.
5. Always use the proper attire and wash and disinfect your boots and hands before and after treating cows.
6. Discard used gloves, syringes, needles, empty drug

containers, and so on.

7. Hospital bedding pack should be cleaned out often.
8. Farm personnel who do not have business in the hospital pen or treatment pen should avoid them.
9. Avoid drinking raw milk from the farm at all times.
10. Do not eat or smoke while working in these areas or performing these tasks.

Other diseases on the dairy farm that employees must be aware of are those caused by parasites and fungi (which could cause skin problems in humans): ringworm and lice are two examples. Deer ticks, often found near feed commodities, can transmit Lyme disease.

THE BULL PEN

Dairy bulls are extremely dangerous and have killed farm employees and dairy producers. Learn how to read signs of aggression from bulls and report them to both the manager and everybody in the barn. Older bulls are more likely to be problematic to people, but no bull should be trusted in the barn.

- a) Bulls turning sideways and flexing are displaying aggression.
- b) Loud and guttural sounds showing anger are hard-to-miss indicators.
- c) Bulls are very fast animals. They can overtake a human in a short distance.
- d) The cow pusher must be particularly careful when pushing cows from the bullpen.

Figure 6.



Courtesy of Hubbard Feeds, Inc.

HIGH-TRAFFIC ROADS AROUND FACILITIES

On-farm traffic is a safety issue that changes continually. In general, it is a larger safety issue during the day than at night. It also increases during seasonal work, such as when corn is chopped and packed for silage. Agricultural equipment is bigger, more powerful, and found in greater numbers than ever before. Here are some safety tips:

1. Pay attention to children.
2. Avoid backing up.
3. Maintain a clean and functioning vehicle.
4. Turn the headlights on so others can see you.
5. Remember that conditions and the environment are always changing.
6. Always yield or give way to large machinery.

HAZARDS IN LIVING FACILITIES

Some safety issues can come with the housing that most farms provide to their employees. Some housing is under a scheduled maintenance program; however, there is always the risk that something might go wrong.

1. Faulty or non-existent smoke alarms.
2. Carbon monoxide inhalation.
3. Fire or explosions caused by propane gas.
4. Electric shock caused by exposed bare live wires.

Figure 7.



Courtesy of Hubbard Feeds, Inc.

MANURE DECOMPOSITION AND GAS INHALATION

In those barns that have had either a partial or a complete failure of the ventilation system, there is a real risk of inhaling toxic gases created by the aerobic fermentation of organic matter. This situation is life threatening for people and animals in low-profile cross-ventilation (LPCV) systems – a ventilation failure could lead to a gas build up that can kill people and cattle within 1 hour.

Figure 8.



Courtesy of University of Ballarat

1. Have an emergency plan that deals specifically with this situation. Make sure that the plan is written in English and Spanish.
2. Carry out drills so that everybody learns how to respond during an actual situation.
3. The chance for a real disaster is high during weekends or at nights, when upper level management is absent.

4. Make sure either that the backup generator is ready to fire up automatically or that there is always someone with the proper training and knowhow to start the generator.
 5. Make sure that the telephone numbers of the manager and/or the mechanic are in a visible area so that they can be called immediately.
 6. **If the power is not back on within 5 minutes, open all doors, move outdoors, and wait for the manager to arrive.**
2. Follow standard operating procedures for machinery: check engine oil, hydrostatic oil, fuel, hoses, tires and tire pressure, and so on.
 3. Have a regular maintenance schedule for machinery.
 4. Have backup machinery available for use during break downs or routine maintenance or repair.
 5. Skid steers can tip over very easily and can tip both frontwards and backwards. For example, attempting to lift a downer cow that is too heavy may lead to the machine tipping to the front (and crashing both the cow and anybody who is in the way), having the skid steer's bucket all the way up while moving uphill can lead to a backwards tip. Poor physical conditions (e.g., icy or muddy surfaces) or poor equipment conditions (e.g., tires that are worn down) may make skid steer accidents both more likely and worse.
 6. Traction is very poor for skid steers in icy and muddy terrain, and the operator should be aware of people and cattle nearby when working under these conditions. Also, damage to property is always a concern – as the machine skids on these surfaces, gates, headlocks, stalls, and doors can be damaged.

Figure 9.



Courtesy of Hubbard Feed Inc.

WORKING WITH BARN MACHINERY

A. Barn Personnel

For those farm workers who work with machinery inside the barn, there are additional safety concerns. These concerns should be addressed when training on machinery, particularly the skid steer and those attachments used to spread bedding, rake stalls, push manure, and so on.

Figure 10.



Courtesy of Hubbard Feed Inc.

To avoid accidents it is very important for the operator to have been trained properly. The operator needs to know not only how to operate the equipment safely but also how to perform basic maintenance and how to report when mechanical failure either has occurred or is about to occur.

1. Always make sure that the staff that will use the machinery receive proper training from someone who is dependable and experienced.

B. Other Personnel

The feeder is the other member of the dairy staff who works inside and outside the barn and faces considerable workplace safety risks. The feeder operates large and expensive machinery like the feed wagon and the pay loader. In addition, the feeder has to know basic computer skills in order to enter, withdraw, and print information referring to cow's group rations. This stressful job needs to be performed on a tight schedule in order to achieve the best possible feeding consistency.

1. To keep on schedule and avoid rushing to catch up for lost time, machinery must be in optimal operating condition.
2. The bunker area and the commodity buildings should have adequate illumination so the ration ingredients can be mixed properly.
3. Icy or muddy surfaces increase the chances of an accident.
4. Avoid being around a PTO when it is turning.
5. When on roadways, exercise caution when making left

Figure 11.



Courtesy of University of Ballarat

turns. Be certain that there is no trailing traffic that is trying to pass you.

6. Wear eye, ear, and respiratory protection when working with dusty commodities.
7. Avoid excessively high silage piles. And, to protect the operator from a silage face collapse, use equipment fitted with an approved roll-over protective structure (ROPS) roof cab.

THE MILKING CENTER

The milking parlor is another place on the dairy where accidents could occur. Chemicals used for washing and cleaning the equipment are potential hazards for employees, animals, and the environment. In addition, it is common practice to have footbaths in some areas of the return alley, and the chemicals used in these should be handled with precaution. Figure 12.



Courtesy of University of Ballarat

1. When milking heifers for the first time, the milkers should be aware of the danger of being kicked. These animals are usually nervous and very agile with their rear feet. Before doing your prep-routine, make sure that the cow knows that you are behind her.
2. Avoid being loud in the milking parlor. Making unnecessary noise, yelling, whistling, and poking cows with sticks have no place in the milking parlor and must be avoided.
3. When dipping the teats, be careful not to be splashed in the eyes with the chemical.
4. When dipping teats with a high-pressure sprayer system, make sure that your milkers are not inhaling the chemicals. Inhaling chemicals can occur when the fans in the milking parlor are running.
5. When filling footbaths, be careful with the chemicals used; some of them can cause skin and eye irritation. Formaldehyde is carcinogenic and should be used only in well-ventilated areas; handling it requires wearing gloves, a mask, and goggles.
6. Slips, trips, and falls can occur when surfaces are wet, icy, and muddy. Mishaps can be serious and care should be exercised at all times when working.

WORKING WITH DAIRY COWS

Most of the dairy staff eventually has to move or help move cows around. Accidents can occur when moving cows. Cows

rarely charge against somebody when working with them; however, heifers could run over you if they are cornered.

1. The cow pusher has to be careful when bringing cows in and out; opening and closing gates can cause personal injuries. Look for pinch points, protruding objects, and gates that can swing back or come off the hinges.
2. When working with cows in the headlocks, make sure that they are aware that you are behind them; they cannot always see you and can react and kick very fast.
3. When releasing individual animals from the headlocks, one runs the risk of being crushed or having a finger pinched.
4. Another common hazard is the accidental inoculation of veterinary drugs during routine shots vaccines, such as hormones in the Ovsynch program. (Women should not administer the shots in the Ovsynch program, especially if they are pregnant.)

POWER TOOLS

Accidents sometimes occur when employees decide to repair equipment themselves. While employees usually know how to use and maintain power tools, management should decide what to allow. If accidents involving power tools are a recurrent problem, a solution may be to keep power tools locked up and have only the necessary hand tools available for day-to-day repairs.

CHEMICALS AND VETERINARY DRUGS (1)

A. Chemicals

Safely using, storing, and disposing of dairy chemicals is essential for the safety of workers and animals, and can prevent contamination of the surrounding environment. Chemical use is dangerous at any time, but a particular hazard is being exposed to a chemical that is concentrated.

Chemicals can be absorbed into the body through the following:

- direct ingestion
- exposure to skin
- breathing in fumes when applying, decanting, or mixing
- accidental ingestion due to poor hygiene

Everyday work in a dairy exposes farmers and employees to a variety of chemicals – e.g., acids, alkalis (caustic detergents), iodine based teat sprays, formalin, antibiotics, vaccines, drenches, lice treatment, veterinary chemicals like hormones.

Use caution when applying hydrated lime to free stalls. This compound is extremely caustic and reactive. When accidentally dusted into the eyes, flush thoroughly and quickly seek medical attention. All employees should wear protective eyewear and have their skin covered while working with hydrated lime.

The inappropriate use, storage, transport, or disposal of chemicals can lead to the following:

- a violent reaction
- the corrosion of materials
- burns – in the case of acids and alkalis
- serious illness – as in the case of formalin, a known carcinogen

B. Inventory

Record all the chemicals you have on the farm, including type and quantity, and check that all chemical containers

are correctly labeled and stored adequately. Make sure that bottles are not refilled with dangerous chemicals. Remove all unwanted, out-of-date, and banned chemicals from the dairy and dispose of them according to federal regulations.

C. Working With Chemicals

When working with chemicals, personnel should take the time and protect themselves with the proper attire (e.g., coveralls, rubber gloves, goggles or face shields, respirators, appropriate footwear).

D. Transport & Storage

- When not in use, all chemicals should be stored in a locked chemical locker or shed. Chemical storage should provide spill containment and be well ventilated. Do not store chemicals in a work area such as the milk room.
- Chemicals used in the dairy should always be inaccessible to children, visitors, and inexperienced personnel. Preferably, keep chemicals behind a childproof barrier.
- Veterinary chemicals that require refrigeration should be kept in a separate refrigerator that is not used for drinks or food.
- Acids and alkalis should be clearly labeled and distinguished from each other. They should never be mixed together because mixing risks a violent reaction.
- Have chemicals delivered to the farm by a professional and as part of the service; they can unload, handle, and store the chemicals in the designated area, keeping farm personnel from being involved in this task.

E. Decanting, Mixing & Use

- Mix chemicals in a ventilated area on a non-porous surface that can be readily cleaned, and with close access to clean water for washing spills, personal cleaning, or first aid.
- Pouring chemicals from a drum risks spills and splashing. It is far safer to use pumps, siphons, or gravity taps. There are also closed automated delivery systems.
- Install hand-held soft water showers. Place them where detergents are decanted and use them for removing chemicals from the eyes.
- The employer is responsible for providing, maintaining, and replacing, when necessary, all protective equipment.
- The employees are responsible for wearing protective equipment when working with chemicals. They should exercise care with the equipment, maintain it, and return it to the place it is kept.

F. Emergency Calls

Every dairy farm should have a formal chemical management plan for dealing with chemical emergencies or spills. This plan should include emergency contacts and first aid.

Workplace rules for the use of chemicals should be enacted, and all workers should follow them. Those workers who need to use chemicals, particularly restricted chemicals, should be trained through a suitable program.

Always ask yourself if a particular chemical is necessary, or if it can be replaced with other safer and more environmentally friendly alternatives.

THE HIERARCHY OF CONTROL (1)

The hierarchy of control, **from most effective to least effective, is an established process for identifying the most effective way of controlling chemical risks, including hazardous substances:**

1. Elimination: Stop using and completely remove a hazardous substance (e.g., not using formaldehyde in footbaths).
2. Substitution: Use a less-hazardous substance, form or process (e.g., use high-pressure water to remove algae and other residues from concrete surfaces, rather than detergents).
3. Isolation: Separate hazardous substances from people by distance or barriers (e.g., keep chemicals in a lockable, well-ventilated storage area).
4. Engineering controls: Use machinery, equipment or processes to reduce possible contamination (e.g., use a closed chemical application system that removes the need to directly handle chemicals).
5. Administrative controls: Have procedures in place about handling chemicals safely (e.g., restrict access to areas that contain hazardous substances or where they are used, and provide adequate training and information about the chemicals in use).
6. Personal protection equipment (PPE): Wear protective equipment (e.g., respirators, coveralls, gloves, footwear, goggles or face shields). The PPE must be suitable for the type and volume of chemicals you are using, meet the relevant standard, and be regularly checked and maintained. PPE should be used when other control measures are not practicable or in conjunction with other controls.
7. Monitoring and health surveillance: Although not technically part of the Hierarchy of Control, monitoring the health of workers is an important way to ensure that the control of chemical risks is an ongoing process. As chemical-related health issues can develop over long periods of time, keep any monitoring or health surveillance records for 30 years. The MSDS will provide information about whether health monitoring is required.

FIRST AID and EMERGENCY RESPONSE (1)

Farming is a dangerous occupation. We not only need to reduce the risks of injury, we must also put in place a plan that will ensure an effective response to an incident.

Dairy farm employees should know both what to do and how to seek help in case of emergency or accident (e.g., fire, flooding, chemical spills, gas inhalation, drowning). Develop an emergency response procedure in conjunction with your family and staff. Program occasional drills and learn from them.

Here are some basic items that can be looked at when exploring emergency response procedure planning:

- clearly identify the locations of fire extinguishers suitable for different types of fires
- fire extinguishers should be regularly inspected
- names(s) of first-response person or persons
- working alone should be avoided when possible
- reliable communications systems should be available

- should have the ability to transmit clear and accurate information for locating injured personnel

Because many dairies are in isolated areas and it may take time for emergency medical assistance to arrive, it's vital that dairy workers be trained in first aid and that these skills be supported by equipment that meets the needs of the workplace.

The dairy farm should have at least one first-aid kit and a first-response person who has the training to assist someone who has been hurt. This person should be known to all and should be responsible for keeping the first-aid kit up to date.

For infection control, first-aid kits should contain disposable resuscitation face shields (mouth-to-mouth resuscitation masks) and plastic gloves. A *portable* first-aid kit is also handy to have in large dairies. A medical supply business should service the dairy's first-aid kit(s) on a regular basis.

Select and send employee(s) to a first-response/first-aid training course; there are several levels of training, and continuing education is available.

Not having someone on the dairy trained in first-aid response may have dire consequences. A worker who is seriously injured has the best chance for surviving if attended to immediately. While emergency medical assistance is en route, bleeding can be stopped or breathing can be assisted.

All workers on the farm must know how to contact the first-response person. This information must be taught upon hiring.

Emergency contact lists placed in locations by the first-aid kit(s) and near all of the farm's telephones can be handy in case of an incident. The phone number of the farm's first-response person should be on the list.

Make sure that all of the farm's workers know the following:

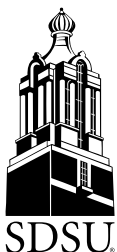
- a. first-aid kit location(s)
- b. first-response person(s) contact info

For serious incidents or risks (i.e., excavations, building collapse, fires and explosions, or spills and leaks of dangerous substances or chemicals), an employer should notify all people exposed to the incident or risk.

References:

(1) <http://www.dairysafety.org.au>

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