Safe Work Practices
For Dairy Workers
in BC

FARSHA
Farm and Ranch Safety and Health Association
PUBLICATION INFORMATION

FARSHA welcomes your inquiries and comments on this booklet. For more information, or to receive a FARSHA Resource Material Catalogue, which lists all FARSHA’s available farm safety information, please contact:

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ABOUT FARSHA

The Farm and Ranch Safety and Health Association (FARSHA) has produced this booklet as an explanation of safe work practices, as they apply to BC dairy farms.

Since its founding in 1993, the Farm and Ranch Safety and Health Association has worked to make employers and workers aware of safety and health hazards, and to help them follow British Columbia’s requirements. FARSHA also provides on-site training, literature, videos, and other health and safety guidance.

As a general guide, this booklet may not cover all details of safe dairy farm operation. FARSHA assumes no responsibility or liability for the application of this information, recognizing that circumstances, conditions, and other factors may vary greatly. For more detailed information on the requirements of BC’s *Workers Compensation Act* and *Occupational Health and Safety Regulation*, contact FARSHA.

This booklet is limited to the workplace health and safety issues that arise on dairy farms. Other similar topics, such as food product or veterinary safety requirements, are beyond the scope of this guide.
INTRODUCTION

PURPOSE OF THIS BOOKLET

This booklet is addressed to you, if you are currently working or hoping to find work on a dairy farm in BC.

This booklet will help you:
- Understand your health and safety responsibilities under British Columbia’s *Workers Compensation Act* and the *Occupational Health and Safety Regulation*
- Participate in the health and safety program of your employer
- Identify the hazards you may face in your workplace.

If you have any questions while reading this booklet, ask your employer for clarification. You may also contact FARSHA directly, at the address provided at the end of this booklet.

HOW THIS BOOKLET IS ORGANIZED

In the next pages of this booklet, you will find some recent statistics on injuries and illnesses in agriculture which may surprise you. These statistics show the importance of health and safety in farm work.

The booklet then discusses the health and safety requirements that apply to BC agriculture. It also explains the workers’ compensation system in BC.

The largest part of this booklet, however, focuses on the common hazards of dairy farms:
- Working with animals
- Working with hazardous materials
- Working around manure
- Handling feed and bedding products
- Using equipment
- Working around confined spaces.
Dairy Industry Injuries and Illnesses: Health and Safety Matters

Here are some recent statistics about work-related injuries and illness in BC agriculture. While dairy work is usually satisfying and rewarding, the injuries and illnesses can be serious and costly – financially, and socially.

- To the worker who suffers injury or illness, no amount of compensation can ever fully make up for lost health.
- To the employer, dealing with a health and safety incident on the farm is stressful and time-consuming. Personal and family relationships are affected. Besides the human cost, work will be disrupted, equipment or materials may be damaged, and livestock may be injured.

Workers’ Compensation Claims

Each year, FARSHA looks at the statistics from the BC Workers’ Compensation Board, to identify common sources of work-related injury and illness. What stands out about the statistics on injury claims from dairy workers?

The most common injuries suffered by dairy workers have been dislocations or fractures, and crushes or bruises (about ½ of the total injury claims), and muscle strains (about ⅓ of all injury claims).

Each year, the single most common source of injury is contact with cows. Workers have been kicked, squeezed, head-butted, and stepped on by cows. Other injuries came from automatic parlour doors, and gates. Occasionally, workers have been injured by splashes of acid or other chemicals used on dairy farms.

The injury rate in BC agriculture is higher than in BC workplaces overall. (Injury rate refers to the number of injury-related WCB claims as a percentage of the total number of hours worked in the sector.) The injury rate on dairy farms is about 50% lower than that of BC agriculture as a whole. In 2003, the WCB accepted approximately 800 claims from workers in BC farm operations.
**OTHER REPORTED INJURIES, ILLNESSES, AND DEATHS**

The Canadian Agricultural Injury Surveillance Program (CAISP) provides another part of the picture of farm-related injury, illness, and death. CAISP collects information from hospitals, coroner’s offices, and other sources. The statistics from CAISP are more representative of all deaths and hospitalizations from incidents involving farm work, not just those that resulted in WCB claims.

Between 1990 and 2000, there were 82 work-related deaths in farming in BC. When CAISP analyzed these cases, they were able to identify the most common causes. These were:

- Machine rollover (34%)
- Machine runover (11%)
- Entanglement in machinery (11%)
- Pinned or struck by machine (10%)
- Animal-related injury (10%)

(The remaining 24% of deaths had various other causes.)

Interestingly, the CAISP statistics show that older farmers and farmworkers are at great risk. Even though people over 60 years of age are only 14% of the farming population, they experienced 36% of the farmwork-related deaths!
All BC workplaces must meet the requirements of the *Workers Compensation Act* and the *Occupational Health and Safety Regulation*. (From 1993 to 2004, the *Regulations for Occupational Health and Safety in Agriculture* applied to agricultural workplaces in BC. This law is no longer in effect. Farms in BC now fall under the same regulation as all other BC workplaces.)

The Workers’ Compensation Board of British Columbia administers these health and safety laws, in addition to providing compensation to people who suffer work-related injury or illness.

**Health and Safety Responsibilities**

Here are the legal responsibilities of employers, supervisors, and workers under the *Workers Compensation Act*.

**The employer must:**

- Ensure the safety and health of all workers working for the dairy, or on the dairy premises
- Comply with the *Workers Compensation Act* and *Occupational Health and Safety Regulation*
- Correct any hazardous workplace conditions
- Make all workers aware of all known or reasonably foreseeable health and safety hazards
- Ensure that all workers know and comply with health and safety requirements
- Instruct all workers in safe work procedures for all job duties
- Establish occupational health and safety programs and policies
- Provide and maintain all protective equipment, devices, and clothing that workers need to protect themselves from injury
- Make copies of the *Workers Compensation Act* and *Occupational Health and Safety Regulation* readily available to the workers
Consult and cooperate with the worker health and safety representative, or with members of the joint health and safety committee

Cooperate with the WCB, when required.

**Supervisors must:**

- Ensure the health and safety of all workers under their direct supervision
- Be knowledgeable about the *Workers Compensation Act* and *Occupational Health and Safety Regulation*
- Comply with the *Workers Compensation Act* and *Occupational Health and Safety Regulation*
- Make sure that all workers under their direct supervision are aware of all known or reasonably foreseeable health and safety hazards
- Make sure that all workers under their direct supervision are complying with all health and safety requirements
- Consult and cooperate with the worker health and safety representative, or with members of the joint health and safety committee
- Cooperate with the WCB, when required.

**Workers must:**

- Take reasonable care to protect their own health and safety, and the health and safety of others
- Comply with the *Workers Compensation Act* and *Occupational Health and Safety Regulation*
- Carry out all work in accordance with established safe work procedures
- Use and wear the required protective equipment, devices, and clothing
- Report to a supervisor any hazardous situation or activity
- Not engage in practical jokes or other conduct that may endanger themselves or others
- Not work while their ability to do so safely may be impaired by illness, fatigue, alcohol, or drugs
• Cooperate with the worker health and safety representative, or with members of the joint health and safety committee
• Cooperate with the WCB, when required.
Your Employer’s Health and Safety Program

The purpose of any health and safety program is the prevention of work-related injuries and illnesses. However, the type of program will depend on the size of your employer’s operation.

You can expect from your employer:

- A commitment to providing a safe and healthy workplace
- Regular opportunities to discuss hazards and concerns about health and safety around the farm
- Training, guidance, and supervision in safe work procedures and equipment operation
- Provision of any required safety gear (personal protective equipment)
- An appropriate level of first aid equipment and preparation for emergencies.

On a larger operation, you may be introduced to a co-worker who serves as your health and safety representative (either as an individual, or as part of a joint worker-management committee). This co-worker:

- Identifies hazardous situations, and advises the employer about solutions
-Consults with workers, and deals with health and safety complaints
- Makes recommendations to the employer about needed training, and program or policy improvements
- Ensures that accidents and near-miss incidents are investigated, and the causes are corrected.

If you are asked to be a worker health and safety representative or to serve on a joint health and safety committee, your employer may arrange for FARSHA to provide a training session so that you can confidently carry out this responsibility.

Your employer also regularly inspects all parts of the farm, to identify and correct hazards. If you know of a hazard, let your supervisor or
employer know. If you are sure that you can safely correct the hazard yourself before starting work, do so, and tell your employer as soon as you can. If you don’t have the right tools, or don’t know how to correct the hazard on your own, bring it to your employer’s attention right away. Don’t do something that may cause injury or illness to you or someone else.
The workers’ compensation system is a form of insurance.

Employers pay a regular premium, and in return receive a service: workers who are injured or ill as a result of their employment will be compensated by the Workers’ Compensation Board (WCB). The employer, in turn, is protected from individual lawsuits filed by workers who suffer work-related injuries or illnesses.

Workers also receive a service: while they’re unable to work, they are compensated for lost earnings, as well as medical expenses for their injury or illness. Workers who are unable to return to their original job upon recovery may be compensated for other arrangements: placement in another type of job, retraining, or a partial or full pension. In exchange for this financial security, workers have no right to sue employers for damages following a workplace injury or illness.

Most people working in BC – whether they’re working full time, part time, on contract, or as casual labour – are covered by the WCB. You are covered even if your employer has not kept up to date with WCB premium payments. (Self-employed people or co-owners of small businesses should discuss their situation directly with the WCB, as it may be possible to arrange for Personal Optional Protection.)

You or your dependents will be compensated by the WCB if you suffer an injury or illness that results from working at your job. The compensation may cover medical costs, financial support, rehabilitation or a pension if necessary.

FIRST AID AND EMERGENCY PREPAREDNESS

Depending on the size of your employer’s operation, there should be a first aid kit, or even a trained first aid attendant. Find out where the first aid kit is kept.

If someone on the farm acts as the first aid attendant, be sure you know how to contact this person. If no one is trained as a first aid attendant,
find out from your employer how to get help in an emergency. Learn the location of emergency supplies such as fire extinguishers, and eyewash equipment.

**Reporting an Injury or Accident**

If you are injured, or if you have an illness or condition that may be related to your work, you must tell your supervisor or employer as soon as possible. This may prevent someone else from encountering the same hazard. It also may begin the process of a WCB claim, if you require compensation.

**Making a WCB Claim**

In most cases of work-related injury or illness, your employer or the first aid attendant will fill out a WCB form called the *Employer’s Report of Injury or Occupational Disease* (Form 7) or *First Aid Report* (Form 7A).

If you go to your family doctor, a clinic, or a hospital, the doctor there will fill out a similar WCB form. Be sure that the doctor understands that the injury or illness is work-related, as you explain what happened.

You may also be contacted by the WCB, and asked to fill in an *Application for Compensation & Report of Injury or Occupational Disease* (or Form 6).

If you need more detailed information, contact the Workers’ Compensation Board directly and ask for the booklets *Managing Your WCB Claim: the Basics of Workers’ Compensation*, and *WCB Benefits and Services: a Handbook for Workers* (contact information is provided in the Appendix at the end of this booklet).

Every application for a WCB claim is given a number. You (or your employer) must have this number on hand, when asking for any information about the claim. If a claim is accepted, a WCB staff member
will be assigned who can answer any questions about the status of the claim.

You have the right to apply for compensation even if your employer disagrees with the claim. (There is space on the *Employer’s Report of Injury or Occupational Disease* for your employer to dispute a claim, if there is a disagreement. Staff at the WCB will review all the information, and make a decision on the claim.) It’s illegal for your employer to try to prevent or discourage you from reporting a work-related injury or illness.
HAZARDS AND RISKS

Hazards are the things that cause injury or illness. Common hazards on a dairy farm include a kick or squeeze from a cow, entanglement in machinery, exposure to deadly silo or manure gases, falls from heights, or awkward movement that causes muscle strain.

Risk is the likelihood or chance of a hazard affecting you. Some activities on a dairy farm are very risky. For example, the decision to enter a silo or manure pit without first testing the air quality is so high-risk that it may take a life – it’s very likely that the hazard of a deadly atmosphere will be present.

In most hazardous situations, it is possible to reduce the risks – or eliminate them completely – by recognizing, evaluating, and managing them. These are problem-solving skills.

Recognize. In any hazardous situation, start by recognizing the hazard. What could happen? What is the potential for injury? Who might be affected? How serious could it be? If you were injured, would anyone else know or be able to help? Would others face the same hazard?

Evaluate. Ask yourself about risk. What’s the likelihood of the hazard affecting you or someone else? Would re-organizing the task eliminate the risk? Could the risk be reduced by a different choice of equipment, or by choosing a better way of doing the task? Use your experience and knowledge to evaluate the risk as completely and objectively as possible.

Manage. Having taken a few moments to consider the options, managing risk means using the safest possible way of doing the job. Here are some ways of managing risk.

The best options are those that eliminate risk altogether. For example, the hazards of working with bulls have been eliminated on many dairy farms by the widespread use of artificial insemination.
It’s not possible to eliminate some risks. For example, even though the spinning shaft of a power take-off (PTO) is extremely hazardous, farming would be nearly impossible without PTO-driven equipment. PTOs cannot simply be eliminated. They can be made more safe. The risk of contact with the PTO is reduced significantly by equipment guards.

Even when risks are reduced, there may still be a hazard in some situations. Safe work procedures or protective equipment are the last line of defense. Even with the PTO fully guarded, no one should work near or step over the PTO shaft while it’s moving. This is one example of an important safe work procedure. An example of protective equipment is the rollover protective structure on a tractor (ROPS). The ROPS cannot prevent a rollover, and it is no substitute for safe work procedures – but if the tractor does roll, the ROPS and seatbelt will protect the operator from death or serious injury.

**COMMON HAZARDS IN FARMING**

Here are some general hazards that exist in all agricultural operations in BC. In fact, they are so common that they are easy to overlook.

- Working alone
- Fire
- Electricity
- Heavy or repetitive manual work
- Unexpected movement of equipment or machinery.

What can you do to eliminate or reduce the risk in these common situations?

**WORKING ALONE**

There are many situations on a dairy farm where someone is working alone, either in the barn, or out on the farm property. Does the work being done pose the risk of a disabling injury? Could the person be unable to get help if they were injured? In agricultural operations, the answer to these questions is almost always “yes.”
One of the WCB’s requirements for farm workplaces is that in this type of situation, the employer must have a way of periodically checking on the well-being of the person working alone.

A cellular phone or two-way radio is a good first step. But if someone was trapped, entangled, or seriously injured, and could not make a call for help – how long would it be before someone started looking the person?

At a minimum, tell someone where you are going, and when you expect to come back. Discuss what should be done if you do not return at the expected time. Or, arrange to have a reliable person call you regularly – then, if you do not answer the call, they can send help without delay.

FARSHA’s booklet *Farm Accidents, Prevention and Response* has more detailed information on this topic.

**FIRE**

Whenever you’re in a new workplace, take a few minutes to learn the location of fire extinguishers, telephones, electrical circuit boxes, gas shutoffs, and so on. Your employer may have developed an emergency fire plan that you should find out about.

Fire requires fuel. Make sure that you are not providing unnecessary fuel around the farm, in the form of piles of scrap wood or old tires; containers of waste or unwanted petroleum products, paints, and solvents; or piles of paper and old cardboard. Remove potential fuel for disposal.

If you’re working with solvents or other flammable liquids, clean up spills right away, and keep the containers closed. Keep the containers in a cool, shaded place. Thoroughly rinse any oily or solvent-soaked rags, and hang them outdoors to dry with lots of air circulation to prevent the buildup of heat and flammable fumes.

Under heat or during a fire, many chemical products become explosive, release poisonous gases, or undergo chemical reactions. Warn firefighters and emergency responders what hazardous materials to expect. In a fire, you may be told to move upwind or to evacuate the
area. The water runoff from a chemical fire may be highly contaminated with toxic byproducts.

**Electricity**

Even the most common voltage, 110V, can injure or kill a person or an animal. Contacts between high voltage power lines and farm equipment or irrigation pipe usually result in deaths.

Keep circuit boxes clean, and make sure they are not exposed to leaks or splashing water. Use lockout locks, keys, and tags to make the circuits safe during maintenance or repair work.

Use a heavy-duty extension cord: it should be CSA-approved, and at least 12-gauge, three-wire (12/3). All extension cords and connections should be well beyond the reach of any animals. Electrical tools must either have a three-prong connection or be clearly marked as “double-insulated.”

For minor electrical work around the farm, use a ladder that is made of non-conducting wood or fibreglass.

Some areas of the farm may have overhead power lines. There must be a clearance of **at least ten feet** from all farm equipment or machinery that may pass underneath. There should be warning signs below overhead power lines, if there is any chance that someone could run equipment into them. If there are any overhead power lines that do not allow a ten-foot clearance, never move equipment underneath them without someone present to act as a spotter.

**Electrical Emergencies**

If your tractor or equipment somehow comes in contact with an overhead power line, you are safer if you **stay on the tractor** and don’t move around. The soil around you will be electrically live. If possible, try to drive away to break the electrical contact. Ask someone to call the local utility company immediately to shut down the electricity in the line.
If there’s an emergency such as an electrical fire, and you must leave the tractor, jump with your feet together, as far away from the equipment as you can without falling. Keep your balance at all times, so that your only point of contact with the charged surface is across your feet and ankles. Do not allow any part of your body to touch the equipment and the ground at the same time.

Carefully move away until you are a safe distance from the electrically-live area, by keeping your feet close together (take little jumps with your feet together, or use a shuffling motion). Wet ground and puddles will extend the danger area and make a safe escape more difficult. Therefore, stay with the equipment if at all possible.

**HEAVY OR REPETITIVE MANUAL WORK**

Modern dairies are usually very mechanized, and some of the worst repetitive and heavy manual work of earlier days has been eliminated.

However, muscle strains and repetitive strain injuries still account for nearly one-third of all WCB claims accepted from the dairy sector in British Columbia. Some of these injuries will cause life-long pain and limitations. These injuries are most likely to happen in cold or wet conditions, and when you are tired or in a hurry.

When lifting heavy weights, do you ever have to:
- Bend awkwardly
- Twist your back
- Extend your arm(s) well away from your body?

These movements increase your chances of a back injury.

If it is not possible to keep the weight close to your body, and to put most of the strain on your leg muscles (rather than your back muscles), can you change how you do the task? Can the weight be slid along a ramp or other surface? Can the weight be rested on a cart or dolly?

The common scenarios for back injuries and muscle strains include slippery or wet floors; muddy or uneven ground; falls from ladders or off the edge of unprotected drop-offs; and collisions with low beams or other obstacles. Concrete floors can be roughened up, grooved, or treated...
with a non-slip paint. Holes in the ground should be filled in and levelled. Use ladders that are in good repair (and throw out any that are not reliable).

Wherever you can, consider using mechanical aids to reduce the temptation to lift an unsafe or awkward load.

When doing repetitive work, have you noticed:

- Numbness
- Tingling sensations
- Stiffness or aches
- Shooting pains in the hands or arms?

These can be early warning signs of repetitive strain injuries such as tendinitis or carpal tunnel syndrome. Get medical advice for these symptoms. If addressed right away, it is often possible to prevent permanent damage to muscles, tendons, and nerves.

**Unexpected Movement of Machinery or Equipment**

Whenever you are working with machinery that could start up or otherwise shift position and cause injury, you must use some form of lockout procedure. A lockout procedure simply isolates equipment or machinery from the energy source that powers it.

For example, the lockout procedure for a repair to a hardwired conveyor is:

- Turn off the conveyor.
- Shut down the circuit at the breaker box. If possible, lock the circuit in the *off* position, and tag it with an explanation for the lockout. (If there is no lockout location at the circuit switch, you may have to lock the door of the circuit box itself. However, this is a very poor alternative, since it restricts access to other circuit switches until the work has been completed.)
- Try to turn on the conveyor. This important step – often overlooked – may cause the belt to move, if undischarged energy has remained in the electrical system of the equipment itself. Then turn it back off.
- Do the repair.
• Unlock the circuit.
• Turn the conveyor on – briefly at first. The first time the equipment is operated, a quick on-and-off jog will make sure that everything is moving freely as it should.

If you need to work on hydraulically-operated equipment, consult the manufacturer’s manual carefully. Follow the written procedures. Depending on the equipment, a hydraulically-controlled part may need to be bled and slowly lowered to the ground before it can be safely worked on. In other situations, you must securely block hydraulic equipment before working on it, to prevent unexpected movement if the hydraulic system fails or releases pressure while someone is working underneath.

**WORKING WITH ANIMALS**

Some of the hazards of working with animals will seem obvious to anyone who works in a dairy. Animals can kick, bite, squeeze you against a wall or fence, or step on you.

Other hazards may not be so obvious: for example, the transmission of diseases when humans come into contact with the blood, urine, or feces of infected animals.

Finally, there are indirect hazards of working with animals, such as levels of noise high enough to permanently damage your hearing. This section of the booklet will discuss:
• Safe animal handling
• Protection from disease
• Prevention of noise-induced hearing loss
• Making the barn a safer workplace.

**SAFE ANIMAL HANDLING**

When working around dairy animals, your safety depends on:
• A sensitive understanding of animal behaviour, and the skill and experience based on that understanding
• Good design of the working areas.
Good Practices Around Animals

Domesticated animals learn from their environment and their experience with people. Cows that are exposed to stress, sudden movements, sharp noises, or pain are more likely to cause an injury – to a person working around them, to other animals, or to themselves.

Cows develop habits based on the dairy routines. Heifers, because they have not yet developed the same habits, are more unpredictable in their reactions.

It is possible, when you’re tired or frustrated, to lose your temper with an animal. You not only risk an immediate injury, but you also may stress the animal, and make it more likely to kick someone else later.

Good Design of Working Areas

Any animal enclosure should contain slips or escape routes: narrow openings just big enough for you to escape. Sometimes called “man gates,” these slips should be about 14” wide, and braced by posts. Every worker should be able to quickly reach at least one slip or other escape route in an enclosure. As a general habit, plan in advance an escape route whenever you work in an enclosure with animals.
PROTECTION FROM DISEASE

Diseases that affect humans, and that are transmitted by animals are called “zoonotic diseases” or simply “zoonoses.” You can be exposed to zoonotic diseases in a variety of ways:

- By direct contact with animal blood, urine, or feces, if splashed in your eyes, nose, or mouth
- By introduction into your bloodstream through cracked skin or open cuts
- By inhalation of dust or micro-organisms in the air
- By transmission from an infected animal to a human by the bite of a fly, mosquito, tick, or flea.

In British Columbia, some of the zoonotic diseases that can affect dairy workers are:

- Salmonella (a gastro-intestinal illness, caused by oral contact with bacteria)
- Cryptosporidiosis (a gastro-intestinal illness, caused by oral contact with micro-organisms in feces)
- Leptospirosis (a potentially severe illness, caused by direct contact of bacteria-infected urine with broken skin, mucous membranes, or the mouth)
- Q Fever (a flu-like illness, caused by inhaled contact with coxiella, a type of bacteria)
- Hantavirus Pulmonary Syndrome (a potentially severe lung disease, caused by airborne contact with a virus in the dust of infected mouse droppings and urine)
- Tetanus (a potentially severe illness, caused by bloodstream contact with a bacteria in soil contaminated by animal feces)

Assume that any body fluid from dairy animals may be carrying a zoonotic disease.

As much as possible, use personal protective equipment (PPE).

- Use a particle-filtering (HEPA) dust mask or respirator when sweeping or stirring up loose dirt and dust.
- Always use disposable latex rubber or nitrile (synthetic rubber) gloves if your skin is cut or chapped.
• Change saturated or badly soiled work clothes as soon as you can.

Supplies of all items of personal protective equipment (goggles, masks or respirators, gloves, and so on) should be readily available and in good condition. Half-face respirators must be properly fitted to be effective.

Anyone working on a dairy farm should be hand-washing frequently: before and after using the toilet; before eating or taking a break; and after any contact with the animals. Paper towels, non-irritating soap, and nailbrushes should be in good supply at all sinks.

If an eyewash station is available in the barn or dairy, take a few minutes to learn how to use it. (Eyewashing is described in more detail in a later section of this booklet, Working with Hazardous Materials.)

One type of eyewash station is a small wall-mounted kit, with a specially-designed bottle of sterile liquid and a chart that demonstrates its use. Another type is a simple switch on some types of sink faucets, that directs two streams of water upward to allow a good continuous flushing of the eyes.

A simple route of infection is on contaminated work clothing. Use a storage area outside of the house for work clothes, dirty boots, gloves, and other gear. These should be taken off and dried for future use, or set aside for separate laundering with plenty of hot water and bleach.

Take seriously any symptoms of disease infection. If you notice any unusual symptoms, get a medical check-up without delay. (Make sure that the doctor is aware of your work on a dairy farm as a possible exposure to zoonotic disease.) Here are some symptoms to be aware of:

• Chronic coughing, difficult or painful breathing
• Prolonged fever, night sweats
• Unexplained skin rashes or sores
• Prolonged intestinal problems, diarrhea, or abdominal cramping.
CLEANING THE BARN SAFELY

Pressure-washers may be either electric or gas-powered. An electric pressure washer must be used on a protected circuit (a ground fault indicator or GFCI).

Gas-powered pressure washers, like any fuel-consuming engine, produce carbon monoxide (CO) gas in the exhaust. Farm safety organizations in the US have recently drawn attention to the dangers of using gas-powered pressure washers in dairy barns. Carbon monoxide can build up quickly enough to kill a person if the exhaust is not vented well beyond the building.
PREVENTION OF NOISE-INDUCED HEARING LOSS

The noise levels in parts of a dairy operation are high enough to permanently damage your hearing. In fact, statistics show a higher rate of noise-induced hearing loss among farmers, than in comparable populations. Sources of high noise include tractor and equipment motors, poorly adjusted ventilation fans, and animals in close quarters.

Noise-induced hearing loss, or NIHL, can be caused by isolated, extremely loud noises such as gunshots. However, noise-induced hearing loss is more commonly caused by long-term exposure to continuous noises.

NIHL usually happens gradually. By the time a person realizes that voices (especially higher-pitched children’s voices) are harder to understand, significant damage has already begun.

How do you know if a noise might damage your hearing? As a general rule, if you have to raise your voice to be understood by someone standing at arm’s length from you, the noise level is probably above 83 decibels. Above this level, you need ear plugs or earmuffs to protect your hearing.

Ear plugs and earmuffs can offer the same levels of protection. Earmuffs are useful for short-term use against intermittent loud noises. Keep a pair of good quality earmuffs ready for use at the door of a noisy equipment or pump room.

Disposable ear plugs may be made of foam or plastic, and are inexpensive and widely available. Popular models are attached to a string or band of plastic, so they can hang around the neck between uses. You can also get comfortable custom-moulded ear plugs that can last for years.

If you believe you have already suffered some hearing loss, it is especially important to use good hearing protection! Even if you are not as sensitive to loud noise as you used to be, it can still damage your remaining hearing.
WORKING WITH HAZARDOUS MATERIALS

THE EFFECTS OF HAZARDOUS MATERIALS

All hazardous materials can have serious effects on people and animals. Here are some examples of these effects.

If pipeline acid rinse is accidentally mixed with any kind of concentrated bleach solution (in a leak during improper storage, or as the result of a spill), the chemicals can combine to fill the air with deadly chlorine gas.

Another example on some dairy farms is the use of formaldehyde in hoof baths: formaldehyde can cause a person to become sensitized, so that even a small exposure causes a serious allergic reaction. In addition, formaldehyde causes cancer during animal studies, and is a probable carcinogen in humans too.

The effects of hazardous materials may be acute (dramatic and short-term), or chronic (long-term), or both.

Remember that the effects may not be the same from one person to the next. Growing children and young people, pregnant women, people with medical conditions, the elderly – all can be more seriously affected by exposure to hazardous materials.

THE WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM

All farm workers who work around hazardous materials must have up-to-date WHMIS (pronounced WIM-miss) safety training. WHMIS is the Workplace Hazardous Materials Information System, a Canada-wide program that defines most hazardous materials as “controlled products.”

Some hazardous materials are not controlled products under WHMIS, either because they can be bought as consumer products in retail outlets, or because they fall under other requirements, such as the Pesticide Control Act.
Even when hazardous materials are not WHMIS-controlled products, they must still be handled safely in the workplace.

The WHMIS program consists of:

- The identification of the controlled products in the workplace, through clear labelling of all containers
- The education and training of all employees in the safe use, handling, and disposal of controlled products
- Worker access to more detailed health and safety information about each controlled product, through up-to-date Material Safety Data Sheets (MSDSs).

Therefore, hazardous materials around the farm must be clearly labelled. Your employer may arrange for you to receive WHMIS training from FARSHA.

You should be able to answer the following questions about each hazardous material on the farm, giving as many specifics as you can:

- What are the hazards of this material?
- What measures are necessary to work safely with this material?
- What should I do in an emergency involving this material?
- Where on the farm can I find more detailed information about this material?

If you feel that your answers would be vague or uncertain, take the time to get the necessary information. Ask your employer where the MSDSs are kept, and take some time to read through them. If you still have questions, contact FARSHA for more detailed information.

**Material Safety Data Sheets (MSDSs)**

Material Safety Data Sheets are prepared by the manufacturers of hazardous materials. Depending on the situation, you may be provided with an MSDS when you buy a product. In other cases, you may have to ask. If the supplier does not have an MSDS on hand, you can request it directly from the material’s manufacturer, or visit the manufacturer’s website.

Under the WHMIS requirements in Canada, all “controlled products” must be supplied with an up-to-date MSDS. In turn, the employer is
required to keep the MSDSs (dated within the last three years) on hand in the workplace for easy reference.

**PESTICIDES**

In Canada, pesticides are regulated by the *Pest Control Products Act*, and therefore have to meet different requirements from WHMIS-controlled products. The requirements of the *Pest Control Products Act* cover the type of crop and pest the product may be applied to; the dilution and method of application; the type of protective equipment and precautions required; and re-entry times. Many pesticide manufacturers also provide MSDSs – if one is available to you, review it to be sure you are following all the precautions.

Under the *Pest Control Products Act*, pesticides are classified as slightly toxic, moderately toxic, or very toxic. Anyone who mixes, loads, or applies a moderately toxic or very toxic pesticide must have a current Pesticide Applicator’s Certificate. Contact FARSHA if you need to arrange for this training. FARSHA also has brochures and booklets on pesticide safety.

The pesticides most commonly used on dairy farms are herbicides: triazine types such as atrazine; acetanilide (also called amide) types such as metolachlor; and others. Most herbicides are classified as “slightly toxic” and do not require a Pesticide Applicator’s Certificate. However, they can cause serious health effects if not used carefully.

The vapour from any of these products can be inhaled, or it can settle on exposed skin and be absorbed directly into the body. A pesticide can be swallowed if any residue has not been washed off your hands before handling cigarettes, chewing gum or tobacco, or eating.

When mixing or working with these herbicides, do everything you can to minimize all these forms of contact.

Wear clothing that covers as much of your skin as possible. In some situations, this may mean a suit of disposable paper coveralls. Goggles will prevent splashes as well as vapour absorption through the delicate tissues of the eyes. Protective gloves are made of different materials such
as natural latex rubber, nitrile, neoprene, polyethylene, and so on. Be sure you have chosen the right type of glove, by checking the MSDS for each specific product.

Use a properly-fitted half-face respirator. This type of respirator is sometimes called an “air-purifying” respirator because it purifies the existing air by removing some poisons through a filter cartridge - it cannot, however, supply new air. Be sure that the respirator filter cartridges are the right type for the pesticide you are working with, and that they are up to date.

Store equipment like respirators separately from pesticides and other hazardous materials, to prevent contamination of the inner surfaces.

Be sure to use the right type of respirator for the job. Some pesticides require an air-supplying respirator for a greater level of protection.

Clothing that has been lightly contaminated with pesticides should be stored separately from all other laundry until it can be washed separately. If clothing has been heavily soiled with any hazardous material, it should simply be thrown away, rather than contaminating the washer and dryer.

VETERINARY PREPARATIONS

Your employer may be treating hoof ailments with a hoof bath of diluted formaldehyde or copper sulfate.

Formaldehyde has been identified as a serious health and safety concern in many types of workplaces. When it’s sold as a 37% solution in water, it is also called “formalin.” Formaldehyde liquid and vapour are both flammable, and may react with solvents and alkalis. Formaldehyde has a strong warning odour. However, after exposure to formaldehyde, some people become less aware of the smell and irritation, and may therefore not react to high concentrations of formaldehyde in the air.

The vapour that arises from the surface of the formaldehyde is extremely irritating to the delicate tissues of the nose, mouth, and eyes. Direct contact of formaldehyde on the skin can cause a chemical burn or rash. If concentrated formaldehyde is splashed in the eyes, it can cause permanent damage.
Formaldehyde is a sensitizer. This means that after an initial exposure to formaldehyde, some people may have an allergy-like reaction to later exposures, even at very low levels. Sensitization reactions can be surprising and unpredictable, developing after a single exposure or many. The reaction may happen only once, or it may develop into a permanent condition.

Formaldehyde is classified as a “probable human carcinogen.” This means that repeated animal tests with formaldehyde have resulted in cancers of some form, and that humans who were studied after exposure to formaldehyde were more likely to develop certain types of cancer than would otherwise be expected.

Always allow for good ventilation around the hoof bath, so the vapour-filled air is carried out of the barn as quickly and directly as possible.

When mixing formaldehyde or similar solutions, always wear protective gear to further reduce your exposure. The right protective gear includes:

- A half-face respirator mask with formaldehyde filters
- Chemical goggles with a seal around the face to prevent eye absorption of vapours as well as to protect from splashes
- Neoprene or nitrile gloves (not latex rubber)
- Long sleeves.
CLEANSERS AND DISINFECTANTS

Typically in the dairy, three types of materials are used:

- A caustic (alkali) pipeline detergent, which is usually made up of sodium hydroxide, potassium hydroxide, and other ingredients
- An acid pipeline rinse, which usually includes sulfuric acid or phosphoric acid
- A disinfectant, which usually includes sodium hypochlorite (bleach solution) in combination with other chemicals.

Each of these materials is packaged as a concentrate, and must be diluted for use.

These materials must be stored separately from one another, because if they accidentally come together in their concentrated form, they are very reactive.

Concentrated alkalis, when mixed with concentrated acids, can become extremely hot, spatter violently, splash corrosive material around, and give off poisonous gases. If concentrated acids (such as pipeline rinse) are mixed with concentrated bleach solutions, the chemicals combine and then break down, releasing hydrogen gas (which is explosive) and chlorine gas (which can be deadly).

In their concentrated form, each of these products can cause irritation or permanent damage to the eyes, nose, throat, or respiratory system. When you are working with these materials, especially if you are manually mixing or diluting them, wear a half-face air-purifying respirator with cartridges that will protect you from acid gas vapours and chlorine.

Any of these products can dry and crack your skin, making it more vulnerable to infection by bacteria and viruses, or to the absorption of other hazardous materials.

It’s not likely that someone would knowingly drink any of these products. However, it is possible that an unlabelled container could be mistaken for something else, or that a child could swallow the liquid without understanding the danger. Be sure that access to these products is limited to people who have been trained to handle them safely.
SAFE HANDLING TIPS FOR ALL HAZARDOUS MATERIALS

Protective Clothing and Other Gear

Protective gear is not “one size fits all.” You must be sure that the gloves or respirator you’re using will actually protect you.

A cheap paper dust mask (sometimes called a “comfort mask”) will prevent visible particles of dust and sawdust from filling up your nose as you work. However, it cannot filter smaller particles – and these smaller particles are the ones that can cause damage deep in your lungs. A half-face respirator is what you should be using. It should seal tightly around your nose and mouth. The replaceable filter cartridges can be chosen according to the hazard. Use the respirator’s resealable bag to protect it from dirt or chemical contamination.

Latex rubber gloves do not protect against many of the hazardous materials used on dairy farms. For example, you may have seen latex rubber gloves disintegrate on contact with certain solvents. A better choice is nitrile, which is a synthetic rubber substitute. Disposable nitrile gloves are not expensive.

In an Emergency

If someone is splashed with a corrosive liquid, the faster you can react, the better.

You may have seen on MSDSs the direction to immediately rinse the skin or eyes with fresh water for 15 or more minutes. Consider where this might be done in an emergency. Do you have access to a gentle flow of clean lukewarm water? Can it be directed upwards, to thoroughly flush acid or caustic from someone’s face and eyes?

To flush someone’s eyes, react calmly but quickly. Rinse the face as much as possible. Gently hold the eyelids open with your fingers, and allow the water to flow directly on and around the eyes. In the pain and shock of the emergency, it’s easy to misjudge the passage of time – be sure that at least 15 minutes has been spent thoroughly rinsing the eyes and face before stopping. Then be sure the person showers thoroughly, to remove any material that ran into the hair or around the neck and
shoulders. Have a doctor verify that no further attention is required.

**Disposing of Unwanted Hazardous Materials and Used Containers**

As a general rule, all hazardous materials containers can be returned to your supplier after they’ve been emptied. Triple-rinse them, and if possible, slash or puncture them to prevent their use for some other purpose.

**Working Around Manure**

When manure is concentrated in a covered pit or open lagoon, it begins to ferment or decompose, producing four hazardous gases:

- Methane
- Hydrogen sulfide
- Carbon dioxide
- Ammonia.

Each of these gases presents a major hazard to people, animals, and property.

**Methane**

Methane is a flammable gas that can build up into an explosive mixture with air. It is odourless, colourless, and lighter than air, so it accumulates at the ceiling or top of any enclosed space. When mixed with air, the slightest spark can cause it to explode. It can also displace the oxygen in air, causing an invisible deadly atmosphere.

**Hydrogen sulfide**

Hydrogen sulfide is also potentially explosive when it mixes with air in a confined space. It smells strongly of rotten eggs at low concentrations, but as it becomes stronger, it paralyzes the sense of smell and cannot be
detected. It is heavier than air and accumulates near the surface of the manure, or in nearby depressions in the building or ground. It is extremely irritating at low concentrations. At higher concentrations, it causes unconsciousness and respiratory failure. Hydrogen sulfide can kill within a few breaths.

**Carbon dioxide**

Carbon dioxide, or CO₂, is normally present in the atmosphere; it is also exhaled by people and all other animals. It has no detectable odour, and is heavier than air. Carbon dioxide replaces the oxygen in air in low-lying areas or in confined spaces. The first signs of excess carbon dioxide are difficulty breathing, dizziness, headache, or impaired judgement. At higher concentrations, carbon dioxide can displace enough oxygen to cause suffocation within a few breaths.

**Ammonia**

Ammonia is an irritating, toxic gas with a stinging smell. Breathing ammonia in air can cause serious tissue damage in the nose, throat, and lungs. It can be deadly at higher concentrations.

Any accumulation of manure will produce a combination of these gases.

You should assume that a deadly atmosphere is present at any time around any concentrated manure.

Because some of these gases are explosive, no sparks should be allowed near concentrated manure. Ventilation fans, agitator motors, and lighting must all have explosion-proof wiring.

**Barn Cleaning Equipment**

Dairy barns in BC use a variety of manure removal systems. Each presents different hazards.
Are the collection pits or gutters deeper than a few feet? Without strong ventilation, gases can accumulate in the air space above the manure, and create an unexpected hazard in the space. Any work done in a space like this, even if it is open at the top, should be considered potentially hazardous unless the air quality is known to be safe.

If the barn is equipped with automated manure scrapers, keep the floor clear of obstructions, or equipment can be damaged if the cable is pulled taut. Keep the protective covers on the motor and belt drives of the scraper.

**MANURE COLLECTION AREAS**

Once collected, the manure is held in a pit or containment, which may be directly under the barn, or a short distance away.

Manure pits (and their associated sumps, pump areas, and so on) are actually considered “confined spaces.” There is more information on confined spaces in a later section of this booklet.

If the farm has an enclosed manure pit (under the barn floor, for instance), there must be at least two openings for air circulation. High-volume ventilation fans can supply fresh air around an enclosed manure pit, and drive contaminated air away from people, animals, and buildings. All holes and openings to the manure pit should be covered by sturdy grates at all times.

If a manure pit is being pumped, the agitation of the solid and liquid layers will cause a rapid increase in the volume and concentration of gases. As a manure pit fills, the gas layer can be pushed up out of the enclosure and into the air breathed by people or animals.

The *Occupational Health and Safety Regulation* requires workers to leave the building (or an adjoining building, if there’s any chance of the gases moving) while manure is being agitated. No one may re-enter the area until it has been thoroughly ventilated and the toxic gases have dispersed.

Before working around the manure holding area, consider the hazards. Are there low-lying areas where deadly gases may accumulate? Are there raised walls or barriers around the lagoon or pit to prevent a fall
into the manure? How steep or slippery are the inner sides of the lagoon or pit? Would you be able to rescue yourself, or should a second person be on standby?

**PUMPING AND SPREADING MANURE**

Your employer may pump liquid manure directly to an irrigation system, or it may go through a separation stage to make it easier to handle. Whichever system is used, be aware of the hazards discussed here.

Holding tanks used for manure are considered confined spaces. If the mechanical parts or pump mechanism are inside the tank, maintenance or repairs become a high-risk activity, and must follow written confined space entry procedures. When the tank needs to be cleaned out, use an extension wand and hoses so entry is not required.

**HANDLING FEED AND BEDDING PRODUCTS**

**HAY**

Both hay and silage can develop allergy-causing moulds. As the hay or silage is moved or broken up, mould spores become airborne in the dust, and can be inhaled. Over time, exposure to this mould can cause lung disorders and respiratory disease. The allergic reaction is commonly called “farmer’s lung,” although the allergy is only one of the possible problems that can develop.

If you suspect that hay or silage has become mouldy, use a respirator or a disposable HEPA face mask. **Be sure to get the right filter cartridges or masks.** They must be marked HEPA (or N100), or for somewhat less protection, they must be marked N95.

The cheap paper “dust masks” or “comfort masks” commonly sold in hardware stores will actually allow mould spores to pass freely into your lungs.
Big accumulations of hay also pose a fire hazard. A damp core at the center of a hay pile can get hot enough to smolder, and the hay pile itself provides the fuel. Be extremely cautious if hay has gotten wet; disturbing the hay may either stir up mould spores, or provide a sudden inrush of oxygen to a “hot spot.”

**SILAGE**

Silo gas (nitrogen dioxide and other related chemicals) builds up within the first two days of ensilement, and may not disperse for a few weeks. Silo gas is heavier than air, so it flows downward into the lowest part of any space. It can accumulate at the base of a tower silo, in depressions in the ground, or within the silo itself.

Whether the silage is processed in a tower silo, a bunker, or poly tubes, silo gas builds up inside. It is not visible to the naked eye, although it may have a pungent or bleach-like smell.

Silo gas is a respiratory irritant because it combines with natural moisture in the nose and throat, and forms a corrosive liquid that damages the delicate tissue of the lungs.

At high concentrations, silo gas is a killer. However, another danger exists as well. It is possible to work in low concentrations of silo gas with little immediate discomfort. The gas is breathed deep into the inner surfaces of the lungs, and many hours later, can cause a reaction that begins with coughing, and can become very serious. (This has sometimes been called “silo-filler’s lung.”)

**BEDDING MATERIALS**

As with damp hay and straw, mould spores can also develop on sawdust bedding, which is commonly used in BC dairy farms. Use the same precautions when working with sawdust, particularly if it has gotten damp.
ROUND BALE

Dairy farms in BC may use either traditional square bales, or large round bales of hay. Round bales bring a new set of hazards that have already caused many serious injuries and deaths across North America.

Bale-handling equipment

Conventional front-end loaders, and tractors equipped with conventional forks are not safe for handling large round bales. Operators have been injured or killed as a result of round bales rolling back down the arms of conventional front-end loaders.

A round bale may weigh as much as a small car. Carrying even one round bale will change the stability and handling of any tractor or loader, making it more prone to rollover. Because of the rollover hazard, FARSHA strongly recommends that any equipment used with big bales be equipped with a rollover protective structure (ROPS). However, the ROPS is specifically designed to protect the operator from injury during a tractor rollover. The structure of the ROPS may not prevent a large round bale from smashing into the operator’s space.

A bale loader should be equipped with a spear or spears (spuds), or a grapple, or other system that is specifically designed for handling the large round bales. The loader should incorporate a restraining device that will prevent a bale that has come loose from sliding backwards onto the operator’s cab.

USING EQUIPMENT

In BC, most dairy farms have some combination of the following equipment:

- Tractors and tractor attachments
- Hay elevators
- Irrigation equipment
• Front-end loaders and skid-steer loaders
• Feed mixers
• Manure spreaders
• Corn harvesters
• Sawdust spreaders
• Forage wagons
• Hay wagons
• Balers and bale-handling equipment.

**WORKING WITH A TRACTOR**

The tractor has brought tremendous efficiency to farming and ranching. However, in Canada, the leading cause of work-related deaths on farms and ranches still comes from side and rear rollovers of tractors. You have very little chance of surviving a tractor rollover if the tractor does not have a rollover protective structure (ROPS). The combination of ROPS and seatbelt will prevent you from being thrown or crushed under an overturning tractor.

The centre of gravity of most tractors is very near the rear of the vehicle, usually just above and ahead of the rear axle. When the tractor is on a slope, pulling a weight, or making a turn, it may be very close to tipping over or flipping backwards. A tractor rollover can happen in as little as half a second – much less than the normal reaction time of an alert adult. It is not possible to “jump clear” before a tractor rollover.

You can reduce the risk of a tractor rollover. Maximize the stability of your tractor:
• Set the tires at the widest position possible for the job.
• Keep the weight low – use fluid-filled tires. When carrying weight in a tractor bucket or on forks, lower the load while travelling.
• Use ballast to keep your tractor balanced.
• Do not pull weights that are beyond the capacity of the tractor (the owner’s manual has this information). Attach towlines only at the manufacturer’s hitching points.
- Keep the tractor on level ground, wherever possible.
- Stay well away from the edge of holes, ditches, and other excavations – at least as far from the edge as the hole is deep.

**The Rollover Protection Structure: A Life Saver**

Since 1985, all tractors manufactured for sale in British Columbia have been required to have a ROPS and seat belts. Today, farm employers **must** have non-ROPS tractors retrofitted and certified, unless a particular tractor is fitted with an incompatible implement or is used in low-clearance work where a ROPS-equipped tractor could not be used.

If the farm has more than one tractor, use the newer, safer model for activities that pose more risk of rollover (towing equipment, pulling stumps, working on slopes or near ditches, and so on). Keep the older one for use on level ground only.

Tragically, people – particularly children – continue to be seriously injured or killed while riding as passengers on the wheel covers, draw bars, or in the buckets of tractors or other farm machinery. Unless the tractor has a second seat, ROPS, and seatbelts – **never take a rider**.

Every tractor and implement should have an operating manual. You will need to check the manual for hitching height, towing capacity, and information on height and distance of PTO-driven attachments.

Before using the tractor, make sure that all the shields and guards are in place, and in good condition. If you must remove shields or guards to apply grease or to make adjustments to the tractor or implements, reinstall them before starting work. Keep the slow-moving vehicle (SMV) sign visible and in good shape.

Attach implements or loads at the draw bar or hitch point only. Hitching a chain or cable to any point **above** the draw bar can cause the tractor to flip over backwards. Hitching to other parts of the tractor can misalign the PTO shaft.

Plan your route, and identify hazards in advance. Obstacles and hidden hazards such as stumps, large stones, irrigation pipes, ditches, steep banks, or mud and holes can be flagged if necessary.
If you must drive the tractor along the edge of a ditch or hole, the rule is: stay as far away from the edge as the hole is deep.

**WORKING WITH TRACTOR ATTACHMENTS**

Common scenarios of accidents involving tractor attachments include:

- A helper standing on the ground is not visible to the tractor operator. The person on the ground is struck or driven over.
- Material gets jammed in equipment, and a helper tries to pull it loose while the equipment is still running. The jammed material suddenly is drawn into the equipment, too quickly for the person to let go, and the hand or arm becomes entangled in the moving equipment.
- The tractor operator or a helper takes a shortcut and tries to step over the PTO shaft. A bootlace or cuff snags on the rotating shaft or a protruding bolt, and the person’s entire body is quickly entangled around the PTO.
- The operator or a helper jumps down from the equipment, lands on slippery or uneven ground, and injures an ankle or leg.

When the tractor operator is working with helpers on the ground, everyone must take extra precautions. The operator must know where each person is, at all times, or stop all movement. The helpers, in turn, must understand that all farm implements have blind spots. Helpers must always signal to the operator from a safe distance until they have been seen and acknowledged.

As well, helpers must understand **never** to try to clear blocked or jammed equipment while the equipment is still under power. Establish a system of signals between the operator and helpers, so the operator can shut down the equipment before anyone tries to clear a blockage or jam.

Do not allow anyone to hitch a ride on the draw bar or any part of the tractor.

Use well-maintained shields to cover the PTO shaft and stub. Don’t ever step over or go near the PTO shaft while it is turning, even with the PTO guard in place.
WORKING SAFELY WITH HAY ELEVATORS AND CONVEYORS

The most common hazards of elevators and conveyors are:
- Entanglement of hands, arms, or feet in the moving parts
- Falls, if workers make a habit of stepping on or over the moving belts.

All machinery and equipment must be properly guarded, so that no one can get a piece of clothing or loose hair, a finger, or other body part caught in the moving parts.

Always turn off machinery before trying to unplug a jam. Moving equipment is faster than human reaction time. You will not have enough time to pull free or let go, before being drawn in to the machinery.

A portable elevator is tippy and unstable. Don’t try to move it alone.

Before moving a portable elevator, walk the route. Make sure the ground surface is clear of holes and obstructions, and make sure that there is enough space for turning. If there are electrical power lines or other hazards overhead, plan a safer route.

Lower the equipment to a horizontal position before transporting it. If at all possible, trail it behind a tractor rather than hand-pushing it. Serious injuries and deaths have happened when equipment of this kind collapsed on someone after the wheel hit an obstruction, while being hand-pushed.

A portable auger or elevator is a perfect conductor of electricity, if it contacts an electrical power line. The person touching or standing close to the equipment will become the easiest path for the electricity as it runs to the earth, and electrocutions of this kind are usually fatal. This is another reason to move this equipment with a tractor, rather than by hand-pushing it.

When working around any hazardous equipment, don’t let yourself be distracted. If you are working while tired or inattentive, stop and rest.
WORKING WITH IRRIGATION EQUIPMENT

Irrigation systems are a cost-efficient, labour-saving method of delivering water and fertilizer over a large area. However, each year in North America, farm and ranch workers have been injured and even killed while working with irrigation equipment.

Each type of irrigation system has its own specific hazards, and workers must be trained and knowledgeable in the safe use of the system on their farm.

Read and follow the manufacturers’ safe work procedures that are specific to each type of system. The manufacturers and distributors of this equipment can order the manuals and information you require. As well, many manufacturers now have this information available on their web sites.

Some special precautions while working with irrigation equipment

Many of the electrocutions on farms and ranches have involved irrigation systems. Stay well away from irrigation systems when thunderstorms are near. Lightning can strike a mile away from the centre of the thunderstorm.

Know the location of overhead power lines when hand-moving irrigation pipes. The limits of approach vary, depending on the voltage of the line. The minimum safe distance for most power lines is ten feet, but higher voltages require a greater distance for safety. Check with your local power utility company for specific safety recommendations for the voltages of lines in your area. Stay clear of all power lines, including communication cables.

Electrically-powered central pivot systems need careful, regular inspection and maintenance of the electrical systems. They must be properly grounded; tingling sensations are an important warning sign of a serious hazard. Ensure that this maintenance is done only by a qualified electrician familiar with the system at hand. Electrically-powered irrigation systems must have a written “lock out procedure” and the workers must be trained how to use it.
All motors, sprockets, gears, drive lines, chains and belts must have the protective guards in place. Be aware of moving parts and do not stand or work near them without shutting down the system. Never reach under a guard or shield while the system is operating.

Water weighs ten pounds per gallon and when moving under pressure can create considerable force. When this water comes up against a closed valve, or when a valve is closed too quickly, a “water hammer” of great force can occur. Always shut water off at the main line before closing downstream valves.

The force in a pressurized water line can even blow apart a valve, and violently spray out water and pieces of broken metal. When shutting off a valve on a pressurized line always turn your face and body away from the valve stem. Close the valve slowly.

Don’t stand on pressurized lines, fittings, valves, or towers.

Never drink water from the irrigation system.

For further information on irrigation system safety, contact your equipment manufacturer or supplier. The FARSHA Regional Safety Coordinator can help in developing safe work procedures for your specific irrigation system.

**WORKING WITH FRONT-END AND SKID-STEER LOADERS**

Almost every BC dairy farm has at least one front-end loader or skid-steer loader. These machines combine the driving force of a tractor with a hydraulic system for raising and lowering the bucket (or other attachments).

When operating these machines inside buildings, remember that the exhaust can build up quickly, filling the atmosphere with deadly carbon monoxide. Make sure the space is well-ventilated.

A skid-steer loader (sometimes called a “bobcat” after the brand name of one common type), is small, light, and very agile – the ideal type of machine for a dairy farm. However, because it is small, light, and very agile, a skid-steer loader is sometimes put to risky uses.

Most skid-steer loaders have a safety interlock to prevent accidental movement of the tracks or bucket unless the operator is in the seat. If
your machine has this safety interlock, let it do its work. Don’t try to over-ride it: you or someone else may be tempted to reach into the cab from outside to move the loader “just a little” and instead be pinned or seriously injured at the pinch point between the loader arm and the cab frame.

The hydraulic fluid in the lines of a front-end or skid-steer loader is under tremendous pressure. It is corrosive, and may be hot. If you suspect a leak in the hydraulic lines, hold a piece of stiff cardboard or paper to locate the leak. Never look closely or run your hand in the area of a suspected leak. At 2000 pounds per square inch (PSI), a small jet of spraying hydraulic fluid can be injected through human skin and cause serious internal injury.

**Working Around Confined Spaces**

Dairy farms usually have some confined spaces. Here’s how “confined space” is defined:
- An enclosed and potentially dangerous place
- Not designed or intended for ongoing human presence
- Very limited entry and escape choices
- May contain an atmosphere that is poisonous or explosive, or lacks oxygen
- May have other internal hazards, such as moving equipment (an auger or an agitator).

On farms and ranches in Canada, people have died in recent years when they entered confined spaces and were overcome by poisonous gases, or by a lack of oxygen.

Did you know that as iron or steel rusts in a confined space, the oxygen in the air will be consumed until there is none left? Recently in BC, workers who entered a rusted steel chamber suffocated to death; they were not wearing air-supplying respirators, and there was not enough oxygen to support life in the confined space.

Human beings must have a certain percentage of oxygen in the air to survive (the acceptable range is between 19% and 23%).
It is a dangerous delusion to believe that you can hold your breath long enough to quickly enter a low-oxygen atmosphere. In a low-oxygen atmosphere, you will feel dizzy, start to pant for air, lose consciousness, and eventually die.

A confined space may not have enough available oxygen due to rust, the available oxygen may have been pushed out by other gases, or there may be other toxic gases trapped in the confined space. Any of these factors can cause a deadly atmosphere in a confined space.

Always assume that a deadly atmosphere is present inside any confined space at any time. Don’t take chances.
PROCEDURES FOR CONFINED SPACE ENTRY

If the farm has any confined spaces that may contain a harmful atmosphere (in other words, if there may not be enough oxygen to support life, or if there may be toxic gases), your employer must:

• Develop safe work procedures for entry into the space
• Train workers in the safe work procedures
• Test the atmosphere before anyone enters the space, to ensure that the atmosphere will remain safe while workers are breathing it
• Prepare in advance for a possible emergency rescue.

Using air-testing instruments is the only way to be certain that an atmosphere will support life.

If the air-testing instruments show that the atmosphere is not safe, the confined space must be thoroughly ventilated until repeated tests show that the air is (and will remain) safe to breathe.

In some situations, you may find that the air in a confined space cannot be ventilated thoroughly. In these situations, any worker who enters the space must be wearing an air-supplying respirator (SCBA tank), in addition to the rescue harness and lifeline.

Someone trapped within a confined space will not be able to escape without help. You must set up escape equipment before the work begins. Trained people must be available to help with the rescue. The worker must wear a harness and lifeline, and someone must be ready at all times outside the confined space to carry out a rescue.

PROTECTION AGAINST ENTRAPMENT

Some of the confined spaces on dairy farms may contain another hazard: entrapment. Here are some ways that a worker may be entrapped in a confined space:

• If walls collapse inward onto the worker (the earth walls of a pit, for example)
• If the worker is walking or driving on a crust that unexpectedly breaks through
• If the worker is standing below clumped or crusted material that unexpectedly breaks free and falls
• If the worker gets drawn down in flowing grain, loose sand, or pelletized feed.

Anyone working in this type of situation must be wearing a harness and lifeline; someone must be ready at all times to use the lifeline and rescue an entrapped worker.

**PREPARATION FOR CONFINED SPACE EMERGENCIES**

During an emergency, it will be very difficult to stop an untrained person from entering a confined space to try to rescue someone, especially on a family farm.

The more we follow safe work procedures in and around confined spaces, the less likely it is that an emergency will develop. And the less likely an emergency, the less likely that others may die in a chaotic or untrained rescue attempt!

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**Emergencies involving confined spaces are very dangerous.**

If someone gets into trouble inside a confined space, the immediate response of untrained people may be to rush in to investigate or help. The result can be a tragic chain reaction, as would-be rescuers encounter the same hazard and lose consciousness or die.

Statistics show that **nearly half** of the people who died in confined space incidents were would-be rescuers, entering after someone else had already not come out.

**You will be of no help to anyone in a confined space emergency if you add yourself to the problem!**
TRAINING

Training of workers and family members must address the dangers that are specific to each confined space on the dairy farm.

Deadly gases and a lack of oxygen are not visible to the naked eye, and often cannot be detected by smell. In some confined spaces, the levels of oxygen and toxic gas can change very quickly. Just because someone entered the space safely in the past does not mean it will be safe in the future.

THE WORKSHOP

Every farm has some sort of workshop. The type of tools, and the workshop size may vary, but some hazards are common to all workshops. The workshop should be adequately powered, brightly lit, and sufficiently ventilated.

Use personal protective equipment when necessary: ear plugs or earmuffs; a half-face respirator with appropriate cartridges for your work; face shield; goggles or impact-resistant safety glasses.

If you are using a propane torch, oxy-acetylene rig, or an arc welder in the workshop, be aware of the special hazards. The gas cylinders, valves, and lines must be maintained in good condition. The oxy-acetylene cylinder dolley should have a holder for a fire extinguisher; make sure the fire extinguisher is fully charged. Personal protective equipment includes leather gloves and apron; welding goggles or arc-welding face shield; and a respirator. Pay attention to what’s in the immediate area of work, and clear away anything that could catch on fire. After welding, don’t leave the area until you’re sure all sparks have been put out and all hot materials have cooled.

Make sure you have **at least** one fire extinguisher readily available in the workshop.
Remember as you work in the workshop, that some “home-made” modifications should not be done at all. (For example, the addition of foot pegs for an illegal passenger on an ATV, or the addition of a towing hook on the back of a tractor.) Other modifications should only be done by an authorized equipment dealer.

When you are working on any powered equipment or machinery, follow the lockout procedure to make sure that all the energy has discharged from movable parts, and that the equipment cannot be restarted while your hands are in the line of movement.

FARSHA can provide you or your employer with fact sheets on the safe use of many common shop tools and practices.
APPENDIX – RESOURCES & CONTACTS

Other Resources from FARSHA

The Farm and Ranch Safety and Health Association has other information on health and safety in dairy operations, including:

- Agricultural Equipment Safety
- Stretches and Postures at Work
- ATV Safety for Agricultural Workers in BC
- Farm Accidents – Prevention and Response

There are FARSHA Safety Coordinators throughout British Columbia:

- Fraser Valley:
  - Richard Newton, (604) 852-7143, worksafely1@telus.net
- Vancouver Island:
  - Ken Lacroix, (250) 758-9807, kglacroix@shaw.ca
- Okanagan-Thompson-Nicola:
  - Reg Steward, (250) 546-9397, cowboygus27@hotmail.com
- Kootenays:
  - Kevin Paterson, (250) 427-3958, kpaterson@shaw.ca
- Cariboo:
  - Gene Pascuzzo, (250) 747-3781, pascuzzg@goldcity.net
- Central Interior:
  - Trevor Tapp, (250) 699-6466, ttapp@bcgroup.net
- Peace River:
  - Dennis Meier, (250) 782-3914, damfarm@pris.bc.ca
- Vineyards and Orchards:
  - Brian Nordin, (250) 764-1340, bnordin@shaw.ca
- Senior Health and Safety Coordinator:
  - Sandeep Mangat, (604) 881-6078, sandeep@farsha.bc.ca
FARSHA’s provincial office is:
   Suite 311, 9440 – 202 Street
   Langley, BC, V1M 4A6
   Tel.: 1-877-533-1789 or (604) 881-6078
   Fax: (604) 881-6079
   Email: farmsafe@farsha.bc.ca
   Web site: www.farsha.bc.ca

Other Health and Safety Contact Information

The Workers’ Compensation Board of British Columbia has offices throughout BC:

- For workplace safety and health inquiries:
  Lower Mainland: (604) 276-3100
  Toll-free within BC: 1-888-621-7233

- For claims or rehabilitation inquiries:
  Call your nearest Claims Call Centre, as listed in your local telephone directory.

- Web site: www.worksafebc.com/