

# B.C. DAIRY TALK

## FIRE, FIRE, FIRE !!

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In 1992, sixty-one farm fires raged, at a cost of nearly four million dollars and three personal injuries. Financial costs are high, but they are nothing compared to the physical and emotional devastation that follows. Just ask any dairy producer who has gone through a fire.

One fire is one too many, especially when it could have been prevented! Take the time to examine how safe your operation is and prevent a disaster.

### Prevention is the Key...

Most farms are far from municipal fire stations and lack adequate water supply. Organizing, cleaning and building your facilities with fire prevention in mind is the first step to reducing the risk. Review the following areas and ask yourself: "How fire safe is my facility?"

### Management Prevention

#### 1. Good Housekeeping

Keeping things clean and orderly is good for many reasons, but above all, for the prevention of fire. Check the following list to see how fire-safe your operation is in terms of general housekeeping:

- ✓ flammable liquids are stored in an approved fire-resistant cabinet or room with inventory kept to a minimum;
- ✓ dust and debris are swept up regularly;
- ✓ old, wet and dirty rags are discarded after use in an airtight, non-combustible container with a tight fitting lid;
- ✓ milking equipment is serviced regularly;
- ✓ equipment is cleaned with proper solvents (**not** gasoline) in a well ventilated area away from ignition sources;

- ✓ vehicles and machinery are refueled only in an open area with a supply of Kitty Litter or Absorb-All (**not** sawdust) nearby to absorb any spillovers; and,
- ✓ smoking in barns or near stores of any flammable materials is never allowed.

#### 2. Fire Extinguishers Available

Fire extinguishers (Type ABC) should be available in a number of locations (e.g.: workshops, equipment rooms, feed rooms). Ensure one is always immediately available when cutting or welding. Have extinguishers checked annually by an approved company and recharged as necessary. If you are unsure how to use one, ask a firefighter. They would be pleased to help.

#### 3. Avoiding Hay and Silo Fires

Hay that is put up too wet or silage that is put up too dry will heat and can spontaneously ignite. If growing conditions are right (the proper ratio of moisture, oxygen and organic matter are present) opportunistic bacteria and mold will grow rapidly. It is their rapid growth that leads to heating, drying and subsequently, fire.

To avoid hay and silo fires, ensure that moisture levels are correct. Improper moisture levels can be costly:

1. heat-damaged feed is poor feed value; and,
2. spontaneous combustion can destroy facilities and livestock. Review the following table and prevent the risk!



### Moisture Thresholds For Spontaneous Combustion

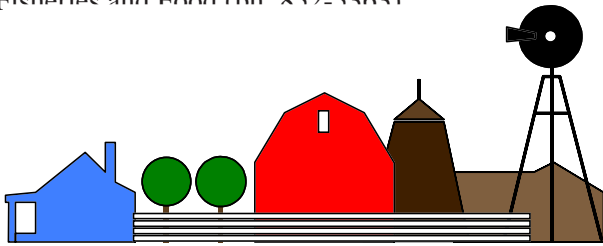
Feed	Moisture Level %
Hay	26 or higher
Horizontal Silage	65 to 70
Conventional Tower	55 to 65
Oxygen Limiting Tower	45 to 50

} or lower

### Build Your Own Temperature Probe...

The use of a hay thermometer probe could prevent a fire. To construct a thermometer probe use a 1.25 cm (1/2 inch) diameter by 3 m (10 ft) long electrical conduit or tubing with a sharpened point at one end. Drill 6 holes of 6 mm (1/4 in) diameter at the bottom of the tube. To use it insert the probe 2.5 to 2.75 m (8 - 9 ft) into the hay or silage. Lower a candy or oven thermometer on a 3.75 m (12 ft) cord to the bottom of the tube and leave it there for five minutes. Remove the thermometer and note the temperature. Repeat this procedure in more than one location.

Temperature and time required to test will vary with the type of forage, density, moisture content, length of cut, etc. For a general temperature guide on when to watch for hot spots keep the following table and a temperature probe handy. The critical period to watch for hot spots is between 2 to 6 weeks after storage. For information on checking for hotspots or borrowing ready-made probes, contact the Resource Management Branch of the Ministry of Agriculture, Fisheries and Food (nb: 852-5363)



### CHECKING FOR HOTS SPOTS IN STORED FORAGE

#### Temperature Range C ( F )

#### Action Required

54° - 60° C (130° - 140° F)

65° C (150° F)

71° C (160° F)

80° C (175° F)

Greater than 100° C (210° F)

Temperature could go either way. Monitor on a daily basis.

Entering the **DANGER** zone. Check temperature at least twice a day. Open up the stack or silage pile to reduce the temperature.

**DANGER!** Inspect every 4 hrs.

Fire pockets may be anticipated. Call the fire department and wet the forage down. Remove, *BUT* only with the Fire Department present as flames will develop when air comes in contact with the forage.

**CRITICAL!!** Certain to ignite.

### Structural Improvements

#### 1. Building Materials

The amount, volume, distribution and flamespread potential of building materials all affect the outcome of a fire. Using building materials with minimal fire spread rating and low potential for combustibility is best. The amount of space required between structures depends on the type of materials used. For example the spacing requirements for hard-board siding is greater than plywood siding, which is greater than painted metal with no openings, which is greater than unpainted metal with no openings. Consult with a building engineer for assistance on the best choice for your situation.

#### 2. Building Design

If the building is long does it have fire breaks or will fire spread rapidly? Are there exits within quick and easy reach? Consider placing man door exits at least every 30.5 m (100 ft). This will be a lifesaver for you or a firefighter needing a quick escape. Other considerations are placement of rooms and buildings to one another. For example, are silos, feed rooms and welding rooms all interconnected with other buildings? These locations are common starting sites for fire. When planning renovations or new structures, incorporate spacings to prevent the spread of fire should it happen. For high-hazard buildings (e.g. work shops) that are connected to livestock buildings, use fire separation materials (e.g. drywall) to provide some measure of security. For more information, talk to a building engineer or your local Fire Department.

### 3. Water Availability

If your facility is not close to municipal fire hydrants, a good ready source of water will be required to successfully fight a fire. Fire fighting equipment requires a storage supply with a minimum capacity of 20,000 L (4,400 gal), within 150 m (492 feet) of any farm structure. Farm pumps for controlling the spread of fire between buildings would need a minimum capacity of 20 L/min (4.4 gal/min) at 200 kPa (29 psi) pressure. To extinguish fires, the minimum capacity would need to be 60 L/min (13.2 gal/min) at 350 kPa (50.75 psi) pressure. Often in a fire the electricity is turned off. To ensure electric motors on the fire pumps will work, a supply of electricity that is independent of all buildings is essential.

### 4. Fuel Storage

Fuels in liquid form should be stored outdoors or in a building for that purpose only and be separated from other buildings by a minimum of 12 m (39.4 feet). If fuel is stored in underground storage tanks then the distance must be 1.5 m (5 feet) from any building to be safe.

### 5. Heat Lamps

A heat lamp located over bedding materials is a high risk situation. To avoid potential fire hazards, install heat lamps in such a manner that if the lamp was accidentally pulled down it would disconnect itself from the electrical circuit. Improper use of heat lamps and space heaters are a common cause of fire.

### 6. Electrical Wiring

Wiring is a favorite snack for rodents. To reduce the fire risk due to rodents, install concealed wiring in rigid conduit wherever possible. Inspect exposed wires on an annual basis and repair any showing wear. Install electrical equipment according to the manufacturer's specifications and use the equipment only for its intended purpose. Keep all electrical equipment, including fuses, junction and outlet boxes, free from dust and grease and repair all damaged or worn-out equipment immediately. Malfunctioning equipment very often overheats and can be a source of fire.

### 7. Lighting

Install barn lights with protective coverings. Regularly clean cobwebs and dust from fixtures. Many a hay fire has started with just a few burning dust embers dropping from hot lights.

### 8. Ventilation

Ventilation is important in diverting toxic gases and smoke away from all occupants (you, the livestock and the firefighters). Ventilation also provides a release of unburned, combustible gases before they ignite. The best way to ventilate a building is by using skylights, roof hatches, emergency escape exits, etc. Talk to an engineer for the options possible in your barn.

### Ten Most Common Causes of Fire

Do any of these describe your farm?

1. Improper use of heat lamps and space heaters.
2. Cleaning machine parts with gasoline.
3. Refueling vehicles and equipment (especially hot vehicles) in an enclosed area.
4. Thawing frozen pipes with a blow torch - use electrical heat tape instead.
5. Equipment that is poorly maintained, dirty, oil strewn and overheating.
6. Hay mow light bulbs that are improperly covered and dusty.
7. Using sawdust as an absorbent for oil or diesel fuel spills.
8. Open containers of gasoline or other flammables in machine shops.
9. Use of flammable liquids too close to ignition sources.
10. Smoking in shop areas and storage areas.

**BE SAFE!** Look through your barn and home today, before it is too late. Design a fire safety plan today and use it. If you need some assistance with renovations, construction or identification of possible fire hazards, consult with your local firefighter and engineer.

*An ounce of prevention IS worth a pound of cure!*

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