



**Gord Woodward**

Gord has run his own communications and business-consulting firm for 24 years. He brings us “Ask an officer” (right) and a “Safety talk” on log hauling (page 21).



**Sarah Ripplinger**

Sarah is a marketer, writer, editor, and journalist. She brings us our cover story on peer safety in health care (page 7).



**Marnie Douglas**

Marnie Douglas is a Kelowna-based writer and communications professional who began her career in journalism. In our “Safety spotlight,” she talks to a woodworking company about its emergency response plan (page 11).



**Gillie Easdon**

Gillie Easdon is a writer specializing in communications, blogs, websites, grant writing, articles, and creative work. She speaks with SafetyDriven on how to chain up properly in one of our “WorkSafeBC updates” (page 16).

# Silo fires pose unique risk to workers, first responders



**Todd Siefke**

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A fire in a silo presents a unique set of risks that are not always found in other types of fires. Any employer who uses bulk storage vessels, such as silos, needs to be aware of the risks. Many industries use silos, but some of the most common are agriculture or agrifoods; breweries; large commercial bakeries; manufacturers of animal feed, wood products, foam, foods, and beverages; and plastics.

In this issue, supervisor in Prevention Field Services Todd Siefke explains the fire hazards of silos and how to reduce the risk of serious injury and death to workers and first responders.

### Q. What makes silo fires unique?

**A.** Silo fires are often smouldering, rather than active fires with open flames. Smouldering fires can be deep rooted in the material being stored and they can feed themselves for days, weeks, or even months. A smouldering fire in a silo may create an oxygen-deficient environment. This affects how you fight the fire: allowing oxygen into the silo by opening hatches or spraying in water can intensify the fire. There's also an explosion risk from accumulation of carbon monoxide.

You could also see structural collapse due to silo materials absorbing the water and increasing in weight. The materials being stored could add more complexity as well — disturbed combustible dust could also cause an explosion.

### Q. What am I required to do as an employer?

**A.** You need to create a risk-based emergency response plan and assign someone to oversee it. To get started, identify the hazards and do a risk assessment. Your plan also needs to cover the following:

- Training and equipment needs
- Specific actions to be undertaken
- Roles and responsibilities

- A communication plan
- Outreach to first responders — fire departments will rely on you for information

### Q. What are some other actions I can take to reduce the risk of fire?

- A.** Your specific prevention practices will depend on your industry and circumstances. In general, regularly monitor your silo content with the goal of preventing spontaneous combustion. How long has it been stored? How often do you turn it over? Regularly measure temperature and the concentration of gases. Look for ways to prevent ignition from an outside source such as a spark from your equipment. Inspect your equipment and do preventive maintenance regularly.

### Q. What should I consider when creating an emergency response plan?

- A.** There are three important factors: type, materials, and resources. Here's what to review:
- **Type of silo:** The more airtight it is, the greater the potential for explosion due to carbon monoxide or combustible dust.
  - **Materials it contains:** Understand the characteristics of what you're storing, such as its size, shape, and byproducts. The material's characteristics have an impact on the risk of fire and the methods for extinguishing it. For example, biofuels and silage are susceptible to self-heating from biological activity and chemical oxidization, which could lead to spontaneous ignition. The porosity/permeability of the product could affect an extinguishing agent's ability to disperse through the material. Other materials may absorb water during firefighting activities and structurally compromise the silo's integrity.
  - **Available resources:** It's not good enough to simply say, "I'll call 911 if there's a fire." Is there a fire department nearby or do you rely on an in-house fire brigade? Discuss with them the potential for a silo fire and the risks it creates.

Develop a firefighting strategy so everyone knows what to do. Then practise your plan.

### Q. What are the best practices for responding to silo fires?

- A.** Incidents here in B.C. show that fighting silo fires is extremely challenging and dangerous, even for professional fire services. So, never rush into it. It is essential to have your strategy in place first. You have a bit of time to think when dealing with a smouldering fire.

One option is to shut down the silo to let the fire burn out. If you have to fight it, don't open the silo and avoid using water if possible. Instead, inject nitrogen. Don't enter the area without personal gas-monitoring equipment or a breathing apparatus. If you're removing the material, do it slowly to minimize the disturbance of combustible dust.

### Q. Where can I get more information?

- A.** Henry Persson, a leading expert in silo fires, has written a guide, *Silo fires: Fire extinguishing and preventive and preparatory measures*, which is available for free online at [msb.se](http://msb.se). You can also download *Firefighting precautions at facilities with combustible dust*, from the Occupational Safety and Health Administration at [osha.gov](http://osha.gov).

Looking for answers to your specific health and safety questions? Send them to us at [worksafemagazine@worksafebc.com](mailto:worksafemagazine@worksafebc.com), and we'll consider them for our next "Ask an officer" feature. ☺



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