



## Mobile Equipment/Pedestrian Proximity Research Project

The Manufacturing Advisory Group (MAG) is working with the BCFSC to conduct an assessment on some technological solutions to help reduce SIFp (Serious Incident Failure potential) incidents between mobile equipment and pedestrians in sawmills. Previous work has been done in this area but with emerging technologies like cameras and detection devices, MAG feels there are opportunities to develop more advanced controls for these SIFp activities.

MAG has identified some common forklift challenges in sawmills:

- Interacting regularly and in close proximity to pedestrians
- Unloading and loading of different contract drivers such as By-Products, logging and shipping trucks
- Frequent and close interaction with other pieces of mobile equipment
- Tightly congested work areas

BCFSC will be working with Brigade Electronics on this project. Brigade Electronics is considered a world leader in this technology with a proven track record of implementing practical technological solutions for employers to reduce potential SIFp events.

A six-week assessment will be conducted at Gorman Bros. Lumber, West Kelowna Sawmill to pilot and test these potential technological solutions. During this time, the BCFSC will work with Gorman Bros. to obtain feedback on the installation and operation of the equipment and will be gathering information on the effectiveness of the technology in improving the detection of a pedestrian in close proximity to a working forklift. The BCFSC is currently working on the evaluation criteria, surveys and resources required to conduct the six-week trial. The on-site activities are planned to commence in mid-May.



*“From a Gorman Group perspective, trialing this line-of-sight and detection technology is the next logical step in preventing mobile equipment-related SIFp’s. We’ve been grateful for the mobile equipment/pedestrian interface safety learnings we’ve previously gained and implemented from our MAG member peers and the BCFSC. We hope the outcomes of this project will build on our shared priority - the pursuit of driving serious safety risks out of our business”* says David Murray, MAG committee Chair and Gorman Group Corporate Safety, HR & Environment Manager.

The following project deliverables were identified by the BCFSC and MAG to help support the sawmill industry:

- Identify appropriate technological solutions for sawmills to reduce Mobile Equipment/Pedestrian SIFp events
- Installation guidance for these technological solutions
- Installer training for technology implementation at worksites
- Operator and worker training on equipment use and identification of limitations (if any)
- Guidance for proper maintenance and inspection activities to ensure the equipment is functioning properly

BCFSC will take the outcomes and learnings and develop resources for industry to aid in the selection, installation and use of these technological solutions to help reduce Mobile Equipment/Pedestrian Interface SIFp events in sawmills. 🌱

# Mark Your Calendar! New Pellet Safety Foundations Webinar Series

Dr. Fahimeh Yazdan Panah, Director of Research and Technical Development, WPAC

Safety is the foundation of our pellet industry. Our work around safety never ends; we are constantly striving for new ways to improve safety whether it be the equipment we use or the processes that support good, safe decision making.

To achieve this, we have to start with the basic foundations of pellet plant safety. That's why WPAC's safety committee in co-operation with WorkSafeBC, the University of British Columbia Biomass and Bioenergy Research Group, and our media partner Canadian Biomass Magazine are hosting the Safety Foundation Series. This six-part series, focused on Process Safety, has broad application across all sectors and is free and open to everyone. The first part in the series will launch May 18, 2021 at 10 a.m. Pacific; and new webinars will be released every two weeks after. You can find out more [here](#).

Immediately following each webinar, there will be a quiz that participants will need to successfully answer in order to pass the webinar and be issued a certificate. Those who successfully pass the six webinars, will be issued a certificate in Safety Foundation Course.

"We believe this type of training is a first for the pellet industry globally," said Scott Bax, Chief Operating Officer at Pinnacle Renewable Energy and Chair of WPAC's Safety Committee. "We've created the series based on what our committee has observed over the past seven years, choosing the areas where we feel we could have the biggest impact from a safety perspective."

The first two webinars will cover **Bow Tie analysis** which is a simple and effective tool for communicating risk assessment results in order to identify the links between the potential causes, preventative and mitigative controls and consequences of a major incident.

- Bow Tie Analysis Part I: Using Bow Tie Analysis to Assess Combustible Dust Hazards and Controls, Kayleigh Rayner Brown, Research Associate at Dalhousie University.

- Bow Tie Analysis Part II: Using Bow Tie Analysis for Critical Controls Management, Cherie Whelan, Director for SAFE Companies, and Bill Laturnus, Safety Advisor, BC Forest Safety Council.

The next two webinars are focused on **Human Machine Interface and Effective Use of Alarms**. Poor alarm management is one of the leading causes of unplanned downtime in process industries contributing to billions of dollars in lost production every year. This introductory principle-based webinar will help participants to understand how the system should convey and facilitate accurate and timely fault and diagnostic information to operators and support effective plant management. The webinars will encourage attendees to think about how their control systems could be optimized for efficiency, safety and operator detection and decision making.

- Human-Machine Interface (HMI) Part I: Situation Awareness and Effective Alarm and HMI Design Practices, Jenny Coleman, Human Factors Investigator, WorkSafeBC, and Charles Bloom, Senior Partner and Jamie Errington, Senior Partner, Human Centered Solutions.
- Human-Machine Interface (HMI) Part II: A journey to improved situational awareness, Jenny Coleman, Human

Factors Investigator, WorkSafeBC, and Brian Grantham, Pulp Manager, West Fraser.

The final two webinars in this series will discuss **Best Practices for Managing the Major Safety Hazards** in wood pellet manufacturing including wood pellet off-gassing, self-heating and silo fires, and combustible dust and gas management. Self-heating, off-gassing and dust/gas explosions are significant challenges for the industry that have already resulted in significant losses of capital investments and tragic loss of life. With the growth of the bioenergy sector, it is important not only that opportunities for bioenergy are implemented in an efficient and economic manner, but also safely.

- Safe Handling and Storage of Biomass Part I: Off-gassing, self-heating and silo fires, Fahimeh Yazdan Panah, Director of Research and Technical Development at Wood Pellet Association of Canada.
- Safe Handling and Storage of Biomass Part II: Combustible dust and combustible gas, Jeff Mycroft, Regional Sales Manager, Fike Canada.

Each webinar is one hour and open to everyone including operating personnel at every level of the pellet plant, supervisors, senior management, control operators, other industry participants, equipment suppliers, and safety professionals. We encourage you to share the news about this new webinar series with your colleagues across industry. You can read more by visiting our [website](#).

For more information, contact:

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**SAFETY FOUNDATION WEBINAR SERIES**

Complete & pass this 6-part Webinar Series to receive the **Safety Foundation Course** certificate.

The graphic features a background image of a worker in safety gear reviewing documents on a table. The text is overlaid on the left side of the image.



# CRITICAL CONTROL MANAGEMENT (CCM)

## Breaking New Ground in Pellet Plant Safety

Photo: Courtesy of Skeena BioEnergy

Despite significant safety advancements in the pellet industry, the potential remains for pellet plants to experience major unwanted events (MUEs) such as explosions fires and fatal accidents, that are hard to prevent by traditional approaches to safety.

The Wood Pellet Association of Canada (WPAC) and the British Columbia Forest Safety Council (BCFSC) have partnered to pursue a process known as Critical Control Management (CCM) that already is or will be underway at every WPAC member plant in 2021.

“Critical Control Management will help companies understand their equipment better; employees will be able to operate and maintain the equipment safely and improve its reliability; and plant managers will know what activities are most important.”

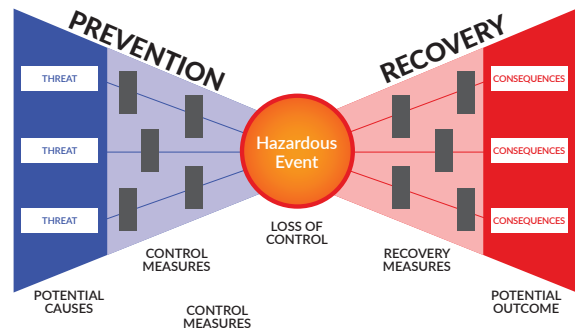
– Gord Murray,  
Executive Director, WPAC

### HOW DOES CCM WORK?

Plant operators identify potential MUEs or “Top Events” – like fires and explosions – each one of these Top Events forms the centre of a bow tie. All plausible accident scenarios that could exist around each MUE are considered and then critical controls that would prevent the Top Event are identified.

This approach relies on the Swiss Cheese Model where each slice of swiss cheese has holes and each hole represents a potential safety weakness. But when you layer the slices together, the holes don't line up, they create a collective barrier to safety weaknesses. This is the essence of CCM.

CCM is already widely used in mining, chemical, and oil and gas industries around the world, but it's new to the wood pellet industry.



“The bow tie is a great tool because it gives everyone involved a better understanding of how they need to work together to prevent an incident. We can now manage multiple layers of controls into a single process resulting in better safety at every level.”

– Cherie Whelan, BCFSC's director  
for SAFE Companies

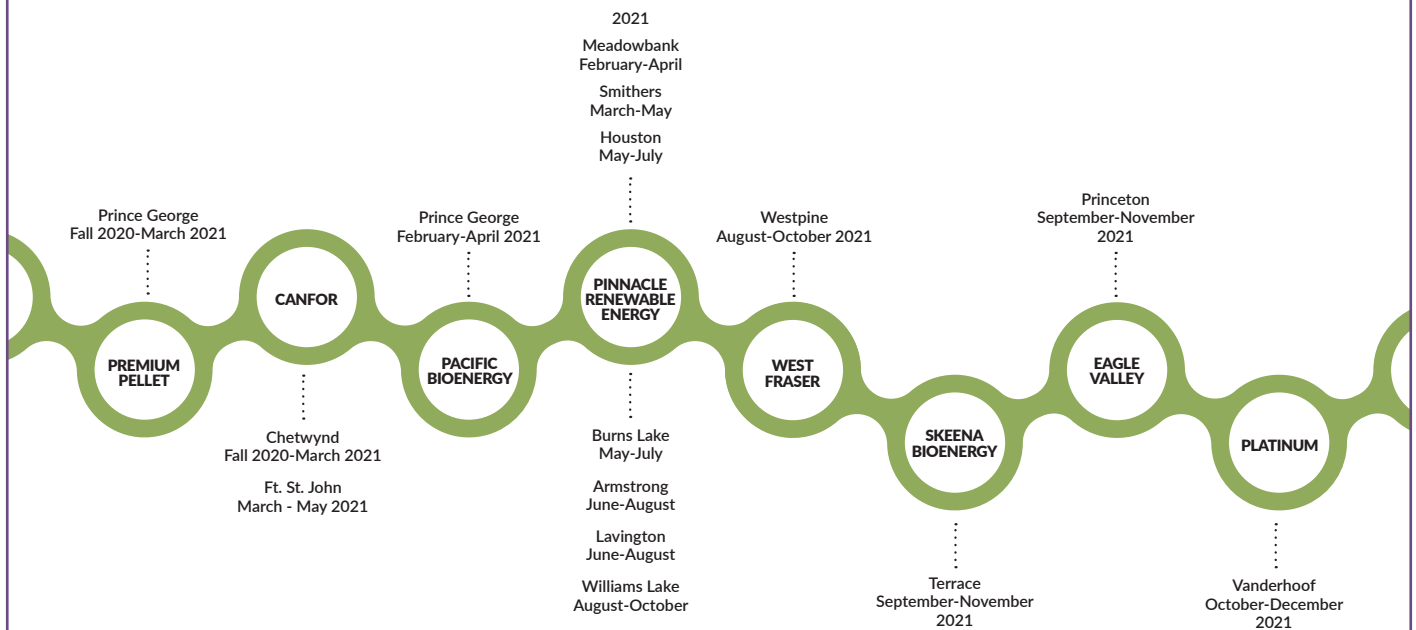
## CCM COMING TO YOUR PLANT SOON

The CCM committee, comprised of representatives from WPAC, BCFSC and Dalhousie University, have developed an implementation schedule with the goal of completing bow ties and critical controls to WorkSafeBC by late 2021. In 2021, the primary focus is on potential fires and explosions.

BCFSC Safety Advisors, Bill Laturnus and Tyler Bartels are providing on-site and online support to all 15 operations. They will provide education, training and mentoring in the necessary knowledge and skills required to identify the

site-specific critical controls. Further support will help the operations develop their internal systems to effectively manage these critical controls to ensure they operate 100% of the time.

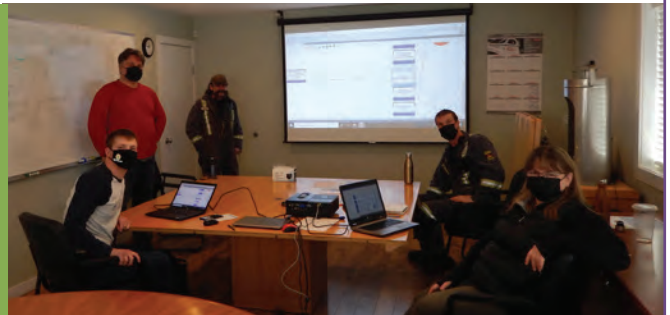
WorkSafeBC is also funding a Dalhousie University Department of Process Engineering and Applied Science research project that will build on this work and transfer this knowledge to employees and employers throughout the wood pellet industry across Canada and internationally.



## COMMITMENT TO SAFETY

British Columbia's wood pellet producers are devoted to running safe operations. In 2014, the Wood Pellet Association of Canada established the WPAC safety committee as a forum for industry participants to share knowledge and to work collectively on solving common safety concerns.

**FOR MORE INFORMATION**  
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**BC Forest Safety**  
Safety is good business



Article submitted from Canadian BioMass Magazine

## Achieving a safety culture amid a pandemic

By Gordon Murray, WPAC



Every day, WPAC members and their employees work tirelessly to ensure leading safety practices are implemented and embraced. We know we will be measured by our collective efforts as an industry. Our reputation and the trust of regulators, the general public and the families of our employees depend on this. That we achieved this and more in 2020 was no small feat in the context of a global pandemic.

With the support of our partner, the BC Forest Safety Council (BCFSC), and the commitment of our members from the boardrooms to the plants across Canada, we were able to overcome the challenges of not being able to meet face to face. It meant long, virtual web conferencing, technical glitches and it required at times more patience and perseverance than most have with technology on the best of days.

We entered 2020, with ambitious goals, and we're proud to say that we met most of them and continue to progress several others. Perhaps the one that stands out is an initiative we undertook with BCFSC in collaboration with WorkSafeBC.

After some research, and with guidance and prompting from WorkSafeBC, WPAC's safety committee decided to pursue a process known as Critical Control Management (CCM) which starts with a procedure known as bowtie analysis. We now have all 14 of our member plants and one MDF facility clamoring to be the first to implement it. Together, WPAC and BCFSC, in conjunction with the industry, have developed an implementation schedule with the goal of completing bowties and critical controls to WorkSafeBC by late 2021.

The initiative also caught the eye of university researchers. WorkSafeBC is funding a Dalhousie University Department of Process Engineering and Applied Science research project that will facilitate knowledge and transfer of this work across the wood pellet industry in Canada and internationally.

That same year, our safety committee decided to produce an educational video to help operators minimize the risks associated with syngas. Several partners quickly stepped up with technical and financial support. These include the University of British Columbia Biomass and Bioenergy Research Group, BC Forest Safety Council, Bio Mass Canada Cluster, and Agriculture and AgriFood Canada. This group has now released the seven-minute video Best Practices in Managing Combustible Gas which describes how and where combustible gas will accumulate during the pellet manufacturing process and gives recommendations for reducing risk.

In addition, WPAC, in co-operation with the BC Forest Safety Council, WorkSafeBC and media partner Canadian Biomass, held the Belt Dryer Safety Symposium. The purpose of the symposium was to share the learnings from these incidents and for individual operators to share in-house safe operating procedures with their industry colleagues. There were more than 70 participants and, at the end of the event, they agreed to form a Belt Dryer Working Group to review past incidents and lessons learned for safer uses of belt dryers in our industry.

That brings us to 2021. WPAC's safety committee, which is responsible for developing and communicating strategies for continuous improvement has released its 2021 safety work plan with a focus on:

- 1. Critical Control Implementation**  
Complete Bowties and critical controls to WorkSafe BC by end of 2021.
- 2. Improving Belt Dryer Safety**  
Establish a working group to develop safer operating procedures.
- 3. Equipment Isolation**  
In cooperation with Dalhousie University, prepare white paper and host a symposium on best practices.

#### **4. Plant Operator Training and Use of Alarms**

With BCFSC, complement development of the basic plant operator competency assessment and host webinars.

#### **5. Local Nitrogen Supply Initiative**

Complete and share information on stationary and mobile nitrogen systems, as well as recommendations for effective emergency response in case of self-heating and silo fire.

#### **6. Training and Supervision of Workers**

Complete and rollout Safety Foundation series videos and webinars.

#### **7. Incident Reporting**

Evaluate how we report in collect, track and report incident data.

#### **8. Communications**

Continue to hold monthly Safety Committee calls, host webinars and distribute communications that promote and foster a safety culture across the industry.

While these may feel like uncertain times, one thing we can be sure about is that safety will remain our foremost priority. We also know that our success will be determined by our partnerships, by listening to our members and their workers, and communicating effectively every day.

The 2021 Work Plan is available [here](#).

WPAC's safety committee works in close cooperation with WorkSafeBC and the BC Forest Safety Council. The committee welcomes new members. If you are interested, please contact Scott Bax or Gordon Murray:

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