



Wood Products Manufacturing Hazard Identification and Risk Assessment Training

BCFSC worked in partnership with the Manufacturing Advisory Group (MAG) to develop an interactive online training program targeted at workers in wood products manufacturing. This free online course focusses on understanding what hazards and risks are and the difference between them, what types of common hazards are found in manufacturing worksites such as sawmills and wood pellet production facilities and how to identify, assess and control the common hazards in these facilities.

The course takes about 1.5 hours to complete and is self-paced with flexible access available 24/7 through the BCFSC online learning centre.

Learn more about [Hazard Identification and Risk Assessment Training](#) enrollment or course details. 🌐

Critical Control Management Initiative on Track for Wood Pellet Sector

Critical Control Management (CCM) is a game-changer for the wood pellet sector and the uptake at every plant across BC is testament to the industry's ownership of and commitment to safety and leadership.

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 can't be prevented by traditional approaches to safety.

In late 2020, WPAC and BCFSC partnered to pursue a process known as Critical Control Management (CCM) which is already widely used in mining, chemical, and oil and gas industries around the world, but it's new to the wood pellet industry. A CCM committee comprised of representatives from WPAC, BCFSC and Dalhousie University was struck in 2020 to support personnel at each plant as they worked to complete and submit bow ties and critical controls to WorkSafeBC by late 2021.

Participation has been key to the success of the initiative. From the outset, WPAC members embraced the initiative wholeheartedly with 14 of the 15 plants now completed with the 15th underway. The information developed at the workshops will be put into a workable template for the plant to use when it submits its plan to WorkSafeBC.

“Overall the plan was ambitious and required a significant amount of effort—but we all knew it will make our plants safer,” says Gordon Murray, WPAC's executive director. “Companies will understand their equipment better; workers will be able to operate and maintain equipment safely; the equipment will be more reliable; and plant managers will know what activities are most important.”

Canfor Energy North Limited Partnership in Chetwynd, a joint venture partnership between Canfor and PacificBioenergy, completed the first pilot critical control project in collaboration with the BCFSC and Dalhousie. Grace Cox, the Safety Manager, Wood Products Canada says the initiative has provided lots of great learning.

“We were able to gain a better understanding on how the process works, the value of involving all the stakeholders, leadership, trades and operators in the process,” says Cox. “Overall the site has a better understanding of their critical control systems and have clearly defined expectations, and we are better equipped to train our new employees.”

The multi-day workshops were supported by Kayleigh Rayner Brown, P.Eng., M.A.Sc., Director of Obex Risk Ltd., who specializes in process safety

and hazard analysis. BCFSC Safety Advisors, Bill Laturnus and Tyler Bartels provide on-site and online support to all 15 operations for the workshops as well as ongoing support helping the operations develop their internal systems to effectively manage these critical controls to ensure they operate 100% of the time.

“The success of the initiatives is a direct result of both the commitment at every level of the companies and getting the right people to the workshop,” says Laturnus. “As a result, we were able to identify tangible and practical changes that could be easily implemented.”

In addition to the workshops, the CCM committee produced a [series of videos](#) to aid in the understanding of the process and its importance to employee safety. WorkSafeBC is 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.

You can learn more about the CCM initiative at WPAC's [website](#). 🌐



From left to right: Kayleigh Rayner Brown, P.Eng., M.A.Sc., director of Obex Risk Ltd.; Bill Laturnus, BCFSC safety advisor; and Tyler Bartels, BCFSC safety advisor.

Free Safety Foundations Certificate Available Now

By Gordon Murray, Executive Director, WPAC

Hundreds of Canadians across the wood pellet sector have earned their Safety Foundations Certificate after participating in a six-part Safety Foundations webinar series produced by the Wood Pellet Association of Canada.

Operating personnel at every level of the pellet plant, supervisors, senior management, control operators, other industry participants, equipment suppliers, and safety professionals have participated in the series already.

“I’ve worked in the pellet industry for 26 years, and safety is lifelong learning, with new data and processes being developed every year so these webinars are critical to keeping up with the latest information and guidance,” says Jamie Colliss who works as Senior Plant Manager at Pinnacle Renewable Energy, Part of Drax.


Each webinar is about an hour long and looks at critical safety topics such as bow tie analysis, human-machine interface and effective alarms, and safe handling and storage of biomass. At the end of each webinar, participants are required to pass a quiz before they can proceed to the next level.

“Through these webinars, employees are learning how to improve their own safety performance, and ultimately



contributing to a safer industry,” says Dr. Fahimeh Yazdan Panah, Director of Research and Technical Development at WPAC and who led the safety foundations initiative.

“We strongly encourage everyone in the pellet industry to take this course and we hope managers and personnel at pellet plants will share this free service with their co-workers and safety teams,” says Cherie Whelan, Director, SAFE Companies at the BC Forest Safety Council. “It’s a small commitment of time with big returns.”

The Safety Foundations Webinar Series was produced by the Wood Pellet Association of Canada’s safety committee in co-operation with WorkSafeBC and UBC Biomass and Bioenergy Research Group, BioMass Canada and media partner Canadian Biomass Magazine. You can enroll for the webinars here. 

Getting to Safer by Isolating the Problem

The Wood Pellet Association of Canada, BC Forest Safety Council and Dalhousie University recently partnered on an initiative to improve pellet industry practices regarding equipment isolation with an eye on minimizing the impact of potential combustible dust fires, explosions and deflagrations within wood pellet plants.

Although the industry’s goal is to eliminate such incidents altogether, we also want to ensure that if such an incident should occur, that any damage would be effectively isolated. Process safety and hazard analysis expert Kayleigh Rayner Brown, P.Eng., M.A.Sc., Director of Obex Risk Ltd. was commissioned to lead a project on analyzing deflagration isolation for safer operation and is conducting the work alongside BCFSC Safety Advisor Bill Laturnus. Funding for the project

was provided by Dalhousie University, arranged by Dr. Paul Amyotte.

Combustible wood dust presents a significant risk of fires and explosions in all wood products manufacturing facilities – including wood pellet plants – where much of the machinery and equipment used has a propensity for generating ignition sources and the processes can involve suspended dust and dusty conditions. A mere spark can cause a dust explosion or serious fire and result in catastrophic loss of life, injuries, and destruction of buildings. And often these incidents will spread throughout an entire production facility rather than being isolated to an individual process area within the plant.

In a dust explosion, the **deflagration** processes happen so rapidly that the

Deflagration & Isolation

According to the National Fire Protection Association (NFPA)

- A dust deflagration is defined as “propagation of a combustion zone at a velocity that is less than the speed of sound in the unreacted medium” NFPA 652 (2019).
- Deflagration isolation is the technique for the “interruption or mitigation of flame, deflagration pressures, pressure piling and flame-jet ignition between enclosures that are interconnected by pipes or ducts” NFPA 69 (2019).

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Continued from page 16...

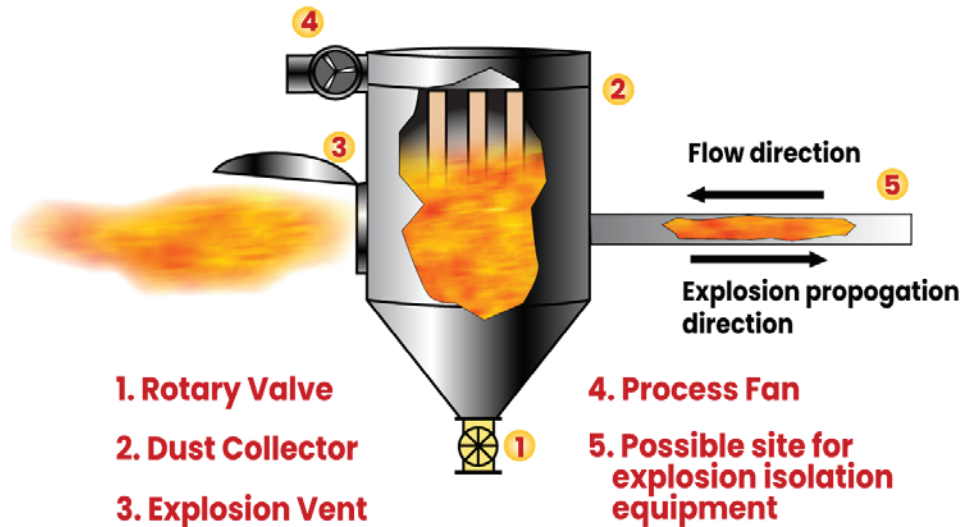
heated air and gaseous fire products (such as carbon dioxide) produce air pressure so extreme it can blow out walls and destroy structures. Deflagration also has the potential to create secondary explosions. This project is focussed on best practices aimed at isolating the potential for this kind of event.

“Basically deflagration can happen in any piece of equipment and the risk is it can have a domino effect and create a secondary explosion, sometimes worse than the first explosion because in a processing facility everything is connected by things like chutes, conveyors and ducts,” says Rayner Brown. “The key is to isolate or confine the event to the one piece of equipment so it can’t propagate from say the hammermill to the belt dryer.”

The project has involved speaking with subject matter experts from wood pellet plants across Canada, engineering consultants with expertise in combustible dust, as well as experts in deflagration isolation equipment supply. Once completed at the end of the year, Rayner Brown will produce an easily digestible resource and reference for wood pellet producers across Canada that provides:

- Information on the different types of deflagration isolation systems that are available
- Information on the installation, operation, and maintenance of these systems to improve understanding
- Summaries of the failure modes and degradation factors associated with these systems
- Considerations for how these failure modes and degradation factors can be managed to make systems more reliable and effective

Rayner Brown says it’s clear that conducting a dust hazard analysis (DHA) is key – something that is required under US law but not in Canada. According to Timothy Heneks,



P.E. at Dustcon Solutions Inc. a Dust Hazard Analysis (DHA) is a systematic approach to identifying and analyzing the fire and explosion hazards posed by combustible dust within a facility, which is more detailed than a typical walkthrough assessment performed by equipment vendors or insurance companies.

As Rayner Brown has discovered in her interviews, a DHA is just the first step. Incorporating deflagration isolation follows a four-step roadmap:

1. Conduct Dust Hazard Analysis (DHA)
2. Purchase equipment for recommended deflagration isolation points
3. Install deflagration isolation equipment
4. Maintain deflagration isolation equipment

While safety is clearly the priority of this work, Rayner Brown says she’s finding that her interview subjects see additional benefits to deflagration isolation.

“In one of my interviews with a pellet producer it became clear deflagration isolation also helped productivity,” explains Rayner Brown. “After adopting this approach, they had an event at the plant that in the past

Four-step road map for implementing deflagration isolation:

1. Conduct Dust Hazard Analysis (DHA)
2. Purchase equipment for recommended deflagration isolation points
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4. Maintain deflagration isolation equipment

would have taken it down for two weeks but in this case the plant was only down for 24 hours and sustained zero damage.”

The research is nearly completed, and Rayner Brown’s findings and producers’ guide will be ready early in the near year. WPAC will also host a free webinar to go over the key findings – stay tuned for announcements about the invite in the coming weeks. 🎧