

BREAKING NEW GROUND IN PELLET PLANT SAFETY

CRITICAL CONTROL MANAGEMENT (CCM)

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 with traditional approaches to safety.

The Wood Pellet Association of Canada (WPAC) and the British Columbia Forest Safety Council (BCFSC) partnered to pursue a process known as Critical Control Management (CCM) that was implemented 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 (see diagram above). 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 is 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 HAS BEEN IMPLEMENTED

The CCM committee, comprised of representatives from WPAC, BCFSC, and Dalhousie University achieved the goal of completing bow ties and critical controls for WorkSafeBC by late 2021. The primary focus was on potential fires and explosions.

BCFSC Safety Advisors, Bill Laturus and Tyler Bartels provided on-site and online support to all 15 operations as well as education, training, and mentoring in the necessary knowledge and skills required to identify the site-specific critical controls. Continuing support will help the operations develop their internal systems to effectively manage these critical controls, ensuring they operate 100% of the time.

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.

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.



VIDEOS:

[Bow Tie Analysis & Critical Controls](#)
(for Workshop Participants)

[How To Manage Critical Controls](#)
(for Workshop Participants)

[What Are Critical Controls](#)
(for Managers and Employees)