

Combustible Wood Dust Explosions



Video Discussion Guide

WORK SAFE BC

About combustible wood dust

Combustible wood dust refers to the fine, dry wood particles that are a by-product of milling wood. These particles can often settle away from the production area (usually on rafters, ceilings, beams, ductwork, walls, joints, and machinery) and present a risk of fire and explosion if not controlled effectively.

Facilities likely to produce fine wood dust include:

- Sawmills and planing mills
- Pulp and paper mills
- Shake and shingle mills
- Reconstituted wood product facilities (e.g., pellet, hardboard, particleboard, insulation board)
- Prefabricated wood building and component facilities (e.g., doors, windows)
- Structural wood member facilities
- Millwork facilities
- Wood kitchen cabinet facilities
- Wood household furniture facilities
- Other wood products manufacturing facilities

A serious fire or dust explosion can cause catastrophic injuries, loss of life, and destruction of buildings. Fortunately, these events are preventable.

About the video

This video explains what combustible wood dust is and why it's such a hazard in sawmills and wood shops. It shows how such dust increases the risk of fires and explosions in your workplace.

The video should be presented in the context of a combustible wood dust management program.

About this discussion guide

This discussion guide provides background information for viewing the video and suggestions for facilitating discussion before and after viewing. Due to variations among workplaces, viewers may come up with answers that are not listed, but are also correct.

Before presenting the video, familiarize yourself with other WorkSafeBC resources on combustible dust. A good place to start is the [combustible dust resource toolbox](#).

After watching the video, viewers will likely want to know more about how to prevent fires and explosions triggered by combustible wood dust. The [post-viewing questions and discussion points](#) section of this guide provides some answers. For more detailed information on how to reduce the risk of wood dust explosions, read the WorkSafeBC publication [Combustible Wood Dust Management Program Development Guide](#).

Pre-viewing questions and discussion points

Start a discussion on combustible wood dust and the risks it poses. Disastrous events at two mills in British Columbia have raised awareness of this hazard and underlined the importance of controlling dust.

Here are some questions for viewers to keep in mind while watching the video:

Of the types of dust created in a mill or wood shop, which is the most hazardous?

- Fine wood dust.

What factors must be present to make combustible wood dust explosive?

- Answers could include: ignition source, dispersion into air, oxygen, confined structure or building.

How much combustible wood dust does it take to pose a risk of fire and explosion?

- As little as a handful.

What specific risk does the first explosion pose?

- The first explosion can initiate a chain reaction where the initial shock wave from the explosion disperses any dust in the immediate area, leading to a secondary explosion.

What makes a fireball so destructive?

- Its speed; the fact it travels outward, igniting everything in its path.

What are the two key ways to reduce the risk of a fire or explosion triggered by combustible wood dust?

- Prevent accumulation and dispersion; control ignition sources.

Post-viewing questions and discussion points

After the video, have viewers revisit the pre-viewing questions. Then move on to the following topics.

Name some areas in your workplace where wood dust may build up.

- Floors
- Structural members
- Conduits
- Pipe racks
- Cable trays
- Equipment
- Leaks around dust collectors and ductwork
- Hidden areas (in attics and crawl spaces, behind walls, above false ceilings, inside guards and enclosures)

Name some processes and areas that may disperse fine wood dust (cause it to float up) into the air in high concentrations.

- Discharge from saws or other dust-handling equipment
- Equipment vibration
- Conveyor transfer points
- Compressed air use
- Upset conditions

In what areas of a mill or wood shop is a combustible wood dust explosion most likely to take place?

- Inside any work area that is fully or partially enclosed by walls, equipment, or other objects (for example, planer enclosures, conveyor tunnels or galleries, chipper and blower rooms, basement areas between enclosed waste conveyance lines, log feed-in, cut-off, and de-barker areas).

In the video, a spark was the ignition source for the fire. What are some other potential ignition sources in your workplace?

- Power tools
- Heated surfaces (e.g., light fixtures)
- Open flame or fuel-fired heating equipment
- Friction points
- Machines and processing equipment
- Electrical systems
- Static electricity
- Tramp metal
- Hot work
- Cigarette smoking