PART 6: SUBSTANCE SPECIFIC REQUIREMENTS

Combustible Dusts

Definitions	**6.133**	**(1) In the combustible dust provisions:**
"combustible dust"		**means a dust that is ignitable or deflagrable;**
"combustible dust management program"		**means a program under section 6.141;**
"combustible dust provisions"		**means sections 6.133 to 6.159;**
"combustion hazard"		**means a factor that could give rise to a combustion that could cause injury or death to a person;**
"combustion risk"		**means the likelihood that a combustion hazard could give rise to a combustion that could cause injury or death to a person;**
"combustion risk assessment"		**means an assessment under section 6.140;**
"competent ignition source"		**, in relation to a combustible dust, means an ignition source that is sufficient to ignite the dust in one or both of the following circumstances:**
		(a) when the dust is suspended in air;
		(b) when the dust is not suspended in air;
"conveying system"		**means a mechanized system that moves dust, or materials that include dust, from one location or operation on a worksite to another location or operation on the worksite, such as a conveyor belt system, bucket elevator system or pneumatic conveying system, but does not include**
		(a) a dust collection system,
		(b) a vacuum cleaning system, or
		(c) moving dust using mobile equipment;
"deflagration"		**means a flame that spreads rapidly outwards from the point of ignition through dust suspended in air;**
"dust collection system"		**means a mechanized system or device used to capture and contain dust suspended in air;**
"dust record"		**means any of the following:**
		(a) a determination under section 6.138 or 6.139;
		(b) a combustion risk assessment;
		(c) a combustible dust management program;
"enclosure"		**means a space, whether wholly or partially enclosed, in which air pressure could build;**
"fire"		**includes smouldering but does not include deflagrations;**

"handle"		**, in relation to dust, means to use, store, transport or otherwise handle the dust;**
"metal dust"		**means a dust more than 10% of which, by mass, is made of metal;**
"minimize"		**means to eliminate or, if that is not practicable, to reduce to the lowest level practicable;**
"minimum ignition energy (MIE)"		**means the lowest energy a competent ignition source needs to ignite a combustible dust suspended in air;**
"mobile equipment"		**means the following machinery and equipment:** **(a) a self-propelled ground machine with wheels or endless tracks or that is operated on rails or fixed tracks;** **(b) any equipment attached to or towed by the machine;**
"pneumatic conveying system"		**means a conveying system that moves a controlled flow of dust using air or other gases as the conveying medium;**
"relevant machinery and equipment"		**means machinery or equipment that** **(a) generates or handles combustible dust, or** **(b) is part of a system that generates or handles combustible dust;**
"vacuum cleaning system"		**means a mechanized system or device used to capture and contain dust that is on surfaces.**
		(2) For certainty, a reference to machinery or equipment in the following provisions is to be read to include an enclosure used for bulk storage of combustible dust: **(a) section 6.140;** **(b) section 6.141;** **(c) section 6.147;** **(d) section 6.150;** **(e) section 6.152;** **(f) section 6.156.**
What dust is covered	**6.134**	**(1) Subject to subsection (2), the combustible dust provisions apply in relation to dust at a workplace if the dust is an input, product, byproduct or waste of a work process.** **(2) The combustible dust provisions do not apply in relation to** **(a) a workplace where there is no reasonably foreseeable risk of injury or death to a worker from the combustion of dust, or** **(b) dust that is in a sealed commercial package.**
	Combustible Dusts – Identification, Assessment and Management	
General Duty	**6.135**	**An employer who generates or handles dust at a workplace must** **(a) minimize the combustion risks, if any, for the dust, and**

(b) without limiting paragraph (a),

(i) identify under section 6.137 whether the dust is a combustible dust,

(ii) if the dust is a combustible dust, prepare and update a combustion risk assessment under section 6.140 for the dust, and

(iii) if the combustion risk assessment identifies a combustion hazard in relation to the dust,

(A) prepare, implement and update a combustible dust management program under section 6.141 for the dust, and

(B) provide instruction and training under section 6.143 in relation to the combustion hazard.

Consultation **6.136** (1) An employer must consult in accordance with subsection (2) on

(a) preparation of a combustion risk assessment,

(b) preparation of a combustible dust management program,

(c) updates to a combustion risk assessment or a combustible dust management program that are required by section 6.135 (b), and

(d) instruction and training that is required by section 6.135 (b).

(2) A consultation on a matter under subsection (1) that relates to a workplace must be carried out with

(a) the joint committee for the workplace,

(b) the worker health and safety representative for the workplace, or

(c) if there is no joint committee or worker health and safety representative, a representative sample of the workers of the employer who are working at the workplace.

Identification of combustible dust **6.137** An employer who is required under section 6.135 to identify whether a dust is a combustible dust must assume that

(a) the dust is ignitable unless the employer determines in accordance with section 6.138 that the dust is not ignitable, and

(b) the dust is deflagrable unless the employer determines in accordance with section 6.139 that the dust is not deflagrable.

Identification of combustible dust – ignitability **6.138** A determination for the purposes of section 6.137 (a) must be in writing and must be made in consultation with a qualified person and based on information derived using one or more of the following methods:

(a) by testing a representative sample based on

(i) the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Seventh edition, Part III, Section 33.2.4.3.1, Preliminary screening test, as amended from time to time, or

(ii) a similar screening test published by a national or international body or standards association;

(b) by considering objective data about the dust that is derived using a screening test referred to in paragraph (a) and published by a provincial, national or international body or standards association.

Identification of combustible dust – deflagrability

6.139 A determination for the purposes of section 6.137 (b) must be in writing and must be made in consultation with a qualified person and based on information derived using one or more of the following methods:

(a) by testing a representative sample based on

(i) the Go/No Go screening test methodology in the ASTM E1226-19, Standard Test Method for Explosibility of Dust Clouds, as amended from time to time,

(ii) the ASTM E1515-14, Standard Test Method for Minimum Explosible Concentration of Combustible Dusts, as amended from time to time, or

(iii) a similar screening test published by a national or international body or standards association;

(b) by considering objective data about the dust that is derived using a screening test referred to in paragraph (a) and published by a provincial, national or international body or standards association.

Combustion risk assessment

6.140 (1) A combustion risk assessment for a combustible dust must

(a) identify each combustion hazard for the dust, and

(b) set out the following information for each of those combustion hazards:

(i) the level of the combustion risk posed by the hazard;

(ii) any work processes or other factors that could increase the combustion risk posed by the hazard.

(2) A combustion risk assessment for a combustible dust must be:

(a) in writing,

(b) prepared and updated in consultation with a qualified person, and

(c) based on the following factors:

(i) the physical characteristics, location and amount of the

dust on surfaces, including, without limitation, whether the dust could escape a conveying system, vacuum cleaning system or dust collection system and fuel a deflagration;

(ii) the potential for dispersion and concentration of the dust in the air, including, without limitation, whether a deflagration could spread between interconnected machinery or equipment;

(iii) the potential for confinement of the dust;

(iv) the presence of competent ignition sources;

(v) the presence of oxidants;

(vi) any other relevant factors.

(3) A combustion risk assessment must be updated as soon as practicable after there is a significant change in any of the following:

(a) rooms, buildings or other structures;

(b) machinery or equipment;

(c) work processes.

Combustible dust management program	6.141	(1) A combustible dust management program must

(a) describe how the employer will implement the controls required by sections 6.147 to 6.159, as applicable,

(b) specify any additional controls that are necessary to minimize combustion risks and describe how those controls are to be implemented,

(c) include schedules and procedures for carrying out regular inspections of any of the following that could give rise to a combustion risk:

(i) rooms, buildings or other structures;

(ii) machinery or equipment;

(iii) work processes,

(d) include procedures for responding to the failure of a control referred to in paragraph (a) or (b), and

(e) include procedures for responding to an unintended combustion of dust.

(2) A combustible dust management program must be

(a) in writing,

(b) prepared and updated in consultation with a qualified person,

and

(c) based on the following for each of the combustible dusts addressed by the program:

(i) the combustion risk assessment for the dust;

(ii) an assessment of the effectiveness of any controls that have already been implemented.

(3) A combustible dust management program must be updated as soon as practicable after a review under section 6.142, if changes are necessary to minimize combustion risks.

(4) An employer who is required under section 6.135 to prepare, implement and update a combustible dust management program for a workplace must assign overall responsibility for coordination of the program to an individual who

(a) is the employer or an employee of the employer, and

(b) is knowledgeable about all of the following that are applicable to the workplace:

(i) the controls described in the program;

(ii) the safe operation of the relevant machinery and equipment.

Combustible dust management program – periodic review **6.142** For the purposes of section 6.141 (3), an employer must ensure that

(a) a qualified person reviews the entire combustible dust management program at least annually and recommends any changes necessary to minimize combustion risks, and

(b) a qualified person reviews the relevant parts of the combustible dust management program and recommends any changes necessary to minimize combustion risks if

(i) a combustion risk assessment for a combustible dust is updated under section 6.140 (3), or

(ii) an event described in section 6.141 (1) (d) or (e) occurs.

Instruction and training **6.143** An employer who is required under section 6.135 to provide instruction and training in relation to a combustion hazard must ensure that each worker of the employer who could be exposed to a combustion risk posed by the hazard receives instruction and training on:

(a) the hazard;

(b) the factors that could increase the combustion risk;

(c) the applicable parts of the combustible dust management program.

Records **6.144** **An employer must**

(a) retain a dust record for as long as the employer generates or handles the dust to which the record relates, and

(b) ensure that a dust record includes the following information:

(i) the date the record is prepared or updated;

(ii) the names of the qualified persons consulted;

(iii) in the case of a determination under section 6.138 or 6.139, a copy of the information on which the determination is based.

Availability of Records **6.145** **An employer must ensure that dust records that relate to a workplace are readily available to**

(a) the workers of the employer who are working at the workplace, and

(b) the joint committee or the worker health and safety representative, if any, for the workplace.

Combustible Dusts – Risk Controls (General)

Who must implement risk controls **6.146** **Sections 6.147 to 6.159 apply to an employer in relation to dust at a workplace if the employer is required under section 6.135 to prepare, implement and update a combustible dust management program for the dust at the workplace.**

Competent ignition sources **6.147** **(1) An employer must ensure that, in areas where a combustible dust is generated or handled, competent ignition sources are**

(a) removed, or

(b) if removal is not practicable, controlled to minimize combustion risks.

(2) Without limiting subsection (1), an employer must ensure that

(a) all machinery and equipment directly exposed to a combustible dust is selected, located, installed, maintained and operated to minimize the risk of friction becoming a competent ignition source,

(b) a person does not engage in hot work or use machinery or equipment that gives off flames or sparks or handles hot material unless the person does so in accordance with work procedures, developed by the employer in consultation with a qualified person, that minimize combustion risks,

(c) the risk of the accumulation of electrostatic charge in machinery or equipment becoming a competent ignition source is minimized through grounding, bonding or other effective methods, and

(d) without limiting paragraphs (a) to (c), mobile equipment is selected, located, maintained and operated to minimize the

risk of the mobile equipment becoming a competent ignition source.

(3) An employer must ensure that the machinery or equipment described in subsection (2) (c) is inspected and tested with sufficient frequency to ensure the effectiveness of the methods described in that subsection.

Oxidant control **6.148** If reduction of oxidant concentration is used to minimize combustion risks, an employer must ensure, in consultation with a qualified person, that oxidant concentrations are maintained within the range that will not support combustion.

Suspension control **6.149** An employer must ensure that the concentration of combustible dust suspended in air in the workplace does not become a combustion hazard.

Foreign substance control **6.150** If a foreign substance entering machinery or equipment could give rise to a combustion, by causing a reaction or otherwise, an employer must ensure that the risk of the foreign substance entering the machinery or equipment is minimized.

Bulk Storage **6.151** (1) An employer who has a combustible dust in bulk storage, whether or not within an enclosure, must

(a) ensure that the combustion risks from heat-producing decomposition of the dust are minimized

(i) by controlling the factors, including moisture and stagnation, that could contribute to heat-producing decomposition of the dust, and

(ii) if the controls under subparagraph (i) are not adequate to minimize the risks, by also installing a self-heating detection mechanism, and

(b) prepare, in consultation with a qualified person, and ensure that workers comply with a written emergency response plan that sets out procedures and methods for

(i) responding to the combustion of the dust, and

(ii) determining whether the burning is extinguished.

(2) An employer who has a combustible dust in bulk storage within an enclosure must ensure that

(a) the enclosure is constructed or selected to have minimal elevated surfaces on which the dust can accumulate,

(b) the enclosure is filled and emptied

(i) in a way that minimizes the risk of electrostatic charge becoming a competent ignition source, and

(ii) if the enclosure has a roof or deflagration relief vents, so that persons are not on the roof or near the vents unless the employer ensures, in consultation with a qualified person, that being on the roof or near the vents, as the

case may be, is safe, and

(c) without limiting section 6.157, the workplace is equipped with a fire suppression system or other means that is adequate to suppress the burning of both the dust and, if combustible, the enclosure.

(3) An employer who has a combustible dust in bulk storage within an enclosure must consult with a qualified person and, if the bulk storage could give rise to a deflagration that could cause injury or death to a person, ensure that the enclosure

(a) is equipped with a deflagration suppression system, or

(b) has a design strength that exceeds the maximum reduced deflagration pressure, as determined by a qualified person, and is equipped to release deflagration pressure through deflagration relief vents that

(i) are located at the top of the enclosure or on the side of the enclosure above the maximum level of the stored dust,

(ii) are maintained in accordance with an applicable standard published by a national or international body or standards association, and

(iii) direct the pressure to

(A) a safe outdoor location, or

(B) a safe indoor location, if the vents are equipped with a flame-quenching device.

(4) An employer is not required to comply with subsection (2) (a) or (3) in relation to an enclosure, including, without limitation, a portable vacuum or an intermediate bulk container, if doing so is not practicable because of the size or portability of the enclosure.

Capture of combustible dust **6.152** **(1) An employer must ensure that combustible dust escaping from machinery and equipment is**

(a) minimized, and

(b) if the amount of dust escaping could give rise to a combustion, captured.

(2) If the dust is suspended in the air, capture required under subsection (1) (b) must be carried out using a dust collection system, if practicable.

Removal of combustible dust **6.153** **(1) This section does not apply in relation to metal dust.**

(2) If combustible dust could accumulate on surfaces, an employer must determine, in consultation with a qualified person, and document

(a) the maximum amount of the dust that will be allowed to

accumulate on the surfaces, based on the combustion risk assessment for the dust,

(b) a schedule for regularly removing the dust from the surfaces so that accumulation of the dust does not exceed the maximum amount referred to in paragraph (a), and

(c) methods of removing the dust from the surfaces under paragraph (b).

(3) If dust accumulates in excess of a maximum amount referred to in subsection (2) (a), an employer must

(a) remove the dust to below that level as soon as practicable, and

(b) in the meantime, minimize the combustion risk posed by the accumulated dust.

(4) For the purposes of subsections (2) (c) and (3) (a) and (b), an employer must determine methods so as to minimize

(a) the exposure of combustible dusts to competent ignition sources, and

(b) the suspension of dust in the air in concentrations that could give rise to a combustion risk.

(5) An employer must ensure that compressed air is not used to remove combustible dust other than in accordance with the following requirements:

(a) the compressed air system must be equipped with a mechanism for regulating pressure and set at the lowest air pressure that is effective to blow down the dust;

(b) each competent ignition source must be removed from the area, shut down or otherwise eliminated before using the compressed air;

(c) any dust that has been blown down onto surfaces in the area must be removed, using a method determined in accordance with subsection (4), before competent ignition sources are used.

Removal of combustible dust – metal dust

6.154

(1) This section applies in relation to metal dust that is combustible dust.

(2) If metal dust could accumulate on surfaces, an employer must determine, in consultation with a qualified person, and document

(a) the maximum amount of the dust that will be allowed to accumulate on the surfaces based on

(i) the combustion risk assessment for the dust,

(ii) whether the dust could react with a metal oxide and produce heat,

(iii) whether the dust could react with a substance and

produce a flammable gas, and

(iv) whether the dust, if it combusts, could become molten metal,

(b) a schedule for regularly removing the dust from the surfaces so that accumulation of the dust does not exceed the maximum amount referred to in paragraph (a), and

(c) methods of removing the dust from the surfaces under paragraph (b).

(3) If dust accumulates in excess of a maximum amount referred to in subsection (2) (a), an employer must

(a) remove the dust to below that level as soon as practicable, and

(b) in the meantime, minimize the combustion risk posed by the accumulated dust.

(4) For the purposes of subsections (2) (c) and (3) (a) and (b), subject to subsection (5), an employer must ensure that metal dust is removed using the following methods in order of priority:

(a) using conductive, non-sparking scoops and brooms that have

(i) conductive, non-sparking handles, and

(ii) brushes with soft and natural fibre bristles;

(b) using a vacuum cleaning system for any remaining dust after using the method in paragraph (a);

(c) using compressed air for areas that are inaccessible by brooms and vacuum cleaning systems;

(d) using any method using water or another substance that will not

(i) create a combustible concentration of dust suspended in air, or

(ii) react and give rise to a hazardous combustion.

(5) An employer is not required to give priority to a method under subsection (4) if the employer determines, in consultation with a qualified person, that doing so would be more hazardous than using a method with lower priority.

(6) An employer must ensure that a vacuum cleaning system is not used to remove metal dust other than in accordance with the following requirements:

(a) if the vacuum cleaning system is a portable vacuum cleaner, the waste collection bin of the portable vacuum cleaner is emptied at the end of each shift;

(b) before and after using the vacuum cleaning system for a substance other than the dust, the system is thoroughly cleaned unless

(i) the employer has consulted with a qualified person, and

(ii) the dust and the other substance will not react and give rise to a hazardous combustion.

(7) An employer must ensure that compressed air is not used to remove metal dust other than in accordance with the following requirements:

(a) the compressed air system must be equipped with a mechanism for regulating pressure and set at the lowest air pressure that is effective to blow down the dust;

(b) each competent ignition source must be removed from the area, shut down or otherwise eliminated before using the compressed air;

(c) any dust that has been blown down onto surfaces in the area must be removed, using a method determined in accordance with subsections (4) and (5), before competent ignition sources are used.

Other requirements in relation to metal dust **6.155**

(1) This section applies in relation to metal dust that is combustible dust.

(2) An employer must ensure that workers of the employer who handle a metal dust with a minimum ignition energy (MIE) below 30 mJ

(a) are grounded through personal protective equipment, and

(b) use metal tools that are grounded, bonded and made of spark-resistant material.

(3) If metal dust is present in a work area, an employer must ensure that flammable substances in the work area are limited to the quantity reasonably needed for one work shift.

(4) If use of a pneumatic conveying system with an air-moving device to transport metal dust gives rise to a combustion hazard, an employer must, in consultation with a qualified person, regulate the manner and amount of worker access to and around the system in order to minimize the risk of injury or death to a person.

Relevant machinery and equipment **6.156**

(1) An employer must ensure that relevant machinery and equipment is maintained and operated so as to minimize combustion risks.

(2) An employer must ensure that relevant machinery and equipment is selected, located and, if applicable, installed

(a) in consultation with a qualified person, and

(b) so as to minimize combustion risks.

(3) If relevant machinery and equipment is modified by or for an employer, the employer must also ensure that the machinery and

equipment is modified

(a) in consultation with a qualified person, and

(b) so as to minimize combustion risks.

(4) If relevant machinery and equipment is designed by or for an employer, the employer must also ensure that the machinery and equipment is designed and constructed

(a) in consultation with a qualified person, and

(b) so as to minimize combustion risks.

Combustible Dusts – Risk Controls (Fire and Deflagration Control)

Fire Control	**6.157**	**(1) An employer who has combustible dust at the workplace must be able to suppress a fire at the workplace using a means that is** **(a) selected and installed in consultation with a qualified person, and** **(b) adequate to minimize** **(i) the combustion risks for the dust, and** **(ii) the effects of a combustion of the dust or, if applicable, a substance produced by a reaction involving the dust.** **(2) An employer must ensure that a fire suppression system or other means under subsection (1) is operated in a way that minimizes the concentration of dust suspended in air.**
Deflagration Control	**6.158**	**An employer who has combustible dust at the workplace must** **(a) be able to minimize the effects of a deflagration involving the dust at the workplace using a means that is selected and installed in consultation with a qualified person, and** **(b) if deflagration relief vents are used under paragraph (a), ensure that** **(i) the vents are designed and located, in consultation with a qualified person, to minimize risk to the health and safety of workers and other persons in the event of a deflagration, and** **(ii) the vents and the blast areas for the vents are marked with signs that clearly identify the hazard.**
After a fire or deflagration	**6.159**	**(1) An employer who has combustible dust at the workplace must have written procedures for safely resuming operations after a fire or deflagration involving the dust.** **(2) If a fire or deflagration involving combustible dust occurs in the workplace, the employer must, before resuming affected operations,** **(a) ensure that the combustion is extinguished and the controls described in sections 6.168 and 6.169 are restored to readiness, and**

(b) advise the affected workers that the employer has met the requirements in paragraph (a).

Consequential Amendments

PART 4: GENERAL CONDITIONS

Notification of fire departments **4.17**

(1) An employer having at a workplace hazardous products covered by WHMIS, explosives, pesticides, radioactive material, **combustible dusts,** consumer products or hazardous wastes in quantities which may endanger firefighters, must ensure the local fire department is notified of the nature and location of the hazardous materials or substances and methods to be used in their safe handling.

Cleaning with compressed air **4.42**

~~(1) Compressed air or steam must not be used for blowing dust, chips, or other substances from equipment, materials and structures if any person could be exposed to the jet, or to the material it expels or propels and an injury or health hazard due to fire, explosion or other cause is likely to result.~~

(1) An employer must ensure that compressed air or steam is not used to blow dust, chips or other substances from equipment, materials or structures if

(a) a person could be exposed to the jet or substances blown and the exposure is likely to result in an injury or health hazard, or

(b) using compressed air or steam could cause a fire, explosion or other event that is likely to result in an injury or health hazard.

PART 5: CHEMICAL AGENTS AND BIOLOGICAL AGENTS

Combustible or flammable air contaminants **5.71**

(1) If an operation or work process produces a combustible or flammable air contaminant in concentrations that may present a risk of fire or explosion, the employer must provide a separate exhaust ventilation system for the operation or work process.

(2) If electrical equipment used in an exhaust ventilation system required by subsection (1) contacts the air stream, the employer must ensure that the electrical equipment is permitted under the B.C. Electrical Code

(a) for use in that location, and

(b) for the specific air contaminants that are or may be present.

~~(3) A dust collector having an internal volume greater than 0.6 m3 (20 ft3) and being used to control combustible dusts must be located and constructed so that no worker will be endangered in the event of an explosion inside the collector.~~

(4) This section does not apply in relation to combustible dust within the meaning of section 6.133 (1).

~~**Combustible dust**~~	~~**5.81**~~	~~If combustible dust collects in a building or structure or on machinery or equipment, it must be safely removed before accumulation of the dust could cause a fire or explosion.~~

PART 31: FIREFIGHTING

Procedures **31.5** (2) Written procedures must be established and followed by a fire department or industrial fire brigade for the following situations, where applicable:

(a) fires in buildings 7 storeys or over;

(b) firefighting over water and underground;

(c) fires and other emergency incidents involving hazardous substances;

(c.1) fires and other emergency incidents involving combustible dusts;

(d) rescue from high angles, confined spaces, trenches, excavations and water;

(e) disaster planning and response;

(f) electrical emergencies.

EXPLANATORY NOTES:

At present, the *Occupational Health and Safety Regulation* (*OHSR*) lacks a set of dedicated provisions targeting the management of health and safety risks associated with combustible dusts at the workplace. The purpose of the proposed amendments is to provide a more robust and structured regulatory framework applicable to all types of combustible dust present at workplaces.

WorkSafeBC anticipates providing additional guidance in OHS Guidelines or other resources to offer information on compliance with some of the proposed requirements, such as those related to a combustion risk assessment and the role of a "qualified person" (QP).

Section 6.133
The definition of "combustible dust" is based on the concept of there being two means for a dust to combust, either by it igniting (thereby resulting in a fire) or deflagrating (following an ignition). "Deflagration" is also defined in s. 6.133. The term "dust" is not defined in s. 6.133. The intent of this is to not create a definition which is too technical in nature and reliant on any specific physical properties of the dust, such as its particle size or minimum ignition energy (MIE). Rather, the ordinary dictionary meaning of the term "dust" will apply in regard to these proposed amendments.

The definitions of "combustion hazard" and "combustion risk" are intentionally targeted at only the health and safety of persons at a workplace. For the purpose of the proposed amendments, these two defined terms are not intended to capture or apply to property or environmental loss.

The definition of "conveying system" specifically refers to a system which predominantly moves, or transfers, dust as part of its regular operation. This distinguishes a "conveying system" from other defined systems, such as a "dust collection system," which are used to “capture and contain” dust.

The definition of "dust collection system" specifically refers to a system which captures and contains dust as part of its regular operation. This distinguishes a "dust collection system" from other defined systems, such as a "conveying system," which are used to “move” dust.

The definition of "handle" includes the word “transport” so as to address hazards associated with the transportation of combustible dusts, specifically during loading and unloading stages of such dusts for transporting activities. This definition is integral to the main application provision in s. 6.134 for the proposed amendments. As a result, the proposed amendments will apply to employers whose operations include the transportation of a combustible dust, including its loading and unloading.

The definition of "pneumatic conveying system" specifically refers to a system which predominantly moves, or transfers, dust as part of its regular operation. This distinguishes a "pneumatic conveying system" from other defined systems, such as a "dust collection system," which are used to “capture and contain” dust.

The definition of "vacuum cleaning system" specifically refers to a system which captures and contains dust as part of its regular operation. This distinguishes a "vacuum cleaning system" from other defined systems, such as a "conveying system," which are used to “move” dust.

Section 6.134
Section 6.134 provides limits on the application of the combustible dust provisions (e.g., sections 6.133–6.159). Based on s. 6.134(1), the provisions are intended to apply to dusts in workplace (or industrial) environments which are “an input, product, byproduct or waste” of an employer’s work processes or operations. They are not meant to apply to day-to-day household, or office, dust which might accumulate at a workplace.

Subsection (2) subsequently provides for two scenarios whereby a workplace with dust will not be subject to the combustible dust provisions. The first, in subsection (2) (a), is where an employer finds there is “no reasonably foreseeable risk of injury or death to a worker from the combustion of dust.” This will be based on an employer’s preliminary determination of their workplace. The second scenario, in subsection (2) (b), is for any dust contained in a sealed commercial package.

The purpose of subsection (2) (a) is to create an alternate pathway for compliance for employers who are exposed to “no reasonably foreseeable risk of injury or death to a worker” arising from the combustion of their dust. For those employers, although the combustible dust provisions specifically will not apply, other relevant *OHSR* and *Workers Compensation Act* (*Act*) provisions will still operate and need to be met, such as *OHSR* sections 3.5, 3.9, 4.3, and 4.41, and section 21 of the *Act*. The provision is intended to exclude from the proposed amendments employers only in the lowest range of risk from combustible dust.

Under subsection (2)(a), the employer is expected to consider only dust-related risks at their workplace that are reasonably foreseeable. In other words, the combustible dust provisions will apply only where there is a potential risk of injury or death resulting from a combustion of dust and the employer would reasonably be expected to anticipate such risk.

WorkSafeBC anticipates providing additional guidance in an OHS Guideline or other job-aid resource which will lend direction on what "reasonably foreseeable risk" entails. It could be used by employers to help them with this initial determination. The resource will set out factors for consideration and items whose presence would indicate a reasonably foreseeable risk.

For example, the resource could set out a series of questions for the employer about their workplace based on factors or conditions they would need to verify. A negative answer to each of the questions listed would signify that there (very likely) is no reasonably foreseeable risk of injury or death to a worker arising from a dust-related combustion. The employer would then not be subject to the combustible dust provisions. Some sample questions could include:

- Is dust conveyed via piping or ducting?
- Is dust being captured by a dust collector, enclosureless air-material separator or other collection system?
- Are there any size-reduction processes being performed, such as grinding, pulverizing, abrasion, or chipping?
- Is dust in close proximity to open flame, sparks, exposed electrical connections or other potential ignition sources that are apparent?
- Is dust being stored on a larger scale in bulk storage containers (e.g., bins, silos, intermediate bulk containers)?
- Is there fugitive dust accumulated on elevated surfaces, such as rafters or pipes, without the presence of ongoing cleaning efforts?

The resource will also highlight other applicable provisions of the *OHSR* and *Act* which the excluded employers will still need to consider to manage their combustible dust risk.

Section 6.135
Section 6.135 provides a roadmap for the entirety of the proposed amendments, as it sets out the overarching general duty to be met along with four core requirements which are the cornerstones for this regulatory scheme. All other sections in the proposed amendments in essence flow from the requirements in this section.

Paragraph (a) is specifically aimed at the risks of a particular dust combusting, while paragraph (b) sets out the four pillars of these amendments: (i) identify whether a dust is combustible; (ii) assess the risk posed; (iii) develop a combustible dust management program; and (iv) provide worker instruction and training.

The proposed amendments in general focus solely on the fire and deflagration hazards presented by combustible dusts. Other occupational hygiene-related health hazards associated with combustible dusts, such as respiratory impact on workers, are covered elsewhere in the *OHSR* and, hence, are not dealt with under the combustible dust provisions.

Section 6.136
Section 6.136 establishes a requirement to involve worker representation throughout an employer's process of managing the risks posed by combustible dusts, namely in conducting their combustion risk assessment, preparing their combustible dust management program, and providing relevant training and instruction. Subsection (1) adds clarity to the duty to consult by pertaining specifically to managing the risks associated with combustible dust.

Section 6.137
Section 6.137 provides an employer the option of assuming that their workplace dust is

combustible, thereby permitting an employer to move forward with their combustion risk assessment and, if necessary, a combustible dust management program without having to perform an analysis of their dust under either s. 6.138 or s. 6.139. Section 6.137, along with others in the proposed amendments, provides flexibility by way of allowing for a proportional and viable pathway to compliance for all employers to whom the proposed amendments apply. As a result, the degree or complexity of an employer's subsequent combustion risk assessment, combustible dust management program, and other control measures will be proportional to the level of risk posed by the employer's dust.

Paragraphs 6.137(a) and (b) set out two criteria for an employer to disprove the assumption set out in s. 6.137, which are by establishing the dust is both not ignitable and not deflagrable via use of an acceptable test means. These two criteria, used to determine whether a dust is combustible, are independent of one another because there exist combustible dusts which can deflagrate when suspended in air but will not ignite when accumulated in a pile or layer.

Section 6.138
Section 6.138 provides acceptable methods to establish via analysis whether a dust is ignitable.

The role of the QP is first introduced in s. 6.138 and is found throughout the proposed amendments. A QP will be integral to an employer's ability to manage the health and safety risks posed by combustible dusts. For the purpose of these Part 6 amendments, the existing definition of "qualified" in Part 1 of the *OHSR* will apply because it provides the flexibility required for their application across a broad scope of work environments. Different requirements throughout the amendments and diverse workplace scenarios will necessitate a QP having varying qualifications in differing circumstances. The role of the QP might be fulfilled by different people for different requirements.

WorkSafeBC anticipates providing additional guidance in an OHS Guideline or other resource which will lend direction on the varying roles and responsibilities of a QP across different sections of the proposed amendments.

Section 6.139
Section 6.139 provides acceptable methods to establish via analysis whether a dust is deflagrable.

WorkSafeBC anticipates developing guidance resources which will elaborate on what sources of test data might be acceptable for the purpose of the testing requirements under sections 6.138 and 6.139 and provide examples of acceptable national or international bodies or standards associations where the test method used is verified as appropriate.

Section 6.140
Section 6.140 sets out the requirements for conducting a combustion risk assessment of any type of combustible dust present at the workplace. Subsection (1) sets out what is required in a combustion risk assessment.

Subsection (2) sets out how a combustion risk assessment must be conducted. Paragraph (2)(c) is aimed explicitly at the five elements of the Dust Explosion Pentagon: fuel (i.e., dust), suspension, confinement, ignition, and oxygen. These are key factors to examine in conducting any combustion risk assessment. Paragraph (2)(c)(vi) is intended to capture workplace factors which might directly or indirectly impact the combustion hazards posed by any of the five Dust

Explosion Pentagon elements. Examples of other relevant factors could include the impact from relevant machinery and equipment at the workplace, work procedures, and human factors.

Subsection (3) prescribes when a combustion risk assessment must be updated.

WorkSafeBC anticipates developing guidance resources about conducting a risk assessment, including providing examples:

- to illustrate "other (relevant) factors" under s. 6.140 (1)(b)(ii) and s. 6.140 (2)(c)(vi) which could impact the level of risk posed by a combustible dust; and

- of common workplace changes under s. 6.140(3) significant enough to impact the level of risk posed by a combustible dust.

Section 6.141
Section 6.141 sets out the requirements for preparing a combustible dust management program. Subsection (1) sets out what is required to be part of a combustible dust management program. The word "unintended" is used in paragraph (1)(e) so as to not have application in circumstances where the deliberate combustion of a dust is part of an employer's regular operation, such as in a co-generation plant or a thermal oil system.

Subsection (2) sets out how a combustible dust management program must be prepared.

Subsection (3) prescribes when a combustible dust management program must be updated.

Subsection (4) sets out who an employer must assign to coordinate their combustible dust management program. One individual must be assigned for each of an employer's workplace locations where a program is in place. The provision allows an employer to assign the same person to be the coordinator at more than one workplace location. While implementation of a program may involve many different persons or departments within an employer's organization, a single individual is required as a point-person to coordinate and oversee the overall activities of a program at each workplace location to ensure the program is robust and functioning properly and as intended. An employer may have more than one person as the coordinator at a single location, so long as each person has an equivalent level of knowledge and overall responsibility for the program at that location.

WorkSafeBC anticipates developing guidance resources to elaborate on the various options for compliance available to a multi-site employer in assigning a program coordinator for each of their multiple workplaces.

Section 6.141 does not provide a prescribed timeline requirement, applicable to all employers, for when a program must be implemented because the proposed amendments must be applied contextually across a broad range of workplace environments. Thus, implementation of a program will differ amongst all employers depending on the nature of their operation and the control measures in question.

Section 6.142
Section 6.142 sets out when an employer must review their combustible dust management program. An annual program review, as required under paragraph (a), will compel an employer to consider whether there have been any changes at their workplace impacting the risk posed by their dust, which may have not been considered initially during the preceding twelve months.

In addition to the annual review under paragraph (a), paragraph (b) requires a review whenever:

(i) there is a significant change to the workplace, as described in s. 6.140(3), impacting the level of risk posed by the dust;

(ii) there is a failure of a control measure put in place; and

(iii) an unintended dust-related incident occurs.

Section 6.143
Section 6.143 sets out the instruction and training requirements for workers. To account for large-scale workplaces where combustible dust might only be present in some areas of the workplace, the provision requires an employer to ensure each of their workers who could be exposed to a combustion risk receives instruction and training relating to the combustible dust at that workplace. Not all workers of an employer will share the same level of risk exposure. Thus, the degree of instruction and training might vary for different workers based on their exposure as it relates to their work location and work activities.

Section 6.144
Section 6.144 (a), coupled with the definition of "dust record" in s. 6.133, sets out what records employers must keep on file and for how long those records must be retained.

Paragraph (b) sets out specific information employers must keep in their dust records.

Section 6.146
Section 6.146 establishes that the subsequent risk control requirements in sections 6.147–6.159 apply specifically to an employer who has a combustible dust and is required under s. 6.135 to have a combustible dust management program.

An employer who performs a risk assessment but does not identify any combustion hazards with there being no control measures in place is not required to prepare a combustible dust program, pursuant to s. 6.135. In such instance, the risk control provisions in sections 6.147–6.159 will not apply to that employer.

Sections 6.147–6.156, *Combustible Dusts – Risk Controls (General)*
Sections 6.147–6.159 set out requirements for risk control measures to manage combustible dusts. These risk control provisions steer away from establishing an explicit hierarchy of controls to manage the risk posed by combustible dust. Rather, the focus to minimize (or eliminate) the risk is best targeted using a layered approach whereby consideration ought to be given to every level of control available to an employer. Not one type of control alone will typically be enough to address the risk sufficiently; a combination of controls ought to be applied.

Sections 6.147–6.155 are generally focused on addressing the five Dust Explosion Pentagon factors:

- ignition (refer to s. 6.147);
- oxygen, in part (refer to s. 6.148);
- suspension (refer to s. 6.149);
- confinement, in part (refer to s. 6.151); and
- fuel, both from a foreign substance (refer to s. 6.150) and from the workplace dust in question (refer to sections 6.152–6.155).

Sections 6.147–6.155 are predominantly performance-based, rather than prescriptive, to allow for their application to employers of all sizes and across the broad range of industries necessary.

Isolation (of machinery or equipment) is but one of many possible options available to employers to manage combustion risks. Isolation is inherent to the methods to be considered by an employer in order to comply with the general risk control provisions in sections 6.147–6.156, as well as with s. 6.157 and s. 6.158 dealing with fire and deflagration control. WorkSafeBC anticipates developing guidance resources which will reference the use of isolation as an available option to consider to help manage the risk of combustible dust.

Section 6.147
Section 6.147 focuses on the control of one of the five Dust Explosion Pentagon factors – ignition. Subsection (1) establishes a priority of requirements between removing competent ignition sources versus controlling them, with removal being mandated as the first measure.

Section 6.148
Section 6.148 focuses on the control, in part, of one of the five Dust Explosion Pentagon factors – oxygen.

Section 6.149
Section 6.149 focuses on the control of one of the five Dust Explosion Pentagon factors – suspension, or dispersion, of a dust in air.

Section 6.150
Section 6.150 focuses on the control of one of the five Dust Explosion Pentagon factors – fuel (from a foreign substance other than dust). WorkSafeBC anticipates providing examples to illustrate “foreign substances”, which could contribute to a combustion, in resources external to the proposed regulation.

Section 6.151
Subsections (1) and (3) focus on the control, in part, of one of the five Dust Explosion Pentagon factors – confinement (resulting from bulk storage).

Subsection (4) provides an exemption to subsections (2)(a) and (3) to address issues of practicability. WorkSafeBC anticipates developing guidance resources to illustrate examples of bulk storage, its risks, and possible exemptions under subsection (4).

The term “bulk storage” is not defined in the proposed amendments. The ordinary dictionary meaning of the term “bulk” will apply as seen through a contextual lens. The intent of this is to not create too narrow a definition based on any specific storage size or quantity, since the hazard presented by dusts in bulk format will vary depending on the type of dust. Ultimately, the question to be determined on a case-by-case basis will be whether the amount of dust being stored by an employer is sufficient to necessitate the requirements called for in s. 6.151.

Sections 6.152–6.155
Sections 6.152–6.155 focus on the control of one of the five Dust Explosion Pentagon factors – fuel (from the workplace dust in question).

Section 6.152
Subsection (1) establishes a priority of controls between preventing the escape of dust from machinery and equipment versus capturing the dust after it does escape, with prevention being

mandated as the first measure. Subsection (1) applies to all escaped dust, whether it settles and accumulates on a surface or becomes suspended in air.

Section 6.152 (2) applies to only escaped dust which is suspended in air.

Section 6.153
Section 6.153 sets out requirements for removing (or cleaning up) combustible dust not made of metal which has accumulated on surfaces. Subsection (2) requires employers to determine, in consultation with a QP, a maximum threshold for surface accumulations of their dust. This is intended to be an amount, or condition, at which point the employer must take corrective actions to clean up and reduce an accumulation. The maximum amount, or threshold, might be a specified, measurable depth of the dust; alternatively, it might by a condition or other amount reached by the dust. For example, the threshold could be whenever the underlying surface colour is no longer discernable. WorkSafeBC anticipates developing guidance resources which will elaborate on means to establish a threshold amount in the context of both sections 6.153(2) and 6.154(2).

Subsection (3) requires an employer to respond in two ways if dust accumulates on surfaces to levels above their permitted threshold. The first is intended to require the employer to proactively take steps to minimize the risk posed to workers by the dust accumulation, while the second is to clean up the dust below the permitted threshold as soon as practicable.

Subsection (5), specifically, provides requirements for when the use of compressed air to remove combustible dust will be permissible.

Section 6.154
Section 6.154 sets out requirements for removing (or cleaning up) combustible metal dust which has accumulated on surfaces. As in s. 6.153 for non-metal dusts, subsection (2) requires employers to determine, in consultation with a QP, a maximum threshold for accumulations of their metal dust.

Subsection (3) requires employers to respond in the same two ways as for a non-metal dust under s. 6.153(3) should combustible metal dust accumulate on surfaces to levels above their permitted threshold.

Subsection (7), specifically, provides requirements for when the use of compressed air to remove combustible metal dust will be permissible.

Section 6.155
Section 6.155 sets out other requirements for controlling the risk of combustion posed by metal dust, beyond measures for its removal as detailed in s. 6.154.

Section 6.156
Section 6.156 sets out general requirements applicable to all machinery and equipment which generates or handles combustible dust at a workplace, or is part of a broader system which does the same. Section 6.156 requires the involvement of a QP in the selection, design, locating, installation, and modification of all “relevant machinery and equipment”, as defined in s. 6.133.

WorkSafeBC anticipates developing guidance resources which will elaborate on the requirements in s. 6.156 and the QP’s role in making the determinations called upon. Resources are also to be developed setting out recommended design criteria for specific types of relevant machinery and

equipment commonly found in BC workplaces, such as dust collectors, enclosureless air-material separators, and dryers.

Sections 6.157–6.159
Sections 6.157–6.159 are aimed at controlling the risk posed from a fire or deflagration caused by a dust combustion and mitigating the impact of such an incident once it occurs. They are predominantly performance-based, rather than prescriptive, to allow for their application to employers of all sizes and across the broad range of industries necessary.

Section 6.157
Section 6.157 requires an employer to have control measures in place for suppressing a fire at the workplace, should one occur. A QP is to be consulted for the selection and installation of the control measure implemented by the employer.

Section 6.158
Section 6.158 requires employers to have control measures in place for mitigating the effects of a deflagration at the workplace, should one occur. A QP is to be consulted for the selection and installation of the control measure implemented by the employer.

Paragraph (b) further sets out requirements for deflagration relief vents in the event employers use such vents as part of their control measures. The requirement for signage at relief vents also takes into account the area into which a relief vent exhausts (i.e., the blast zone adjacent to a relief vent).

Section 6.159
Section 6.159 sets out the requirements an employer must meet before restarting operations after a dust-related incident occurs which has activated either the fire control system or deflagration control system.

Consequential amendments:
As a result of the proposed amendments to Part 6, there are consequential housekeeping amendments to the following sections in Parts 4, 5, and 31 of the *OHSR*: s. 4.17 (1); s. 4.42 (1); s. 5.71; s. 5.81 (repealed); and s. 31.5 (2).

In addition, the following three WorkSafeBC Policies will be retired upon introduction of the proposed amendments:

1. P2-21-3 Employer Duties – Wood Dust Mitigation and Control,
2. P2-22-2 Worker Duties – Wood Dust Mitigation and Control, and
3. P2-23-3 Supervisor Duties – Wood Dust Mitigation and Control.