

May 11, 2006

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PART 8 – MATERIALS AND STORAGE

DEFINITIONS

8.01 In this part, the following definitions apply:

“enclosure”

means a barrier, such as plastic sheeting, gyproc, plywood or other effective material, used to isolate an area in which airborne contaminants are present;

“HEPA filter”

means high efficiency particulate air filter;

“MSDS”

means material safety data sheet.

GENERAL

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|--------------------------------|-------------|--|
| Secured material | 8.02 | (1) Materials and equipment shall be placed, stacked or stored so as not to constitute a hazard to workers. |
| Stable piles | | (2) Stacked containers and materials shall be stabilized by interlocking strapping or other effective means of restraint. |
| Pallets | | (3) Pallets shall be stacked and maintained in a manner that permits safe lifting of the pallets or pallet loads by a forklift, truck or other device. |
| Storage racks | | (4) Storage racks and foundations shall be designed, constructed and maintained to support the load placed on them. |
| Mechanical lifting | 8.03 | (1) Mechanical appliances for lifting or carrying materials and objects that are too heavy or awkward for workers to lift shall be provided and used. |
| Lift training | | (2) Workers required to lift or carry objects shall be trained to do the job safely. |
| Co-ordination of lift | | (3) Where two or more workers are involved in lifting or carrying heavy objects, the raising or lowering of the objects shall be coordinated by well-understood signals to ensure unity of action. |
| Loaded drums | | (4) Where heavy objects such as loaded drums or tanks are handled on inclines in either direction
(a) ropes or other tackle shall be used in controlling their motion, and
(b) workers shall not stand between the skids on the downhill side. |
| Rollers | | (5) Where rollers or bars are used to move heavy objects, sledges or other mechanical means shall be used to change the direction of the rollers. |
| Hazardous materials | | (6) Areas where hazardous materials may be dropped, spilled or dumped shall be
(a) covered or guarded to prevent inadvertent entry by a worker, and
(b) posted with appropriate legible and effective warning signs. |
| Storage near electrical | 8.04 | (1) Material or equipment to be moved by a crane or similar hoisting equipment shall not be stored under or in proximity to an overhead energized electrical conductor. |
| Load loosening | | (2) Blocking, support chains, wire ropes, metal bands and rigging components shall be removed from equipment and material in a manner that does not cause a danger to a worker. |

UNCONSOLIDATED MATERIAL

- Inspection for safety** **8.05** (1) Unconsolidated bulk material shall be
- (a) regularly inspected for hazardous conditions, and
 - (b) verified as safe by a competent person before a worker is allowed to work close to or on the pile.
- Reach of equipment** (2) Where unconsolidated bulk material is removed by powered mobile equipment
- (a) the working face of the unconsolidated bulk material shall be sloped at the angle of repose when workers will be near the face, or
 - (b) the vertical height of the face shall be not more than 1.5 m (5 ft.) above the maximum reach of the equipment when workers remain in the equipment at the face.
- Undermining** (3) Where the face of an unconsolidated bulk material stockpile is undermined by the use of powered mobile equipment, the operator shall ensure that the undermining is
- (a) restricted to the depth of the bucket of the powered equipment,
 - (b) permitted only when the approach of the powered mobile equipment is at a ninety degree angle to the stockpile face, and
 - (c) limited to times and places when no one has access to the face.
- Entrapment** **8.06** A worker shall only enter or remain at any place where there is danger of entrapment or engulfment in loose materials or other similar hazards if
- (a) safe access and a safe work area are provided by the use of catwalks, walkways, barriers or other means, or
 - (b) measures are taken to control the risk of entrapment or engulfment and where the risk is not eliminated, the worker
 - i. shall use a lifeline and full body harness of a type that will keep the worker from being entrapped or so as to be rescued, and
 - ii. shall be continuously tended by a standby person who is equipped, ready and capable of effecting immediate rescue.
- Storage Design Lid, vent** **8.07** Any bin, hopper or process vessel used to store bulk material shall be
- (a) designed and built to allow removal of the material from the bottom,
 - (b) provided with a proper lid, a ventilation system, and be fire resistant if the material is highly combustible, and
 - (c) equipped, where appropriate, with stairways or fixed ladders with platforms and guardrails on the outside.
- Stairs** (3) Where the face of an unconsolidated bulk material stockpile is undermined by the use of powered mobile equipment, the operator shall ensure that the undermining is
- (a) restricted to the depth of the bucket of the powered equipment,
 - (b) permitted only when the approach of the powered mobile equipment is at a ninety degree angle to the stockpile face, and
 - (c) limited to times and places when no one has access to the face.
- Work procedures for clogs** **8.08** (1) A safe work procedure for breaking clogs in bulk material shall be developed, followed and kept available near the bin, hopper or process vessel.
- (2) Where a worker is required to enter a bin, hopper or process vessel used to store bulk material, the requirements of Part 2 – Confined Spaces and the related safe work procedures shall be followed.

SOLID MATERIAL

- Material piles** **8.09** Piling of solid material shall be
- (a) carried out in a manner that does not interfere with
 - i. illumination,
 - ii. ventilation,
 - iii. means of access and egress,
 - iv. passageways or traffic lanes,
 - v. the operation of the machines,

		vi. sprinklers and fire fighting equipment, and vii. electrical panels or energized electrical lines.
Foundation		(b) located on a firm foundation strong enough to support the load,
Indoor storage		(c) located so that the pile is not resting against a partition or wall of a building unless the wall is sound or made strong enough to support the load,
Containers		(d) protected from conditions that may damage the structural integrity of any container used to store the material, and
Stable height		(e) piled to a height that does not render the stockpile unstable.
	8.10	Pipe or bar stock shall be stacked
Pipe racks		(a) on storage racks, or
Pipe storage		(b) where storage racks are not practicable i. in layers resting on wood strips with stop bars fixed on the ends, or ii. on metal bars with upturned ends, so that the storage or withdrawal of the stock does not create a hazard.
Bagged material	8.11	When piling heavy bagged material, the bags shall be
Placing		(a) placed so the mouths of the bags are facing inward,
Cross-tie		(b) cross-tied, and
Piling		(c) piled so a step-back of one bag is made at the first 1.5 m (5 ft.) high level and at each additional 1 m (3 ft.) height.
Piling boxes	8.12	(1) Loaded boxes, crates or cartons shall be piled on the side having the largest area, unless instruction has been given to the contrary.
Cross-tie		(2) Piles of boxes, crates or cartons shall be cross-tied by suitable means.
Piling height		(3) Loaded cartons shall not be piled to a height that will collapse the lowest carton.
Moisture protection		(4) The lowest carton on the pile shall be protected against moisture on the ground or floor.
Lumber piles	8.13	Lumber shall be
Off ground		(a) piled neatly,
Stacking lumber		(b) supported above ground, (c) stacked with horizontal or slightly inclined layers separated by pieces of material between lifts, and
Stable piles		(d) stabilized by means of transversal supports, where a pile is more than 1.2 m (4 ft.) high.
Barrels, drums, pipes	8.14	Where cylindrical objects, such as empty barrels, drums, large pipes or rolls of paper are
Piled on sides		(a) piled on their sides, i. the pile shall be symmetrical and stable, and ii. every unit in the bottom row shall be carefully wedged, or
Piled on ends		(b) piled on their ends, i. the piles shall be low, and ii. two planks shall be laid side by side on top of each row before another row is started.
Masonry	8.15	Masonry units shall be stacked
Stacking bricks		(a) on planks, a platform, or other level base,
Layers		(b) in interlocking layers covering the entire area of the stacks, (c) in such a way that the height of the vertical face of a stack does not exceed 1.8 m (6 ft.), and
Height		(d) when the height of the stockpiling exceeds 1.8 m (6 ft.),

- Cross-tied piles**
- i. with wooden transversal supports between the layers to prevent the pile from collapsing, and
 - ii. bound together, so as to ensure the stability of the pile.

HAZARDOUS SUBSTANCES

NOTE Reference should also be made to the *Transportation of Dangerous Goods Regulations* and *Workplace Hazardous Materials Information System Regulations*.

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|--|--|
| Assignment of qualified persons | 8.16 (1) One or more qualified persons shall be designated as being responsible for proper handling and storage of hazardous substances as established by the <i>Occupational Health Regulations</i> . |
| Training and information | (2) Workers involved with the handling, storage, use or disposal of hazardous substances shall be <ul style="list-style-type: none"> (a) adequately trained, and (b) provided with adequate and current information concerning the identity, nature and potential hazards of the hazardous substances. |
| Storage / MSDS | (3) Hazardous substances shall be stored so the safety and health of workers is protected, using the information available on a MSDS or from the supplier or another reliable source. |
| Incompatibles | (4) A substance that may react with other substances to cause a fire or explosion, liberate a flammable or toxic gas, or create any other hazardous condition shall be stored separately from such other substances. |
| Restricted quantities | (5) Only working quantities of hazardous substances shall be kept in areas where workers are present. |
| Emergency equipment | (6) Emergency equipment appropriate for use in the event of a release of a hazardous substance shall be readily available. |
| Spills | (7) Any spillage of a hazardous substance shall be cleaned up immediately. |
| Disposal | (8) A hazardous substance, when disposal is required, shall be properly disposed of so that it will not create any health or safety hazard. |
| Containers
Labels | (9) A container used for hazardous substances shall be <ul style="list-style-type: none"> (a) clearly labelled <ul style="list-style-type: none"> i. to identify the substance contained, and ii. to provide information for the immediate safe handling of the hazardous substance (b) of such material, design, construction and condition to ensure safe containment of the contents, (c) kept sealed or covered unless otherwise specified by the supplier, and (d) stored in accordance with the specifications and recommendations of the supplier. |
| Design | |
| Closed container
Storage | |
| Precautions | (10) Precautions to be taken in the handling, use, storage and disposal of a hazardous substance shall be available on the container or on a MSDS kept near the container. |
| Bonding | (11) Containers shall be electrically bonded or in contact with each other to prevent accumulation of static charges when a flammable or explosive material is being transferred from one container to the other.

(12) Where tanks, mixers, vessels or other such containers are used for storage of flammable or explosive gases, they shall be electrically bonded and grounded while being filled or emptied. |

<p>Liquid containers</p> <p>Supports</p> <p>Foundation</p> <p>Overflow pipe</p> <p>Catch basin</p> <p>Coating</p> <p>Access / egress</p> <p>Location</p> <p>Cleaning</p> <p>Pits</p>	<p>8.17 A container used for storage of a liquid hazardous substance shall</p> <p>(a) be supported so that any leak in the container is visible,</p> <p>(b) be placed on a foundation that resists reaction with the contents of the container or contents of other containers,</p> <p>(c) be provided with an overflow pipe that discharges into a safe area,</p> <p>(d) be surrounded with a catch basin which will hold the entire contents of the container if ruptured,</p> <p>(e) be covered with a protective coating if made of corrodible material,</p> <p>(f) have safe access and egress for workers who inspect and maintain the container,</p> <p>(g) not be placed above a passageway,</p> <p>(h) be adequately cleaned after it is emptied, unless rendered unusable,</p> <p>(i) if located in a pit below ground level, the container shall be</p> <p style="padding-left: 20px;">i. provided with a cover and a means of safe access and egress for workers who inspect or maintain the container, and</p> <p style="padding-left: 20px;">ii. mounted at least 0.4 m (15 in.) above the floor of the pit, and</p> <p>(j) if located in a pit below ground level, the pit shall</p> <p style="padding-left: 20px;">i. be constructed of impervious material,</p> <p style="padding-left: 20px;">ii. have sufficient space between walls and the tanks or containers to permit a person to pass through, and</p> <p style="padding-left: 20px;">iii. have a control valve that is situated or designed so that it can be turned without a worker entering the pit, and be provided with a locking device operated from outside the pit.</p>
<p>Piping appropriate</p> <p>Inspection</p> <p>Identification</p>	<p>8.18 Piping and equipment used for hazardous substances shall be</p> <p>(a) appropriate for the substance contained,</p> <p>(b) regularly inspected and maintained in safe operating condition, and</p> <p>(c) properly identified with regard to the nature of the hazardous substance contained, direction of the flow and other information necessary for the safe operation of the system.</p>

BATTERY CHARGING

<p>Procedures / equipment</p> <p>Charging room</p> <p>Ventilation</p> <p>Ignition source</p> <p>Signage</p> <p>Trays / racks</p> <p>Floors</p> <p>Wiring</p>	<p>8.19 Battery charging, which may produce flammable gases, shall be</p> <p>(a) carried out following the manufacturer's recommended procedures, using proper personal protective equipment, including acid-resistive gloves, aprons, goggles or face shields, and</p> <p>(b) performed in a room and place especially designed for it, that</p> <p style="padding-left: 20px;">i. is adequately ventilated to prevent the accumulation of flammable or explosive gases,</p> <p style="padding-left: 20px;">ii. is free from sources of ignition,</p> <p style="padding-left: 20px;">iii. carries a notice at the entrance saying "smoking and open flame are prohibited,"</p> <p style="padding-left: 20px;">iv. has non-sparking battery trays and racks, if the batteries are to be mounted in them,</p> <p style="padding-left: 20px;">v. has a non-sparking floor kept clean and washed with fresh water promptly when electrolyte is spilled, and</p> <p style="padding-left: 20px;">vi. has wiring and equipment that meet the requirements of <i>CSA Standard C22.1-06, Canadian Electrical Code</i>, or other similar standard acceptable to the director.</p>
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COMPRESSED GAS CONTAINERS

	8.20	A portable compressed gas container shall be
Specifications	(a)	handled, stored, used and disposed of in accordance with the manufacturer's instructions and specifications as well as
Data sheets	i.	MSDS information,
Standard	ii.	the safe handling rules in <i>CGA P-1-1984, Safe Handling of Compressed Gases in Containers</i> , or other similar standard acceptable to the director, and
Lifting	iii.	not lifted with slings or magnets,
Colour marked	(b)	appropriately colour marked, if intended for medical use, in accordance with <i>CGA Standard C-9-1988, Standard Colour Marking of Compressed Gas Containers Intended for Medical Use</i> ,
Welding gas	(c)	when used for welding and cutting, handled, stored and used in accordance with <i>CSA Standard W117.2-01, Safety in Welding, Cutting and Allied Processes</i> , or other similar standard acceptable to the director.
Gas container storage	(d)	stored
Heat	i.	in a well ventilated and dry area where the temperature does not exceed 52 degrees C (125 degrees F),
Flammable	ii.	away from readily flammable substances,
Heat sources	iii.	at a safe distance from all operations which produce flames, sparks, molten metal or result in excessive heating of the container,
Corrosive material	iv.	in an area where it is not exposed to corrosive material or corrosion aiding substances,
Protection from damage	v.	in an area where it is protected from falling over or heavy objects falling on it,
Bonding	vi.	electrically bonded or in contact with another container when flammable or explosive gas is being transferred from one container to another to avoid the accumulation of the static charges,
Gases separated	vii.	in groups by types of gas, and the groups arranged and separated where necessary, considering the gases contained, and
Secured upright	viii.	with full and empty containers in separate areas standing upright and secure.
	8.21	Compressed gases and accessories shall be used so that
Regulators, valves, lines	(a)	regulators, automatic reducing valves, gauges, hoses and other appliances provided for a particular gas container are not used on containers with gas of different chemical properties unless the information provided by the supplier clearly states that this can be done safely,
Connections	(b)	connections are kept tight to avoid leakage,
	(c)	connections that do not fit properly are
	i.	checked to ensure compatibility, and
	ii.	not forced together,
Valves	(d)	valves are kept closed at all times, whether the container is charged or empty, except when
	i.	gas is flowing from the container for a particular task, or
	ii.	the gas in the container is maintaining pressure in a supply line.
Check valves	(e)	check valves are installed as close as possible to fuel gas and oxygen regulators or as specified by the equipment manufacturer, and
Standards	(f)	hose lines for conveying flammable gas or oxygen from piping or cylinders to the torches
	i.	are spliced in accordance with <i>CGA Standard P-1-1984, Safe Handling of Compressed Gases in Containers</i> , or other similar standard acceptable to the director, or

- ii. have threads designed in accordance with *ANSI/CSA/CGA Standard V-1-1987, Compressed Gas Cylinder Valve Outlet and Inlet Connections*, or other similar standard acceptable to the director.

ABRASIVE BLASTING

- | | | |
|---|-------------|---|
| Risk assessment | 8.22 | (1) A risk assessment shall be conducted before undertaking any abrasive blasting activity, high pressure washing or related cleanup, which may cause release of a harmful level of air contaminant from a surface or coating containing a toxic heavy metal, asbestos or other hazardous material. |
| Silica dust | | (2) All workers who may be exposed to silica dust during the course of their employment shall be warned of the danger to health from inhalation of silica dust. |
| Procedures | | (3) Written safe work procedures, controls and protective measures, including the need for personal protective equipment, shall be developed and implemented addressing the hazards from silica processes, where such abrasive blasting, sandblasting, high-pressure washing or other related cleanup or activities are conducted. |
| Substitution for silica | | (4) Abrasive blasting materials containing crystalline silica shall be replaced with less toxic materials wherever practicable. |
| Silica contamination | | (5) Unless abrasive material is in a fully enclosed and vented cabinet designed to re-circulate it, abrasive material shall not be reused if it <ul style="list-style-type: none"> (a) contains crystalline silica, or (b) becomes contaminated with any harmful substances including metals, such as lead, chromium, nickel or mercury. |
| Used abrasives | | (6) Used abrasive blasting materials that contains crystalline silica or other harmful materials shall be removed from the work area at the end of the work-shift by <ul style="list-style-type: none"> (a) using procedures designed to minimize the generation of airborne dust, and (b) workers wearing suitable personal protective equipment. |
| Sweeping | | (7) Used abrasive blasting material shall not be dry swept. |
| HEPA filters | | (8) Where a workplace in which abrasive blasting has occurred is cleaned using a vacuum cleaner, it shall have a HEPA filter on the exhaust, or a wet method shall be used. |
| Enclosures, cabinets and ventilation | 8.23 | (1) Engineering controls such as enclosure or local exhaust ventilation with dust collection provision shall be used to maintain airborne contaminants below the allowed exposure limits as outlined in the <i>Occupational Health Regulations</i> . |
| Restricted zones | | (2) When abrasive blasting or similar operations are carried out in or on a structure, and where such operations are not a regular occurrence at the workplace <ul style="list-style-type: none"> (a) the process shall be restricted to a work zone identified by signs or similar means as a contaminated area, and (b) only properly protected workers who are necessary to perform work shall be permitted inside an enclosure or a restricted work zone where abrasive blasting or similar operations are carried out. |
| Enclosures / cabinets | | (3) When abrasive blasting or similar operations are regularly conducted within a structure, the process shall be isolated in a separate enclosure or cabinet to minimize worker exposure to airborne contaminants generated by the process. |

- Enclosure ventilation** (4) When abrasive blasting or similar operations are carried out inside an enclosure or a cabinet, the enclosure or cabinet shall have exhaust ventilation that
- (a) maintains air pressure below the air pressure outside the enclosure or cabinet, to prevent the escape of the airborne contaminants from the enclosure or cabinet to other work areas, and
 - (b) minimizes worker exposure inside the enclosure.
- Other processes involving silica** (5) Where a silica process other than abrasive blasting is carried out, the entry of dust into the air where workers may be present shall be prevented by the provision of
- (a) total or partial enclosure of the process,
 - (b) efficient local exhaust ventilation,
 - (c) jets or sprays of a suitable wetting agent, or
 - (d) any other method that provides equivalent protection to the workers.
- Ventilation system** (6) The enclosure, apparatus or exhaust ventilation equipment provided pursuant to subsection (5) shall be
- (a) maintained in good working condition, and
 - (b) inspected daily when in use.
- Discharge air** (7) Discharged air from a ventilation system shall be passed through an effective dust removal system before being recirculated in a workplace and the system shall be equipped with a device to provide a warning to workers when the system is not working effectively.
- Gun controls** **8.24** (1) The operating controls of a sandblasting or jetting gun shall be
- (a) located near the nozzle where the operator's hands will be when using the device,
 - (b) of the continuous pressure type that immediately stops the flow of material when released, and
 - (c) protected from inadvertent activation.
- Hose pressures** (2) Hoses, fittings and all other components shall not be used at a pressure higher than the pressure rating specified by the manufacturer.
- Modification** (3) A jetting gun shall only be modified as authorized by the manufacturer.
- Handheld object** (4) An object shall not be handheld while it is cleaned or cut.
- Hose restraints** (5) High pressure hoses, pipes and fittings shall be supported or restrained against excessive sway, movement and flailing.
- Personal protective equipment** **8.25** (1) An operator of a nozzle or jet gun shall wear proper personal protective clothing and equipment made of canvas, leather or substantial material on the body, head, hands, arms, legs and feet, including the metatarsal area, to protect the worker's skin from injury in the event of contact with the flow from the nozzle.
- Respiratory protection** (2) Unless the process is isolated from the operator in a separate cabinet, suitable respiratory protection shall be provided and worn whenever abrasive blasting or similar operation is carried out.

ROCK DUST

- Dust exposure** **8.26** (1) A worker shall not be exposed to a dust concentration higher than the exposure limits established in the *Occupational Health Regulations*.
- Dust concentrations** (2) The dust concentration shall be controlled by the use of one, or a combination, of the following:

- (a) mechanical ventilation,
 - (b) water spray, or
 - (c) other equally effective methods.
- Ventilation** (3) The ventilation system in subsection (2) shall be equipped with filtration.
- Protective equipment** (4) Only workers with proper protective equipment, and who are necessary for the operation, shall be permitted to work in a dust hazard area.
- Rock drills** **8.27** A rock drill shall be equipped with a dust suppression system, which
- Dust suppression** (a) uses water jet, spray, a mechanical exhaust system with a suitable dust collector, or other equally effective means to suppress drilling dust effectively, and
- (b) operates whenever the drill is in use.

ROCK CRUSHING

- 8.28** Rock crushing plants and components shall be equipped with the following dust controls:
- Dust control** (1) Rock crushers, including jaw, roll, cone or hammer mills shall have an effective mechanical exhaust system.
- Exhaust systems** (2) Screens releasing dust shall be partially covered and have an effective mechanical exhaust system.
- Hopper dust** (3) The screen discharge hopper shall have an effective mechanical exhaust system or an effective water spray system.
- Transfer points** (4) Dust-releasing material transfer points shall be equipped with an effective mechanical exhaust system or water spray system.
- Dust collectors** (5) Each mechanical exhaust system shall have a suitable dust collector.
- Contaminated air** (6) A mechanical exhaust system shall not re-circulate contaminated air into work areas.
- Pressurized cab** (7) A pressurized cab equipped with air filtration and noise suppression shall be provided for the crusher operator.

ASPHALT PLANTS

- Asphalt plants** **8.29** Asphalt plants shall be equipped with the following dust control provisions:
- Dust control** (1) A dust-tight seal shall be installed at the dryer discharge to the hot stone elevator.
- Screens** (2) The screen enclosure shall have a mechanical exhaust system that maintains a negative pressure within the screen enclosure and the elevator feed system.
- Mixing chamber** (3) The mixing chamber shall have a mechanical exhaust system that maintains a negative pressure on the bin discharge to the mixer or elevator feed system.
- Conveyors** (4) The conveyor feeding the mixing chamber on continuous-mix plants shall be enclosed and connected to the mechanical exhaust system.
- Overflows** (5) The screen overflow chutes and hoppers handling screen overflow shall be enclosed and the waste fines conveyor system shall be enclosed at all material transfer and discharge points.

Waste discharge

(6) The overflow or waste fines material shall be discharged into an enclosed container that is emptied in a manner that prevents contamination of the workplace.

Dust seals

(7) Material transfer points between sections of the asphalt mixing plant shall be fitted with effective dust seals.

Conveyor / elevator

(8) Conveyor and elevator seals shall be dust-tight.

Draw chutes

(9) Dust-tight seals shall be installed on manual draw chute levers and on the weigh hopper and bin on batch-mix plants.

Dust collector

(10) A suitable dust collector shall be installed on a mechanical exhaust system with the discharge from the dust collector located so as to prevent the re-circulation of contaminated air to the areas occupied by workers.

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