



May 29, 2018

Dylan Feist
Senior Policy and Research Officer
Municipal Licensing and Standards
100 Queen St. West, 16th Floor
West Tower M5H 2N2
Via email: mlsfeedback@toronto.ca

RE: City Consultation on Construction Dust Mitigation

Dear Dylan,

Construction dust, and its prevention and mitigation is a serious concern of resident associations, including members of the Federation of North Toronto Residents' Associations (FoNTRA). Ten representatives from FoNTRA member residents' associations attended the May 15 public consultation session arranged by Municipal Licensing and Standards. The general consensus among those attending was disappointment that there was insufficient background information provided at the session, and there was a narrow focus on a few items, especially stone cutting dust. We believe that a broader and more comprehensive approach needs to be taken.

To this end, we have focused our feedback on the attached document, drawing from a comprehensive Dust Control manual created by the City of Fort Collins, Colorado, which we believe is an excellent starting point. We have extracted the elements of this manual that relate to residential infill construction, and added comments about those elements, highlighting problem areas and endorsing best practices to reduce the adverse impacts of fugitive dust.

The fundamental premise of the feedback document is that construction dust creation (and landscape maintenance) involves what are in effect industrial activities, but conducted outside of an industrial context. Also, construction dust creation is invariably accompanied by intense machine noise. Although labour regulations supposedly protect the operators, there are no applicable protections for resident and members of the public in the immediate vicinity who are involuntarily subjected to the ensuing dust and noise. The City and Province have a duty to protect the public.

Moving forward the City will need to consider the introduction of a multi-pronged strategy to change the behavior of owners and operators in regard to dust and noise. Some of these changes include:

- Introducing new rules (by-laws)
- Provide guidelines (manual)
- Conduct education programs for owners and operators
- Provide educational materials for residents
- Ensure that the City allocates sufficient resources for the enforcement of existing and new bylaws.

The by-laws need to be worded to facilitate enforcement. For example, for each of the types of dust sources there are minimum mitigation requirements. So the by-law would require that when cutting stone (such as building facades or driveway pavers) the saw needs to have a water hose attachment, and that the water hose is functional. Therefore if the inspector doesn't find these in place then a ticket can be issued immediately, and repeated whenever such a situation is witnessed by the inspector.

We thank the MLS for initiating public consultation on this matter. The attached report brings forward significant new recommendations, which we believe warrants a follow-up meeting to explore the recommendations in more detail.

Finally, we acknowledge with thanks the considerable work of Al Kivi, Harold Smith, Andrea Ferrier in the creation of this report.

Yours Truly,

Geoff Kettel
Co-Chair FoNTRA
129 Hanna Road
Toronto, Ontario
M4G 3N6

Cathie Macdonald
Co-Chair FoNTRA
57 Duggan Ave
Toronto, Ontario
M4V 1Y1

C.C. Mayor John Tory and City Councillors
Councillor Jaye Robinson, Chair, Public Works and Infrastructure Committee
Tracey Cook, Executive Director, Municipal Licensing and Standards
Will Johnston, Chief Building Official and Executive Director, Toronto Building

The Federation of North Toronto Residents' Associations (FoNTRA) is a non-profit, volunteer organization comprised of over 30 member organizations. Its members, all residents' associations, include at least 170,000 Toronto residents within their boundaries. The residents' associations that make up FoNTRA believe that Ontario and Toronto can and should achieve better development. Its central issue is not whether Toronto will grow, but how. FoNTRA believes that sustainable urban regions are characterized by environmental balance, fiscal viability, infrastructure investment and social renewal.

Residential Construction Dust Mitigation
Adaptation of the Fort Collins Manual
Federation of North Toronto Residents Associations
May 29, 2018

1.0 Introduction

This purpose of this document is to use an existing Construction Dust manual from another major municipality to frame FoNTRA's formal response to the City of Toronto's Construction Dust Mitigation Study

Note that contents of the source manual have been largely left as found in the manual prepared by the City of Fort Collins, Colorado. Here is a link to the original document:

<https://www.fcgov.com/airquality/pdf/dust-prevention-and-control-manual.pdf>

Note; that any significant new material or comments from FoNTRA are highlighted in red in order to identify our authorship of changes or additions to the original manual.

1.1 Title



The contents of this document shall be known as the Dust Prevention and Control Manual ("the Manual").

1.2 Purpose of Manual

The purpose of the Manual is to establish minimum requirements consistent with nationally recognized best management practices for controlling fugitive dust emissions and to describe applicable best management practices to prevent, minimize, and mitigate off-property transport or off-vehicle transport of fugitive dust emissions for specific dust generating activities and sources.

The purpose of proposed bylaws is to protect the health, safety, and welfare of the public, including prevention of adverse impacts to human health, property, sensitive vegetation and areas, waters of the province, and other adverse environmental impacts and to prevent visibility impairment and safety hazards caused by emissions of particulate matter into the air from human activities.

1.3 Applicability

This Manual applies to any person who conducts, or is an owner or operator of, a dust generating activity or source, as defined in the Code and described in this Manual, within the City of Toronto, subject to bylaw xx-xx-xxx.

1.4 Definitions

Abrasive blasting shall mean a process to smooth rough surfaces; roughen smooth surfaces; and remove paint, dirt, grease, and other coatings from surfaces. Abrasive blasting media may consist of sand; glass, plastic or metal beads; aluminum oxide; corn cobs; or other materials.

Additional best management practice shall mean using at least one additional measure if the required best management practices are ineffective at preventing off-property transport of particulate matter.

Best management practice shall mean any action or process that is used to prevent or mitigate the emission of fugitive dust into the air.

Bulk materials transport shall mean the carrying, moving, or conveying of loose materials including, but not limited to, earth, rock, silt, sediment, sand, gravel, soil, fill, aggregate, dirt, mud, construction or demolition debris, and other organic or inorganic material containing particulate matter onto a public road, adjacent property or right-of-way in an unenclosed trailer, truck bed, bin, or other containers.

Code shall mean the City of Toronto City Code, as amended from time to time.

Cover shall mean the installation of a temporary cover material on top of disturbed soil surfaces or stockpiles, such as netting, mulch, wood chips, gravel or other materials capable of preventing wind erosion.

Dust control measure shall mean any action or process that is used to prevent or mitigate the emission of fugitive dust into the air, including but not limited to the best management practices identified in this Manual.

Dust generating activity or source shall mean a process, operation, action, or land use that creates emissions of fugitive dust or causes off-property or off-vehicle transport.

Earthmoving shall mean any process that involves land clearing, disturbing soil surfaces, or moving, loading, or handling of earth, dirt, soil, sand, aggregate, or similar materials.

Fugitive dust shall mean solid particulate matter emitted into the air by mechanical processes or natural forces but is not emitted through a stack, chimney, or vent

Mechanical blower shall mean any portable machine powered with an internal combustion or electric-powered engine used to blow leaves, clippings, dirt or other debris off sidewalks, driveways, lawns, medians, and other surfaces including, but not limited to, hand-held, back- pack and walk-behind units, as well as blower- vacuum units.

Off-property transport shall mean the visible emission of fugitive dust beyond the property line of the property on which the emission originates or the project boundary when the emission originates in the public right-of-way or on public property.

Off-vehicle transport shall mean the visible emission of fugitive dust from a vehicle that is transporting dust generating materials on a public road or right-of-way.

On-tool local exhaust ventilation shall mean a vacuum dust collection system attached to a construction tool that includes a dust collector (hood or shroud), tubing, vacuum, and a high efficiency particulate air (HEPA) filter.

On-tool wet dust suppression shall mean the operation of nozzles or sprayers attached to a construction tool that continuously apply water or other liquid to the grinding or cutting area by a pressurized container or other water sources.

Operator or owner shall mean any person who has control over a dust generating source either by operating, supervising, controlling, or maintaining ownership of the activity or source including, but not limited to, a contractor, lessee, or other responsible party of an activity, operation, or land use that is a dust generating activity or source.

Particulate matter shall mean any material that is emitted into the air as finely divided solid or liquid particles, other than uncombined water, and includes dust, smoke, soot, fumes, aerosols and mists.

Required best management practices shall mean specific measures that are required to be implemented if a dust generating activity is occurring.

Sensitive area shall mean a specific area that warrants special protection from adverse impacts due to the deposition of fugitive dust, such as natural areas (excluding buffer zones), sources of water supply, wetlands, critical wildlife habitat, or river corridors.

Soil retention shall mean the stabilization of disturbed surface areas that will remain exposed and inactive for 30 days or more or while vegetation is being established using mulch, compost, soil mats, or other methods.

Stockpile shall mean any accumulation of bulk materials that contain particulate matter being stored for future use or disposal. This includes backfill materials and storage piles for soil, sand, dirt, mulch, aggregate, straw, chaff, or other materials that produce dust.

Surface roughening shall mean to modify the soil surface to resist wind action and reduce dust emissions from wind erosion by creating grooves, depressions, ridges or

furrows perpendicular to the predominant wind direction using tilling, ripping, discing, or other method.

Track-out shall mean the carrying of mud, dirt, soil, or debris on vehicle wheels, sides, or undercarriages from a private, commercial, or industrial site onto a public road or right-of-way.

Vegetation shall mean the planting or seeding of appropriate grasses, plants, bushes, or trees to hold soil or to create a wind break. All seeded areas must be mulched, and the mulch should be adequately crimped and or tackified. If hydro-seeding is conducted, mulching must be conducted as a separate, second operation. All planted areas must be mulched within twenty- four (24) hours after planting.

Wet suppression shall mean the application of water by spraying, sprinkling, or misting to maintain optimal moisture content or to form a crust in dust generating materials and applied at a rate that prevents runoff from entering any public right-of-way, storm drainage facility or watercourse.

Wind barrier shall mean an obstruction at least five feet high erected to assist in preventing the blowing of fugitive dust, comprised of a solid board fence, chain link and fabric fence, vertical wooden slats, hay bales, earth berm, bushes, trees, or other materials installed perpendicular to the predominant wind direction or upwind of an adjacent residential, commercial, industrial, or sensitive area that would be negatively impacted by fugitive dust.

2. Fugitive Dust and the Resulting Problems



2.1 What is Fugitive Dust?

Dust, also known as particulate matter, is made up of solid particles in the air that consist primarily of dirt and soil but can also contain ash, soot, salts, pollen, heavy metals, asbestos, pesticides, and other materials. “Fugitive” dust means particulate matter that has become airborne by wind or human activities and has not been emitted from a stack, chimney, or vent.

The quantity of dust emitted from a particular activity or area and the materials in it can depend on the soil type (sand, clay, silt), moisture content (dry or damp), local wind speed, and the current or past uses of the site (industrial, farming, construction).

2.2 Why should the City Addressing Fugitive Dust?

Although provincial requirements apply to many construction activities, they do not address many sources of dust emissions and City code compliance officers do not have authority to enforce provincial regulations. City of Toronto is experiencing rapid growth and development that has contributed to local man-made dust emissions.

2.3 Health and Environmental Effects



Dust particles are very small and can be easily inhaled. They can enter the respiratory system and increase susceptibility to respiratory infections, and aggravate cardio-pulmonary disease. Even short-term exposure to dust can cause wheezing, asthma attacks and allergic reactions, and may cause increases in hospital admissions and emergency department visits.

Fugitive dust emissions can cause significant environmental impacts as well as health effects. When dust from wind erosion or human activity deposits out of the air, it may impact vegetation, adversely affect nearby soils and waterways, and cause damage to cultural resources. Wind erosion can result in the loss of valuable top soil, reduce crop yields, and stunt plant growth.

In many cases heating/cooling systems are now designed with direct air intake, thus these systems are drawing noxious dust into neighbouring homes.

Many environmental studies have linked particulate matter exposure to health problems and environmental impacts such as:

- Health Impacts:
 - Irritation of the airways, coughing, and difficulty breathing
 - Reduced lung function and lung cancer
 - Aggravated asthma and chronic bronchitis
 - Irregular heartbeat and increases in heart attacks
- Environmental Impacts:
 - Haze and reduced visibility
 - Reduced levels of nutrients in soil
 - Adverse impacts on city and privately owned trees.

2.4 Nuisance and Aesthetics



Dust, dirt and debris that become airborne eventually settle back down to the surface. How far it travels and where it gets deposited depends on the size and type of the particles as well as wind speed and direction. When this material settles, it can be deposited on homes, cars, lawns, and other property. The small particles can get trapped in machinery and electronics causing abrasion, corrosion, and malfunctions. The deposited dust can damage painted surfaces, clog filtration systems, stain materials and cause other expensive clean-up projects. The debris also increases public and private property cleaning costs.



2.5 Safety Hazard and Visibility

Blowing dust can be a safety hazard at construction sites and on roads and highways. Dust can obstruct visibility and can cause accidents between vehicles and bikes, pedestrians, or site workers.

3. Best Management Practices

This Manual describes established best management practices for controlling dust emissions that are practical and used in common practice to prevent or mitigate impacts to air quality from dust generating activities and sources occurring within City of Toronto.

The objective of the dust control measures included in this Manual is to reduce dust emissions from human activities and to prevent those emissions from impacting others and is based on the following principles:

Prevent – avoid creating dust emissions through good project planning and modifying or replacing dust generating activities.

Minimize – reduce dust emissions with methods that capture, collect, or contain emissions.

Mitigate – when preventing fugitive dust or minimizing the impacts are not feasible, the

Manual provides specific measures to mitigate dust.

More specifically, the Manual establishes the following procedures for each dust generating activity outlined in this Chapter:

1. **Required Best Management Practices** – this section includes the specific measures that are required to be implemented if the dust generating activity is occurring. For example, high wind restrictions (temporarily halting work when wind speeds exceed 50 kph) are required best management practices for earthmoving, demolition/renovation, saw cutting or grind, abrasive blasting, and leaf blowing.

2. **Additional Best Management Practices** – this section includes additional measures if the required best management practices are ineffective at preventing off-property transport of particulate matter. At least one of the additional best management practices outlined in the Manual must be implemented on the site to be in compliance with the Manual and Code.

The **Dust Prevention and Control Checklist** included on page xx of this Manual provides a “quick guide” to dust control Best Management Practices covered in the following sections of the Manual.

3.1 Earthmoving Activities



Above: This figure illustrates earthmoving, which is an activity that can generate dust.

Dust emissions from earthmoving activities depend on the type and extent of activity being conducted, the amount of exposed surface area, wind conditions, and soil type and moisture content, including:

- Site preparation (clearing, grubbing, scraping)
- Grading and overlot grading
- Excavating, trenching, backfilling and compacting
- Loading and unloading dirt, soil, gravel, or other earth materials
- Dumping of dirt, soil, gravel, or other earth materials into trucks, piles, or receptacles.

Best Management Practices to Control Dust

(a) **Required Best Management Practices:** Any person, owner, or operator who conducts earthmoving that is a dust generating activity or source shall implement the following best management practices to prevent off-property transport of fugitive dust emissions:

- Minimize disturbed area:** plan the project or activity so that the minimum amount of disturbed soil or surface area is exposed to wind or vehicle traffic at any one time.
- Reduce vehicle speeds:** establish a maximum speed limit or install traffic calming devices to reduce speeds to a rate to mitigate off-property transport of dust entrained by vehicles.

iii) **Minimize drop height:** Drivers and operators shall unload truck beds and loader or excavator buckets slowly, and minimize drop height of materials to the lowest height possible, including screening operations.

iv) **High winds restriction:** temporarily halt work activities during high wind events greater than 50 kph if operations would result in off-property transport.

v) **Restrict access:** restrict access to the work area to only authorized vehicles and personnel.

(b) **Additional Best Management Practices:** In the event the above methods are ineffective to prevent off-property transport, the person, owner, or operator shall use at least one of the following best management practices:

i) **Wet suppression:** apply water to disturbed soil surfaces, backfill materials, screenings, and other dust generating operations as necessary and appropriate considering current weather conditions, and prevent water used for dust control from entering any public right-of-way, storm-water drainage facility, or watercourse.

ii) **Wind barrier:** construct a fence or other type of wind barrier to prevent wind erosion of top soils.

iii) **Vegetation:** plant vegetation appropriate for retaining soils or creating a wind break.

iv) **Surface roughening:** stabilize an active construction area during periods of inactivity or when vegetation cannot be immediately established.

v) **Cover:** install cover materials during periods of inactivity and properly anchor the cover.

vi) **Soil retention:** stabilize disturbed or exposed soil surface areas that will be inactive for more than 30 days or while vegetation is being established.

FoNTRA believes that earthmoving activities are a significant source of fugitive dust during the excavation process.

FoNTRA endorses the Best Management practices as shown above.

3.2 Demolition and Renovation



Above: This photo illustrates restricting access (a required best management practice) and a wind barrier (an additional best management practice) for demolition and renovation activities.

Dust generated from demolition activities may contain significant levels of silica, lead, asbestos, and particulate matter. Inhalation of silica and asbestos is known to cause lung cancer, and exposure to even small quantities of lead dust can result in harm to children and the unborn.

In addition to complying with the dust control measures below, any person engaged in demolition or renovation projects must comply with applicable provincial regulations for asbestos and lead containing materials and notification and inspection requirements (see bylaw reference xx-xx-xx)

Best Management Practices to Control Dust

(a) **Required Best Management Practices:** Any person, owner, or operator who conducts demolition or renovation that is a dust generating activity or source shall implement the following best management practices to prevent off-property transport of fugitive dust emissions:

- i) **Asbestos and lead containing materials:** demolition and renovation activities that involve asbestos or lead containing materials must be conducted in accordance with provincial and local regulations;
- ii) **Restrict access:** restrict access to the demolition area to only authorized vehicles and personnel;
- iii) **High winds restriction:** temporarily halt work activities during high wind events greater than 50 kph if operations would result in off-property transport; and

iv) **Minimize drop height:** Drivers and operators shall unload truck beds and loader or excavator buckets slowly, and minimize drop height of materials to the lowest height possible, including screening operations.

(b) **Additional Best Management Practices:** In the event **that existing bylaws** are ineffective to prevent off-property transport of fugitive dust emissions, the owner or operator shall use at least one of the following best management practices:

i) **Wet suppression:** apply water to demolished materials or pre-wet materials to be demolished as necessary. Prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.

ii) **Wind barrier:** construct a fence or other type of wind barrier to prevent onsite dust generating materials from blowing offsite.



Above: This photo illustrates reducing drop height, a required best management practice.

FoNTRA believes that demolition activities are a significant source of fugitive dust for new buildings. Major renovations including basement excavations are also significant source of fugitive dust.

FoNTRA endorses the Best Management practices as shown above.

3.3 Stockpiles



Above: This photo illustrates a typical stockpile that is often created during a residential construction project.

Stockpiles are used for both temporary and long-term storage of soil, fill dirt, sand, aggregate, woodchips, mulch, asphalt and other industrial feedstock, construction and landscaping materials. Fugitive dust can be emitted from stockpiles while working the active face of the pile or when wind blows across the pile. The quantity of emissions depends on pile height and exposure to wind, moisture content and particle size of the pile material, surface roughness of the pile, and frequency of pile disturbance.

Best Management Practices to Control Dust

(a) **Required Best Management Practices:** Any owner or operator of a stockpile that is a dust generating activity or source shall implement the following best management practices to prevent off property transport of fugitive dust emissions:

- i) **Minimize drop height:** Drivers and operators shall unload truck beds and loader or excavator buckets slowly, and minimize drop height of materials to the lowest height possible, including screening operations.

(b) **Additional Best Management Practices:** In the event 3.3(a)(i) is ineffective to prevent off-property transport of fugitive dust emissions, the owner or operator shall use at least one of the following best management practices:

- i) **Wet suppression:** Apply water to the active face when working the pile or to the entire pile during periods of inactivity. Prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.

- ii) **Cover:** install cover materials during periods of inactivity and anchor the cover.
- iii) **Surface roughening:** stabilize a stockpile during periods of inactivity or when vegetation cannot be immediately established.
- iv) **Stockpile location:** locate stockpile at a distance equal to ten times the pile height from property boundaries that abut residential areas.
- v) **Vegetation:** seed and mulch any stockpile that will remain inactive for 30 days or more.
- vi) **Enclosure:** construct a three-sided structure equal to or greater than the height of the pile to shelter the pile from the predominant winds.
- vii) **Permit timeframes:** establish permit timeframes and if a project is not completed, a builder would need to 'restart' the permit application process. This additional requirement would include extra fees.

FoNTRA believes that stockpiles represent both a temporary and long-term source of fugitive dust. In some cases, these stockpiles may exist for two to three years when the construction completion is delayed.

If a builder is aware of a fixed timeframe within which a project must be completed, they may be inclined to move forward more quickly reducing the number of construction site stockpiles, rather than deal with renewed permit costs and time delays.

The concept of stockpiles should be extended to include 'stockpiles and rear lots' to address the issue of property that is un-landscaped for extended periods of time.

FoNTRA endorses the Best Management practices as shown above.

3.4 Street Sweeping



Left: This figure illustrates the use of brooms as a simple best management practice for street sweeping.

Street sweeping is an effective method for removing dirt and debris from streets and preventing it from entering storm drains or becoming airborne. Regenerative air sweepers and mechanical sweepers with water spray can also be effective at removing particulate matter from hard surfaces.

Best Management Practices to Control Dust

(a) **Required Best Management Practices:** Any owner or operator that conducts sweeping operations or services on paved or concrete roads, parking lots, rights-of-way, pedestrian ways, plazas or other solid surfaces, and whose operations are a dust generating activity or source shall implement the following best management practices to prevent off-property transport of fugitive dust emissions:

- i) **Uncontrolled sweeping prohibited:** the use of rotary brushes, power brooms, or other mechanical sweeping for the removal of dust, dirt, mud, or other debris from a paved public road, right-of-way, or parking lot without the use of water, vacuum system with filtration, or other equivalent dust control method is prohibited.

(b) **Additional Best Management Practices:** In the event the above method is ineffective to prevent off-property transport of fugitive dust emissions, the owner or operator shall use at least one of the following best management practices:

- i) **Wet suppression:** use a light spray of water or wetting agent applied directly to work area or use equipment with water spray system while operating sweeper or power broom. Prevent water used for dust control from entering any storm drainage facility or watercourse.

- ii) **Vacuum system:** use sweeper or power broom equipped with a vacuum collection and filtration system.
- iii) **Other method:** use any other method to control dust emissions that has a demonstrated particulate matter control efficiency of 80 percent or more.

FoNTRA believes that street sweeping (including sidewalk sweeping) is simple measure that can be undertaken to reduce fugitive dust.

FoNTRA endorses the Best Management practices as shown above.

3.5 Track-out / Carry-out



Above: This figure illustrates track-out mud and dirt from a large truck leaving a construction site.

Mud, dirt, and other debris can be carried from a site on the wheels or undercarriage of equipment and vehicles onto public roads. When this material dries, it can become airborne by wind activity or when other vehicles travel on it. This is a health concern and can cause visibility issues and safety hazards.

Best Management Practices to Control Dust

(a) **Required Best Management Practices:** Any owner or operator of any operation that has the potential to result in track-out of mud, dirt, dust, or debris on public roads and rights-of-way and whose operation is a dust generating activity or source shall implement the following best management practices to prevent off-property transport of fugitive dust emissions:

- i) **City standards:** comply with track-out prevention requirements and construction best management practices as set forth in the City regulations or policies.
 - ii) **Remove deposition:** promptly remove any deposition that occurs on public roads or rights- of-way as a result of the owner's or operator's operations. Avoid over-watering and prevent runoff into any storm drainage facility or watercourse.
- (b) **Additional Best Management Practices:** In the event the above methods are ineffective to prevent off-property transport of fugitive dust emissions, the owner or operator shall use **at least one** of the following best management practices:
- i) Install rails, pipes, grate, or similar track-out control device.
 - ii) Manually remove mud, dirt, and debris from equipment and vehicle wheels, tires and undercarriage.

FoNTRA believes that track-outs area a significant source of fugitive dust for new buildings. Major renovations including basement excavations are also significant source of fugitive dust.

FoNTRA endorses the Best Management practices as shown above.

3.6 Bulk Materials Transport



Above: This figure illustrates covered loads, a required best management practice for bulk materials transport.

Haul trucks are used to move bulk materials, such as dirt, rock, demolition debris, or mulch to and from construction sites, material suppliers and storage yards. Dust emissions from haul trucks, if uncontrolled, can be a safety hazard by impairing visibility or by depositing debris on roads, pedestrians, bicyclists, or other vehicles.

Best Management Practices to Control Dust

(a) **Required Best Management Practices:** Any owner or operator of a dust generating activity or source for which vehicles used to transport bulk materials to and from a site within the City on a public or private road or on a public right-of-way shall prevent off-vehicle transport of fugitive dust emissions. To prevent off-vehicle transport of fugitive dust to and from the site, the owner or operator shall implement the following measures:

i) **Cover Loads:** Loads shall be completely covered or all material enclosed in a manner that prevents the material from blowing, dropping, sifting, leaking, or otherwise escaping from the vehicle. This includes the covering of hot asphalt and asphalt patching material with a tarp or other impermeable material.

ii) **Minimize drop height:** Drivers and operators shall load and unload truck beds and loader or excavator buckets slowly, and minimize drop height of materials to the lowest height possible, including screening operations.

(b) **Additional Best Management Practices:** In the event the above methods are ineffective to prevent off-vehicle transport of fugitive dust, the owner or operator shall use at least one of the following best management practices:

i) **Wet suppression:** apply water to bulk materials loaded for transport as necessary to prevent fugitive dust emissions and deposition of materials on roadways. Prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.

ii) **Other technology:** use other equivalent technology that effectively eliminates off-vehicle transport, such as limiting the load size to provide at least three inches of freeboard to prevent spillage.

FoNTRA believes that bulk handling transports are a common source of fugitive dust at all major job sites.

FoNTRA endorses the Best Management practices as shown above.

3.7 Saw Cutting and Grinding



Above: This photo illustrates concrete cutting and how the activity can generate dust.

Cutting and grinding of asphalt, concrete and other masonry materials can be a significant short-term source of fugitive dust that may expose workers and the public to crystalline silica. Inhalation of silica can cause lung disease known as silicosis and has been linked to other diseases such as tuberculosis and lung cancer. Using additional best management practices during cutting and grinding operations can significantly reduce dust emissions.

(a) **Required Best Management Practices:** Any owner or operator that cuts or grinds asphalt, concrete, brick, tile, stone, or other masonry materials and whose operations are a dust generating activity or source shall use the following best management practices to prevent off-property transport of fugitive dust emissions:

- i) **Restrict access:** prevent the public from entering the area where dust emissions occur.
- ii) **High winds restriction:** temporarily halt work activities during high wind events greater than 50 kph if operations would result in off-property transport.
- iii) **Equipment and work area clean up:** use wet wiping, wet sweeping, or vacuuming with HEPA filtration for equipment and work area clean up and do not cause dust to become airborne during clean up.
- iv) **Slurry clean up:** prevent water used for dust control or clean up from entering any public right-of-way, storm drainage facility, or watercourse by using containment, vacuuming, absorption, or other method to remove the slurry, and dispose of slurry and containment materials properly.

(b) **Additional Best Management Practices:** In the event the above methods are ineffective to prevent off- property transport of fugitive dust emissions, the owner or operator shall use at least one of the following best management practices:

- i) **On-tool local exhaust ventilation:** use a tool-mounted dust capture and collection system.
- ii) **On-tool wet suppression:** use a tool-mounted water application system.
- iii) **Vacuuming:** use a vacuum equipped with a HEPA filter simultaneously with cutting or grinding operations.
- iv) **Wet suppression:** use a water sprayer or hose simultaneously with cutting or grinding operations.
- v) **Dust Enclosure:** conduct cutting or grinding within an enclosure with a dust collection system or temporary tenting over the work area. Note that dust enclosures should require sound insulation. For a minor incremental cost, the noise will be muted. We have included a brochure for a commercial solution called AcoustiGuard ML. We have also included a custom solution prepared for a Toronto contractor to enclose his gas powered generator. Dust enclosure should work to mitigate the adverse noise impact generated by the equipment.



Above: These photos illustrate how dust generated from cutting can be minimized by applying on-tool wet suppression, an additional best management practice associated with saw cutting and grinding.

FoNTRA believes that saw cutting and grinding are significant sources of fugitive dust at all construction sites. The problem is most prevalent for construction of building facades where the stone work is formed and finished on site.

FoNTRA recommends that owners who are planning to construct facades with a significant amount of cutting have all stone and masonry cut off site. **Any required on-site cutting must require an approved dust control plan.** (Dust control plans must be submitted and **approved**).

Note: Stone cutting for cladding single family houses is best done off site for the following reasons:

1. Less waste;
2. Less on-site construction time;
3. Cleaner site, less dust and debris;
4. Quieter site for workers and neighbours;
5. Better quality control because of shop drawing coordination.

The tradespeople who work in this trade operate without sufficient protection (i.e., dust, noise, eyes) and with little regard to the public health risks. FoNTRA recommends that stone **and masonry** cutting should be done with temporary tenting with mandatory protection for all the above health risks involving all stone cutting tradespeople as well as the general public.

FoNTRA endorses the other Best Management practices as shown above.

3.8 Abrasive Blasting



Above: This photo illustrates abrasive blasting without dust mitigation in place.

Abrasive blasting is used to smooth rough surfaces; roughen smooth surfaces; and remove paint, dirt, grease, and other coatings from surfaces. Abrasive blasting media may consist of sand; glass, plastic or metal beads; aluminum oxide; corn cobs; or other materials.

Abrasive blasting typically generates a significant amount of fugitive dust if not controlled. The material removed during abrasive blasting can become airborne and may contain silica, lead, cadmium or other byproducts removed from the surface being blasted.

Best Management Practices to Control Dust

(a) **Required Best Management Practices:** Any person, owner, or operator who conducts outdoor abrasive blasting or indoor abrasive blasting with uncontrolled emissions vented to the outside and whose operations are a dust generating activity or source shall implement the following best management practices to prevent off-property transport of fugitive dust emissions:

- i) **Restrict access:** prevent the public from entering the area where dust emissions occur.
- ii) **High winds restriction:** temporarily halt work activities during high wind events greater than 50 kph if operations would result in off-property transport.
- iii) **Equipment and work area clean up:** use wet wiping, wet sweeping, or vacuuming with HEPA filtration for equipment and work area clean up and do not cause dust to become airborne during clean up.
- iv) **Slurry clean up:** prevent water used for dust control or clean up from entering any public right-of-way, storm drainage facility, or watercourse by using containment, vacuuming, absorption, or other method to remove the slurry, and dispose of slurry and containment materials properly.
- v) **Pre-cut stone masonry:** All stone masonry should be pre-cut off site. The advantages are similar to saw cutting and grinding (see previous section).

(b) **Additional Best Management Practices:** In the event the above methods are ineffective to prevent off- property transport off-property transport of fugitive dust emissions, the owner or operator shall use at least one of the following best management practices:

- i) **Enclosure:** conduct abrasive blasting within an enclosure with a dust collection system or temporary tenting over the work area.
- ii) **Wet suppression blasting:** use one of several available methods that mix water with the abrasive media or air during blasting operations.
- iii) **Vacuum blasting:** conduct air-based blasting that uses a nozzle attachment with negative air pressure to capture dust.
- iv) **Abrasive media:** select less toxic, lower dust-generating blasting media.

FoNTRA recognizes that while abrasive blasting is not a problem for new buildings it can represent a significant problem on major renovations involving brick work.

FoNTRA endorses the Best Management practices as shown above.

3.9 Mechanical Blowing



Above: This photo illustrates mechanical blowing without dust mitigation in place.

Mechanical blowers are commonly used to move dirt, sand, leaves, grass clippings and other landscaping debris to a central location for easier pick-up and removal. Mechanical blowing with a leaf blower is a significant source of fugitive dust in some situations and can create nuisance conditions and cause health effects for sensitive individuals. **Not only is it a nuisance but it adversely impacts the health and safety of workers and people in the surrounding area.**

Mechanical blowing can re-suspend dust particles that contain allergens, pollens, and molds, as well as pesticides, fecal contaminants, and toxic metals causing allergic reactions, asthma attacks and exacerbating other respiratory illnesses.

Best Management Practices to Control Dust

(a) **Required Best Management Practices:** Any person, owner, or operator who operates a mechanical leaf blower (gas, electric, or battery-powered) in a manner that is a dust generating activity or source shall use the following best management practices as necessary to prevent off-property transport of fugitive dust emissions.

FoNTRA does not endorse the City of Fort Collins approach. Mechanical leaf blowers should not be used.

(b) **Additional Best Management Practices:** In the event the above methods are ineffective to prevent off- property transport of fugitive dust emissions, the owner or operator shall use at least one of the following best management practices:

- i) Alternative method: use an alternative such as a rake, broom, shovel, manually push sweeper or a vacuum machine equipped with a filtration system.
- ii) Prevent impact: do not blow dust and debris off-property or in close proximity to people, animals, open windows, air intakes, or onto adjacent property, public right-of-way, storm drainage facility, or watercourse.
- iii) Minimize use on dirt: minimize the use of mechanical blower on unpaved surfaces, road shoulders, or loose dirt.
- iv) Wet suppression: use a light spray of water, as necessary and appropriate considering current weather conditions, to dampen dusty work areas. Prevent water, dirt, and debris from entering any storm drainage facility, or watercourse.
- v) Remove debris: remove and properly dispose of blown material immediately.



Above: These photos illustrate alternative methods to mechanical blowing that can minimize dust generation.

FoNTRA recognizes that mechanical blowing is not a common problem across all job sites, however is extremely hazardous when it is used to clean a site.

FoNTRA recommends that mechanical blowers should not be permitted, and that the Alternative Best Management Practices should be allowed instead of the Required Best Management practice, as used in the City of Fort Collins, Colorado.