



209 - 88 Tenth Street
New Westminster, BC
V3M-6H8

T 778.397.2220
F 778.397.2250

bcbuildingtrades.org

September 16, 2013

Email: ohsregfeedback@worksafebc.com

Policy and Regulation Division
Workers Compensation Board
P.O. Box 5350 Station Terminal
Vancouver, B.C. V6B 5L5

Dear Sir / Madam:

**Re: Substance Specific Requirements – OHSR Part 6 – SILICA
Silica Exposure When Shotcreting - Safe Work Procedures Required**

Introduction

The BC Building Trades supports the Board's proposed amendments to the *Occupational Health and Safety Regulation* ("OHSR") which provide practicable safety procedures when working around silica. Indeed, this proposal is long overdue as the current OHSR provides little guidance for employers on how to identify and control silica exposure; nor are workers who we represent advised on how best to protect themselves.

However, while we support the Board's proposal, we think the activity of shotcreting should be captured by the silica safety procedures, particularly the burgeoning application to one-sided vertical structural walls and columns, because this process generates considerable silica dust.

What is Shotcrete

Shotcreting is the application of mortar or concrete pneumatically projected at high velocity onto a surface. In other words, shotcrete is a method of delivery, the application of which can be performed using either a dry-mix or wet-mix process. Shotcrete undergoes placement and compaction simultaneously due to the force with which it is projected from the nozzle of the hose through which it travels. It can be impacted onto any type or shape of surface, including vertical or overhead areas. Although it's instructive to differentiate between the wet and dry methods of shotcrete, since the early 1950's shotcrete has been an all-inclusive term that describes spraying concrete or mortar with either a dry or wet mix process.

Wet-Mix Process

The building and construction industry in British Columbia uses the wet-mix process. The wet-mix process requires that all ingredients including the water are pre-mixed at a batching plant. The pre-mixed material is poured from a truck to a hopper on a specially designed concrete pump from which it is delivered into a hose. Compressed air is introduced at the nozzle and the mixture is then shot at high velocity from the nozzle onto the receiving surface.

Popularity of Shotcrete

The wet-mix process, which is ideal for large projects, has become increasingly popular on job sites throughout BC. Having all ingredients pre-mixed and delivered means fewer steps for the crew on-site. As well, the wet-mix process ensures very thorough and consistent measuring of the materials being used.

The application of shotcrete to one-sided vertical structural walls and columns is a burgeoning industry and buildings using this process are now ubiquitous in the province. This new method of building walls and columns is highly cost effective because the placement needs are minimal (e.g., no wooden forms are used) and erection is fast, particularly on complex forms or shapes such as curved walls and arches. At the same time shotcrete structures have the advantages of conventional cast-in-place concrete – it is durable with good thermal mass; resistant to fire, mold, insects, and vermin; and makes exceedingly tight envelopes.

Shotcrete Applications

Shotcrete can be used in myriad applications including structural walls and columns, soil retention, retaining walls, tunnel linings, shafts, bridge repair, sewage treatment rehabilitation, mining, seawalls, underground parkades, domes, steep slope stabilization, landscaping, swimming pools, rockscapes, skateboard parks, shotcrete homes, and foundation repair.

Health Hazards

As this new method has grown in popularity, so, too, have the number of workers exposed to this hazardous process.

Shotcreting creates myriad hazards because inhaling crystalline silica can lead to serious, sometimes fatal, illnesses including silicosis, lung cancer, tuberculosis (in those with silicosis), chronic obstructive pulmonary disease (COPD), renal disease and other cancers. Moreover, the inhalation of dust from shotcreting may cause irritation to the upper respiratory tract, sore

throat, coughing, sneezing, nosebleeds, and the production of phlegm. Contact with the skin may cause temporary irritation, a burning sensation, and, particularly on tender skin, rashes, cuts or sores. The eyes can be severely irritated and burned (known as "lime burns"). Ingestions of particles generated by shotcrete may cause irritation of the gastrointestinal tract, and large quantities of cement will cause stomach cramps, vomiting and diarrhea. Prolonged exposure to cement mixtures may produce dermatitis and eczema. And respiratory problems may be aggravated by pre-existing lung disease such as bronchitis, emphysema, or chronic obstructive pulmonary disease.

Lack of Safe Work Procedures for Shotcrete

Clearly, the spraying of shotcrete generates considerable silica exposure in the workplace. With this method of applying concrete to build vertical structural walls and columns becoming increasingly prevalent in recent years, increasing numbers of workers are being put at risk of silica poisoning. Despite this danger many employers are not following safety protocols to guard their employees from exposure to shotcrete silica.

In order to address this shortcoming, the BC Building Trades is requesting the Policy and Regulation Division to fully integrate the shotcrete process into the new proposed safety procedures guarding workers from silica. At a minimum, we are requesting that the following addition be made to the proposed regulatory change.

Definitions 6.112.1

Under the definition of "silica process", add the following subsection:

- (g) dry and wet shotcreting, the process of concrete or mortar pneumatically projected at high velocity onto a surface.**

If shotcrete is added to the definition of "silica process" in the proposed OHSR amendments, the act of shotcreting will be regulated in the context of the following OHSR provisions: Workplace Monitoring 5.53; Exposure Control Plan 5.54; Application 6.112; Risk Assessment 6.112.3; Exposure Control Plan 6.112.4; Elimination or Control of Exposure 6.112.5; Monitoring Workplace Exposure 6.112.6; Exceptions to Monitoring Requirements 6.112.7; Blasting Enclosures 6.112.8; Housekeeping 6.112.9; and Instruction and Training 6.112.10.

Conclusion

While the benefits of shotcreting are many, the lack of safety regulations controlling this application, particularly the burgeoning process of constructing vertical structural walls and columns, is putting increasing numbers of workers at risk. The Board's proposal to amend the OHSRs so as to provide a stronger safety regime for silica is a perfect opportunity to address this growing hazard of shotcrete exposures. The BC Building Trades asks the Board to seize this opportunity to make workplaces safer for all workers.

Should you have any questions about our proposal, do not hesitate to contact me.

Sincerely,



Merrill James O'Donnell
Workers' Advocate

MO/jl
cope 378