This article is also available for viewing online at https://www.novascotia.ca/lae/kb/questions.php?questionid=127

Silica Exposure

Hazard Summary
Persons who breathe airborne silica are at risk of developing Silicosis; a disease caused by the prolonged breathing of crystalline silica dust. Exposure to crystalline silica has also been linked to lung cancer. Examples of workplace activities that could expose workers to silica are:

- Chipping, sawing, grinding, hammering, or drilling of rock, concrete, or masonry structures
- Façade renovation, including tuck-point work
- Power cutting or dressing stone
- Many building demolition processes
- Clean-up activities such as dry sweeping or pressurized air blowing of concrete or sand dust
- Crushing, loading, hauling, or dumping of rock
- Abrasive or hydro blasting of concrete
- Tunneling, excavation, or earth moving of soils with high silica content

Silica is a very common hazard in many workplaces and activity that creates dust can expose workers to airborne silica. Nova Scotia has an occupational exposure limit of 0.025 milligrams per cubic meter (mg/m3), which is the maximum amount of crystalline silica that workers may be exposed to during an eight-hour work shift.

Preventive Measures
It is the employer's responsibility to ensure a hazard assessment, if needed, is done to determine the exact nature of the hazard and based on the assessment implement measures to eliminate or minimize it. Some preventive actions may include:

- Building design controls – use pre-built recesses for utilities (plumbing, gas, electric) to eliminate or reduce or the need to cut or drill concrete/masonry
- Engineering controls such as local exhaust ventilation or water spray systems to reduce dust levels, barriers to restrict access by unprotected workers
- Provide appropriate personal protective equipment (PPE) such as respirators and protective clothing
- In sand blasting operations substitute silica with another material
- Train workers on silica exposure dangers and how to use control measures and PPE
- Develop and implement an exposure plan for silica; include: purpose, responsibilities, risk assessment, controls, education, training, written safe work procedures, washing or decontamination facilities, health monitoring, and documentation.

Regulatory Measures
Occupational Health and Safety Act - Employer Responsibilities Section 13(1)

- provide such information, instruction, training, supervision and facilities as are necessary to the health or safety of the employees
- ensure employee, particularly supervisors and foremen are made familiar with any health or safety hazards
- ensure employees are made familiar with proper use of all devices, equipment and clothing required for their protection
- conduct activity so employees are not exposed to health or safety hazards

Section 28 - Requirement for a Health and Safety Program (20 or more employees)

- provision for the training and supervision of employees
- provision for the preparation of written work procedures required to implement safe and healthy work practices, and identification of the types of work for which the procedures are required at the employer's workplace
- development of hazard identification system; including
    - evaluation of the workplace to identify potential hazards,
    - procedures and schedules for regular inspections
    - procedures for ensuring reporting of hazards and the accountability of persons responsible for the correction of hazards, and
    - identification of the circumstances where hazards must be reported by the employer to the committee or representative, if any, and the procedures for doing so

Occupational Health Regulations - Section 4(1)

- Nova Scotia Occupational Health regulations require compliance with the Threshold Limit Values (TLVs) relating to gases, vapours, mists, fumes, smoke, dust, and other chemical substances and physical agents established and maintained by the American Conference of Governmental Industrial Hygienists

Additional Resources

- Developing a Silica Exposure Plan – WorkSafeBC (note: BC has the same occupational exposure limit as NS)
- Silica Exposure video – WorkSafeBC
- Toolbox Meeting Guide - WorkSafeBC
- Cloud Control – Article in WorkSafe Magazine (July/August 2009)
- Silica Links - Electronic Library of Construction Occupational Safety and Health (eLCOSH) (note: these links are primarily from US sources and may have different exposure limits)
- Basic Information on Quartz Silica – Canadian Centre for Occupational Health and Safety (CCOHS)