Hazards in underground mines can result in serious injuries, occupational diseases and death. Incidents involving ground instability are among the more frequent causes of deaths in underground mines in Ontario.

Since 2000, five workers have died and about 25 workers have been critically injured as a result of falls of ground or rockbursts in Ontario’s underground mines.

Falls of ground or rockbursts occur when rocks become dislodged from the roof or walls of an underground excavated site. The amount of displaced rock can vary from hundreds of pounds to thousands of tons of material. Workers can be seriously injured or killed in such incidents.

In general, as underground mines become older and deeper, they are more prone to incidents of ground instability. Currently, several Ontario underground mines operate at depths approaching 10,000 feet.

Ground control generally involves a variety of engineering and operational measures to control, monitor and prevent falls of ground and rockbursts. These include:

- design measures to predict the types of issues that could arise and to adjust the plans to prevent a fall of ground. (These measures generally include an analysis of the mine’s geology and rock mass characteristics as well as computer modelling to understand the effects and pressures of a proposed excavation on ground support.)
- installation of ground support systems to stabilize the surfaces of mine excavations
- a planned sequencing of tasks for excavating a site in a mine to minimize the effects of stress on ground supports
- use of ground monitoring systems to measure seismicity, rock mass stress levels and ground displacement around excavation sites
- use of backfill in areas no longer being excavated

Ontario has about 40 underground mines. Most of these mines are located in Northern Ontario. Many kinds of minerals are extracted from Ontario’s underground mines, including copper, nickel, gold and other precious metals, diamonds, salt and gypsum.

Ground instability can occur at any underground mine.

There are currently approximately 25,000 workers in the mining sector.
More information

- Ministry of Labour:
  www.ontario.ca/HealthandSafetyAtWork

- Mining safety:
  www.ontario.ca/MiningSafety

- Guide to the Occupational Health and Safety Act:

- Health & Safety Ontario:
  http://healthandsafetyontario.ca

- Regulations for Mines and Mining Plants:

Toll-free number

Call 1-877-202-0008 any time to report critical injuries, fatalities or work refusals. Call between 8:30 a.m. and 5 p.m., Monday to Friday for general inquiries about workplace health and safety. Always call 911 in an emergency.

Note: This document does not constitute legal advice. To determine your rights and obligations under the Occupational Health and Safety Act (OHSA) and its regulations, please contact your legal counsel or refer to the legislation at www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900854_e.htm.

While this fact sheet will also be available to Ministry of Labour inspectors, they will apply and enforce the OHSA and its regulations based on the facts as they may find them in the workplace. This fact sheet does not affect their enforcement discretion in any way.