



2022

**Toward a Safe Day Every Day:
Situational Awareness - Being Present, Being Proactive**

**Results from the 2021
Canadian Mineral Exploration,
Environment, Health & Safety Survey**

TOWARD A SAFE DAY EVERY DAY 2022: SITUATIONAL AWARENESS - BEING PRESENT, BEING PROACTIVE

*Results from the 2021 Canadian Mineral Exploration Environment,
Health & Safety Survey*

Introduction

The Association for Mineral Exploration (AME), Prospectors & Developers Association of Canada (PDAC) and Canadian Diamond Drilling Association (CDDA) are pleased to present the 17th annual Toward a Safe Day Every Day report with findings from the Canadian Mineral Exploration Environment, Health and Safety Survey. The 2021 survey had 54 **contributing organizations**, down from 69 in 2020, and from the record of 117 in 2018. However, the number of hours reported increased from 5.9 million hours to 8.1 million hours, partly attributed to increased spending in mineral exploration.

Although the survey is voluntary, it represents a cross-section of the environment, health and safety performance and practices of companies and government geological surveys active in, and supporting, exploration for metals, diamonds, coal, and industrial minerals. We estimate that approximately 60% of exploration expenditures in Canada are captured through the survey.

AME and PDAC, together with the Canadian Diamond Drilling Association (CDDA) encourage all organizations active in mineral exploration to complete the survey. In addition to mineral exploration and mining companies, participation of companies that support exploration is critical to the success of the survey. The survey provides a snapshot of leading indicators related to environment, health, and safety as well as a report of incidents throughout the year. It also continues to inspire the development of both AME and PDAC's safety workshops and initiatives.

Starting in 2020, through a partnership with the CDDA, the survey form has evolved to include interactive tools so that companies can compare their results with those of the broader industry.

The survey is available at www.explorationsurvey.ca.

The 2021 survey covers **8.1 million hours of work** – the equivalent of 4,000 full-time employees.

The average worker can expect to have a career in mineral exploration without a lost-time injury: our survey results indicate a lost-time injury frequency rate of 0.81 in 2021, up from 0.51 in 2020. Despite the increase, we expect this to be the tenth consecutive year of the mineral exploration industry lost-time injury frequency rate being below the rate for all Canadian industries – most recently reported as 1.68 new claims per 100 covered workers in 2020 by the Association of Workers Compensation Boards of Canada.

Despite this safety record, six transportation-related fatalities in recent years – two from an airplane crash in 2019, one each in helicopter crashes in 2020, 2021 and 2022, as well as a vehicle-related fatality in 2021 – have demonstrated the need for continued vigilance and the importance of learning from fatalities when they do rarely, but unfortunately occur.

LESSONS IN SITUATIONAL AWARENESS

The hard lessons learned from all the incidents and fatalities of the past years demand corrective actions from the mineral exploration and development industry. One key insight is situational awareness: paying attention and being aware of one's surroundings. It applies to every employee and contractor at any jobsite, including a drill site. As an example, drilling machine related incidents accounted for 22% of the incidents in 2021. There are many moving and rotating machine parts at a drill site with tight working space; therefore, it is important for the driller and the helper to work mindfully. Each worker needs to take control of his or her surroundings in a proactive way to help reduce or eliminate unforeseen errors that could lead to injuries and loss time.

Slips and falls accounted for 8% of all incidents (739) and 15% of all injuries (419). Strained and/or sprained ankles and/or wrists are one of the consequences of slipping and falling which accounted for 38% of all injuries in 2021. It is therefore crucial to be fully present and take every step mindfully to reduce injuries like these. As one example, stepping on a wasp's nest that may be in the ground is a clear hazard: therefore, being proactive in learning of and preparing for the dangers that traverses present to each worker is important. Such awareness would reduce injuries and even painful encounters with these seemingly concealed insects. There are regulatory implications as well; the 2022 Health, Safety and Reclamation Code for Mines in British Columbia indicates this may be considered a reportable dangerous occurrence on exploration projects (clause 1.71, (g)(vi)).



SAFETY REPORTING

The primary focus of the survey is the various practices in place prior to incidents happening. These leading indicators, or proactive measures, vary according to the organization. The percentage of companies reporting health and safety programs and policies – were at 98% and 94% respectively, compared to 96% and 96% in 2020.

For the second year in a row, all organizations – 100% (first reported at 56% in 2012, and up from 78% in 2020) – discussed safety at some workers’ meetings but only 79% at every worker’s meeting. Similarly, safety discussions at some Board meetings were far more prevalent this year at 94% (up from 66% in 2012 and 91% in 2020) but only 60% of organizations reported safety discussions at every Board meeting.

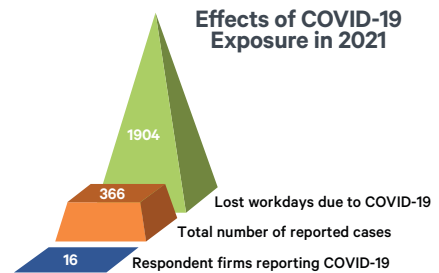
The percentage of companies reporting always or sometimes having return-to-work policies slightly decreased from 86% in 2020 to 85% in 2021. This change may be attributed more to a turnover in survey respondents during the COVID-19 pandemic than to changes in individual corporate policies.

ENVIRONMENTAL REPORTING

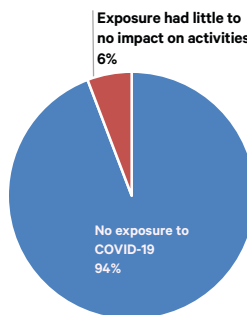
The percentage of companies reporting having an environmental policy increased slightly from 87% in 2020 to 89% in 2021, and the percentage reporting environmental management plans was steady – having declined only slightly from 81% in 2020 to 79% in 2021. In recent years, there had been an increase likely due to increasingly robust due diligence required through legislation, permit requirements and consultation with Indigenous peoples; however, it appears that smaller companies and companies contracting out their exploration work do not necessarily have these in place.

COVID-19 RESPONSE

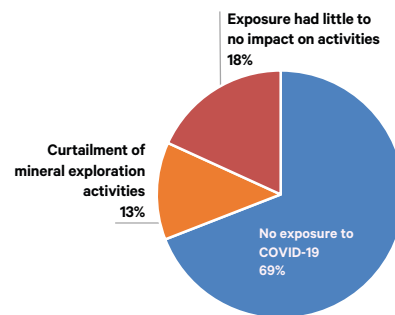
Exploration activities picked up robustly for 2021, with a total exploration expenditure of \$2.88 billion across Canada vs \$2.09 billion in 2020. The measures taken by the industry to reduce the spread of COVID-19; such as working in small team silos in which only closely working employees interact, helped to reduce interactions with other employees. Measures such this appear to have been effective to some degree; however, in 2021, there was an increase in the number of cases as 16 out of 54 (30%) respondents reported exposure to COVID-19 compared to 4 out of 69 (6%) in 2020. There was a total of 366 cases resulting in 1904 lost workdays in 2021 compared to 30 cases resulting in 70 lost workdays in 2020. No organizations reported cessation of mineral exploration activities due to COVID-19.



2020 Effects of COVID-19



2021 Effects of COVID-19



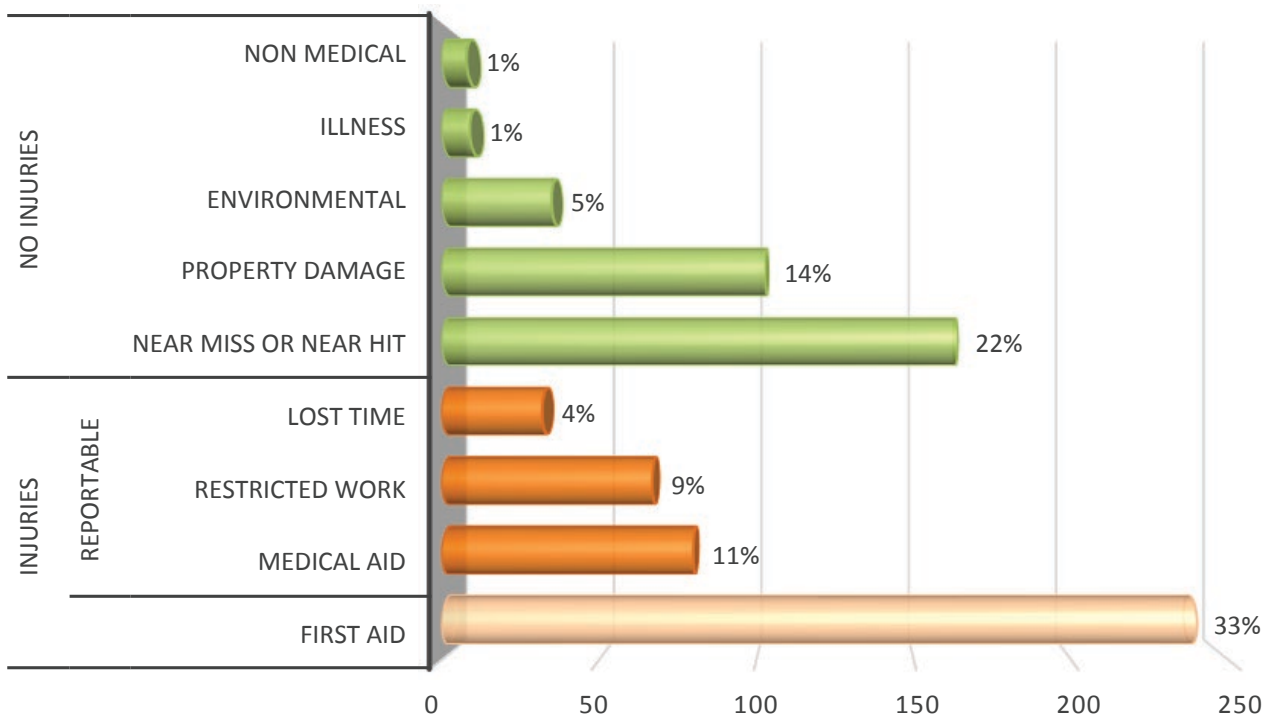
LAGGING INDICATORS

Lagging indicators are measures of numbers of incidents, their impact, and the actions taken after incidents happened. AME, PDAC and CDDA encourage organizations to report these to inform initiatives and to build awareness of the risk of both injury and damage to property.

Through the survey, 24 companies reported 739 incidents, compared to 26 companies reporting 675 incidents in 2020. Of these, 419 incidents (57%) resulted in injury, up from 351 incidents (52%) in 2020. Only 179 of these (24% of incidents, and 43% of injuries) resulted in the need for medical attention and/or a restricted work plan.

For the tenth year in a row, the lost-time injury rate in the Canadian mineral exploration industry is expected to be below that of all industries in Canada, at 0.81, higher from 0.51 in 2020, after declining from 0.61 in 2018 to 0.49 in 2019. The frequency rate of reportable injuries continued to remain relatively high at 4.43, increasing from 3.52 in 2020.

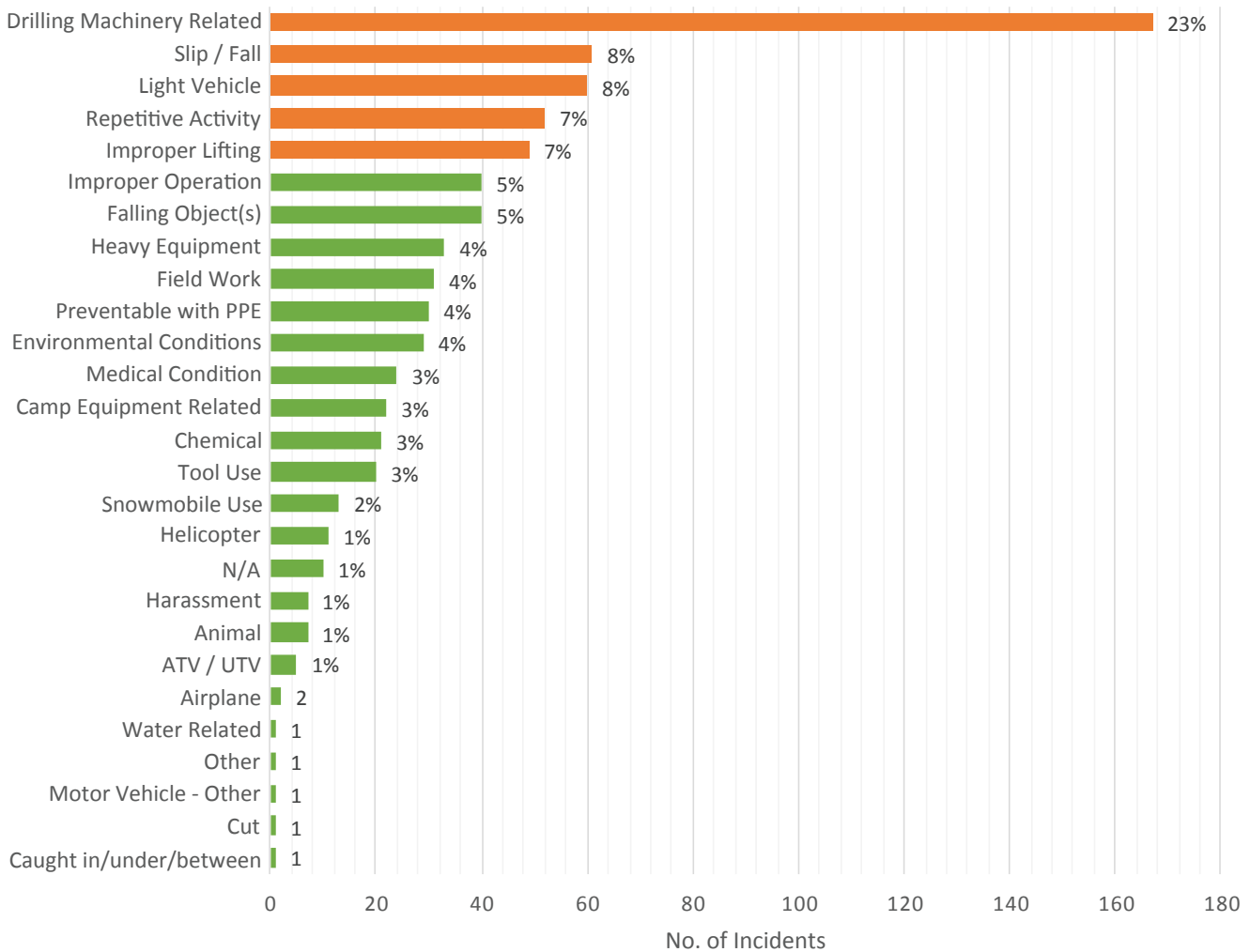
Classification of Incident



INCIDENT TYPE

Key themes in incident type include drilling machinery related and slip and fall (accounting for 31% of all 739 incidents), light vehicle transportation (8%) and repetitive activities (7%).

Incident Type



Key Takeaways:

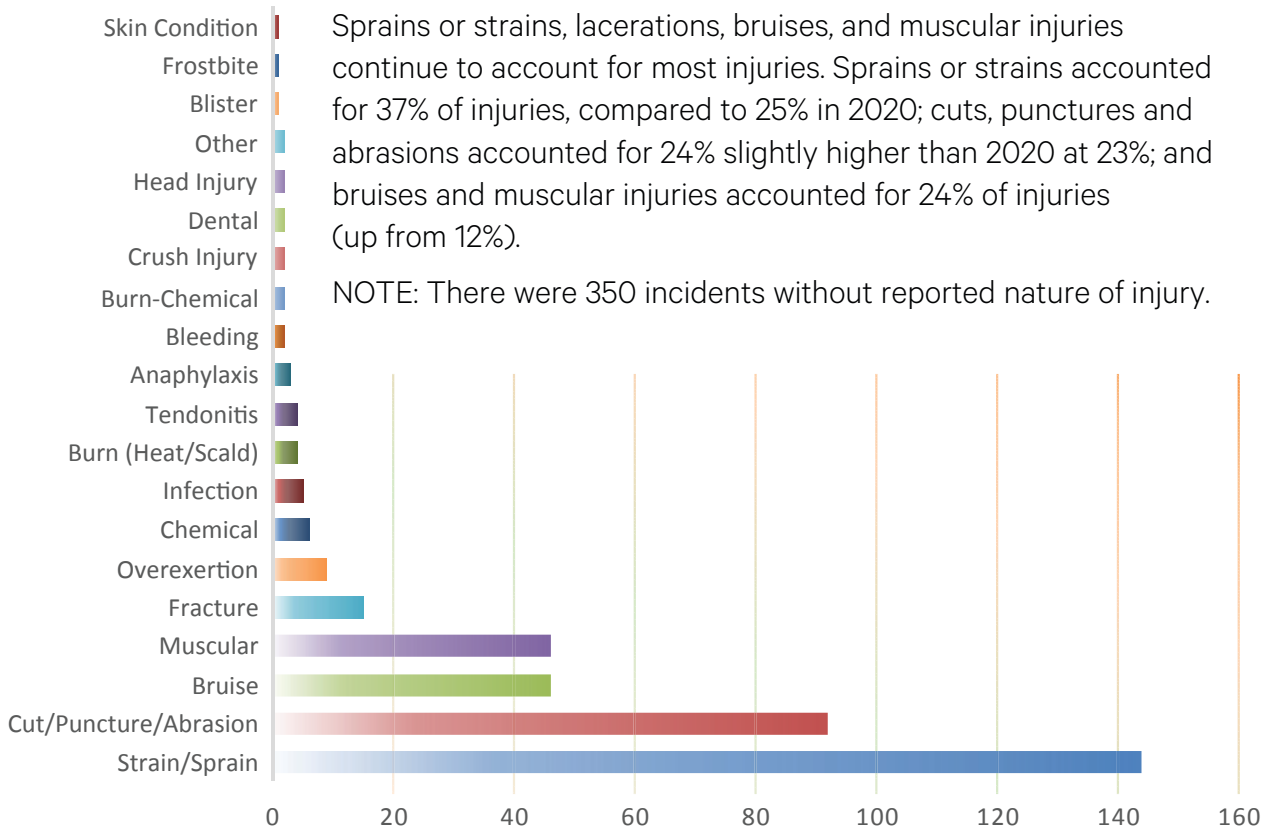
Conduct situational awareness checks and do field level risk assessments for each task.

Make sure that all appropriate personal protective equipment – from safety glasses to proper footwear – is used.

Encourage the reporting of incidents as learning opportunities – and a way to prevent injuries from happening.

Inspect all mobile equipment pre-use, perform preventative maintenance, and consider GPS and driver behaviour technologies in your mobile equipment safety program.

NATURE OF INJURY



LOCATION OF INJURY

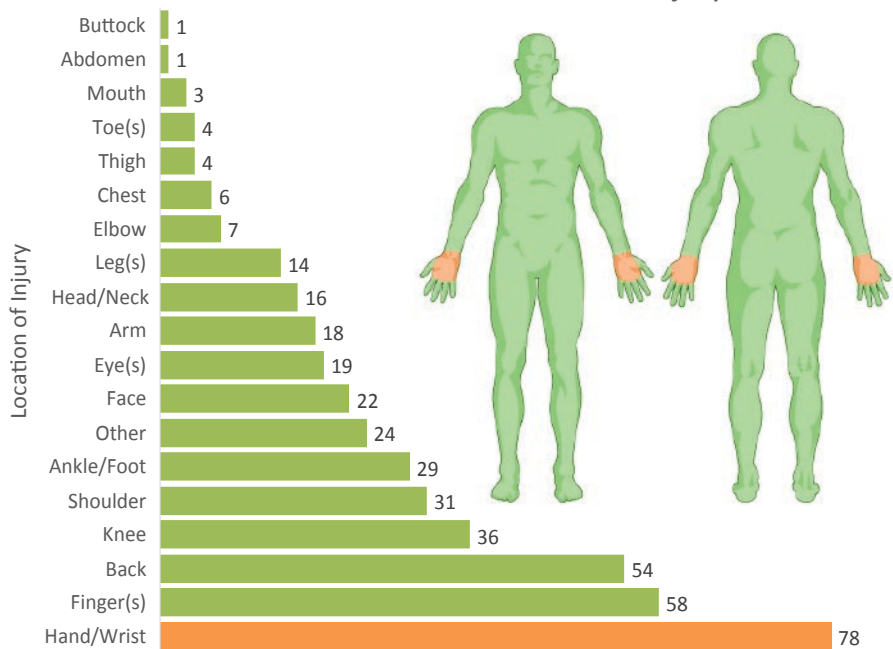
Location of injury was reported for the third year in the 2021 survey. The dominant locations of injury continue to be hand/wrists (17%) and fingers (14%) followed by back (12%)

Key Takeaways:

Reduce muscular injuries and sprains by incorporating health and wellness into your safety program. Stretching should be introduced into the pre-shift toolbox meeting. Assess ergonomics for your work activities, ensure proper placement and storage of materials, and encourage micro-stretch breaks for repetitive tasks.

Ensure workers perform pre-task risk assessments prior to performing tasks. Workers should assess the appropriate level of PPE required for the task, which can include cut resistant gloves, or other gloves suitable to the specific task or climactic conditions. . Using the correct tools and ensuring that guards are in place will also reduce the risk of incidents.

Anatomical Location of Injury



FATALITIES

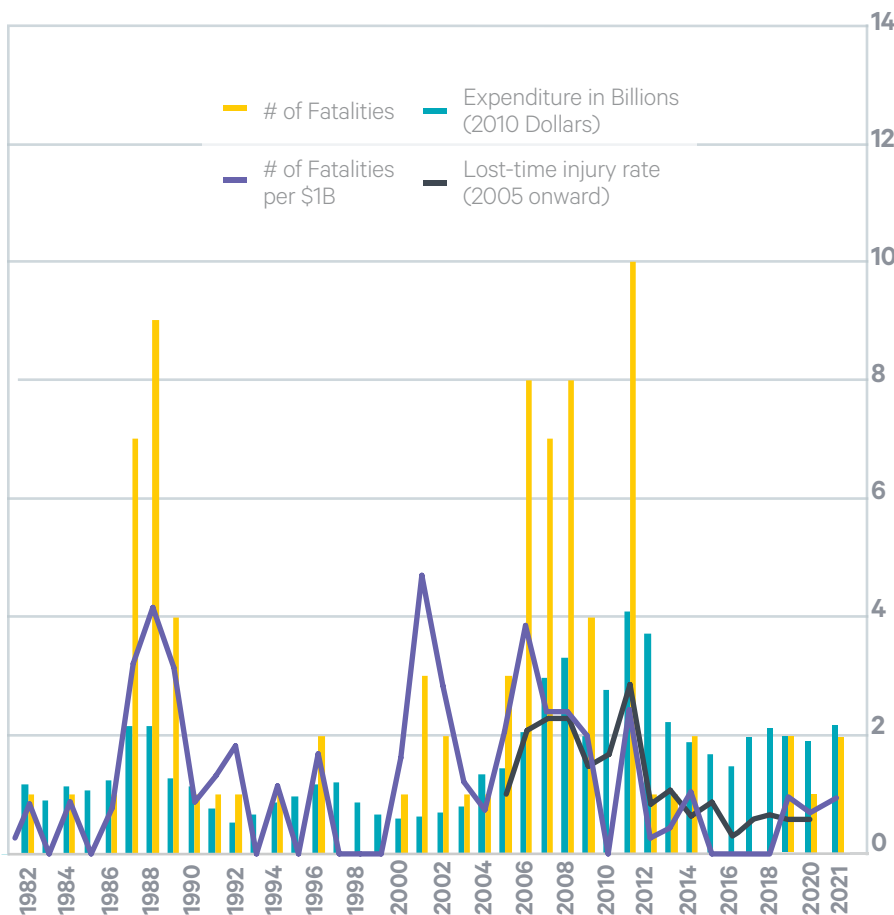
AME and PDAC track fatalities and their underlying reasons (such as human error, adverse weather conditions and mechanical failure) separately from the survey. This information is derived from a combination of reporting through government-led investigations, communications with members, company news releases and news reports.

On November 9, 2022, during an aerial survey operation near Kitsault BC, a helicopter collided with the terrain. The search and rescue team found the pilot fatally injured at the site of the crash: this incident was under investigation at time of writing.

Altogether, there have been 102 fatalities in mineral exploration in Canada since 1980; however, there have been 13 fatality-free years – including a period of four years without a fatality from 2015 through 2018. Reported causes of fatalities are listed below.

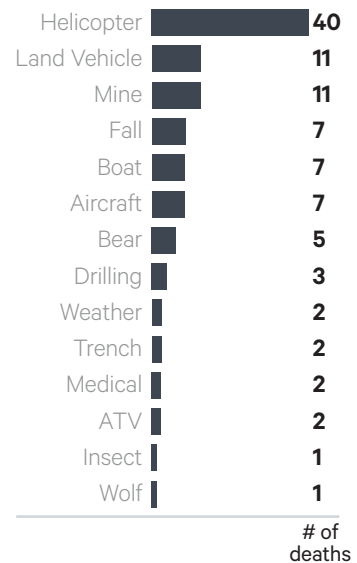
Historically, increased numbers and rates of fatalities and injuries have generally corresponded with peaks of activity in the industry. The injury rate is lower during downturns because during these times companies often lose less experienced workers. Similarly, when there is an upswing in exploration activities, companies ramp up quickly by hiring younger and less experienced workers. This trend appears intact, although to a lesser degree than in previous upswings, which is likely the result of a combination of due diligence, learned lessons from past experience and a growing culture of safety and associated training in the industry. In addition, regulatory requirements such as Ontario’s Common Core lay the foundation for safer work.

FATALITIES IN MINERAL EXPLORATION IN CANADA 1980-2021



PRIMARY CAUSE OF FATALITIES 1980-2021

Transportation was related to 70 fatalities (70%) since 1980, and have been related to all but one of the 18 fatalities (94%) in the mineral exploration industry since 2010.



WHAT YOU CAN DO

- ▶ Remember that each risk assessment is unique and may in fact be life-saving. What is normally a routine task may need to be reassessed and postponed or cancelled depending on the outcomes of the risk assessment.
- ▶ Ask questions about environment, health and safety. It is your right to be informed.
- ▶ If you are concerned, do not accept the status quo. It is every worker's right to refuse unsafe work.
- ▶ Before going in the field, take responsibility to seek out information - including resources from PDAC and AME – available online free of charge.
- ▶ Provide or ask about resources for safety-related topics such as travel and transportation, proper lifting, drill equipment safety, proper footwear and working in icy conditions.

RESOURCES

SAFETY GUIDELINES, MANUALS AND INFOGRAPHICS

The PDAC Field Safety Pocket Guide is available in English, French and Spanish. The guide includes a variety of safe fieldwork practices that will increase one's awareness of the risks, hazards and dangerous situations inherent in exploration work. The pocket guide is available from PDAC; and more detailed information is available in the e3 Plus Health & Safety in Exploration Toolkit developed by the Health & Safety Committee of PDAC. PDAC has also developed infographics on respiratory hazards and noise-induced hearing loss. These resources can be downloaded at <https://www.pdac.ca/priorities/responsible-exploration/health-and-safety>.

A comprehensive source of safety information for mineral exploration focused on Western Canada is AME's Safety Guidelines for Mineral Exploration in Western Canada. The guidelines are available online at <https://amebc.ca/what-we-do/health-safety/> and from the AME office.

TOOLS

Various resources including risk management, helicopter slinging and light vehicle presentations may be viewed and downloaded at <https://amebc.ca/resources/tools/>.

INFOGRAPHICS

PDAC is developing infographics – one on respiratory hazards can be viewed here: <https://www.pdac.ca/priorities/responsible-exploration/health-and-safety/>.

REPORTING

Complete the Canadian Mineral Exploration Environment, Health & Safety Survey at <https://explorationsurvey.ca>

OUR 2021 AWARD RECIPIENTS

There were **46** recipients of Safe Day Everyday Awards in 2021, down from 59 recipients of Safe Day Everyday Awards in 2020 due to lower participation of individual organizations in the survey.

SAFE DAY EVERYDAY GOLD AWARD

Boart Longyear receives the Safe Day Everyday Gold Award for the third consecutive year for having the highest number of hours without a lost-time incident. Boart Longyear receives the award for achieving 1,519,631 hours without lost time.

Eldorado Gold Québec receives the Safe Day Everyday Gold Award for achieving 114,676 hours without a reportable injury.

SAFE DAY EVERYDAY SILVER AWARD

19 organizations are presented with the Safe Day Everyday Silver Award for 2021. This award is presented to organizations reporting more than 10,000 hours throughout 2021 without a reportable injury.

Altius Resources Inc.	Nordgold SE	Teck Resources Limited
Centerra Gold Inc.	North Coal Ltd.	Western Protection Alliance Inc.
Coast Copper Corp.	NorthWest Copper Corp.	Westhaven Gold Corp.
De Beers Group	Ontario Geological Survey	
Endurance Gold Corporation	Probe Metals	
Forum Energy Metals Corp.	Quebec Precious Metals Corporation	
Hecla Québec	Scottie Resources Corp.	
Inventus Mining Corp.	Surge Copper Corp.	

SAFE DAY EVERYDAY BRONZE AWARD

AME, PDAC and CDDA are pleased to award **25** companies with the Safe Day Everyday Bronze Award for reporting a year without a lost-time incident in 2021.

Avalon Advanced Materials Inc.
Cambrian College
Copper Fox Metals Inc.
Finlay Minerals Ltd.
Foraco Canada
George Downing Estate Drilling
Giga Metals Corp.
Hudbay
Inomin Mines
Major Drilling

Midland Exploration Inc.
Mountain Safety Works
North Arrow Minerals Inc.
Northwest Territories Geological Survey
Orano Canada Inc.
Orestone Mining Corp.
Pacific Ridge Exploration Ltd.
Purepoint Uranium Group Inc.
Rio Tinto Exploration Canada Inc.

Saskatchewan Geological Survey
Tchaikazan Resources Inc.
Team Drilling LP
TerraLogic Exploration
Wallbridge Mining Company Limited
Watts, Griffis and McQuat Limited

SAFE DAY EVERYDAY PARTICIPATION AWARD

The Safe Day Everyday Participation Award goes out to organizations for having contributed to the survey for 10 consecutive years. There were no new recipients in 2021.

Previous recipients of the Participation Award who have continued to participate in the survey every year include:

Altius Minerals Corporation (14 years)
Avalon Advanced Materials Inc. (16 years)
Benton Resources Inc. (13 years)
De Beers Group (17 years)
Hy-Tech Drilling Ltd. (15 years)
Orano Canada Inc. (13 years)
Rio Tinto Exploration (11 years)
Teck Resources Limited (17 years)
TerraLogic Exploration Inc. (17 years)
Wallbridge Mining Company Limited (13 years)





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TOWARD A SAFE DAY EVERY DAY 2022: *Situational Awareness - Being Present, Being Proactive* is jointly produced by the Association for Mineral Exploration, Prospectors & Developers Association of Canada and Canadian Diamond Drilling Association.

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