

TOWARD A SAFE DAY EVERYDAY

The Canadian Mineral Exploration
Health & Safety Annual Report

2012/2013



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The Association for Mineral Exploration British Columbia (AME BC) and the Prospectors & Developers Association of Canada (PDAC) conduct an annual industry health and safety survey. Here are some of the findings from the 2012 and 2013 surveys.

The good ...

93% of respondents reported having a health and safety program in 2013 – a record, up from 85% of respondents in 2012.

89% of respondents always had an emergency response plan for each site in 2013, up from 86% in 2012 (Even better, 90% of respondents conduct health and safety simulation exercises).

11.2 million worker hours (the equivalent of 5,600 full-time employees) were included in the 2012 survey and 4.3 million worker hours were included in the 2013 survey. The reduced number of hours in 2013 is largely attributed to an industry downturn.

The lost workday incident frequency in 2012 was 0.85 per 200,000 hours, nearly half the rate for all Canadian industries as reported by the Association of Workers Compensation Boards of Canada at 1.65. The lost workday incident frequency edged up in 2013 to 1.09 per 200,000 hours (similar data for all Canadian industries for 2013 is not yet available).

But ...

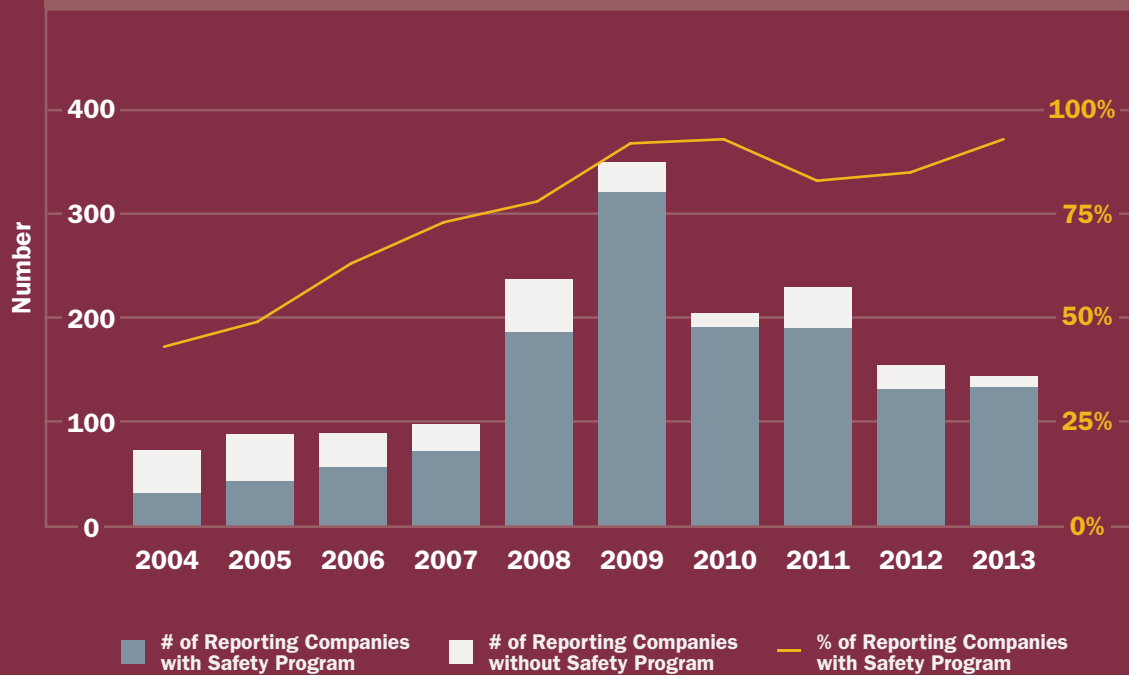
Only 156 organizations active in mineral exploration in Canada reported on their safety practices in 2012; this number decreased slightly to 146 in 2013.

SAFETY REPORTING

Reporting Summary

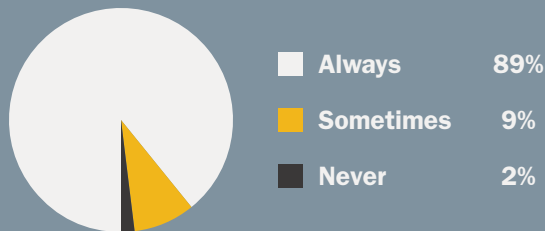


Safety Programs

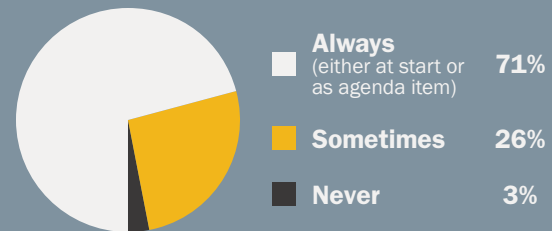


LEADING INDICATORS

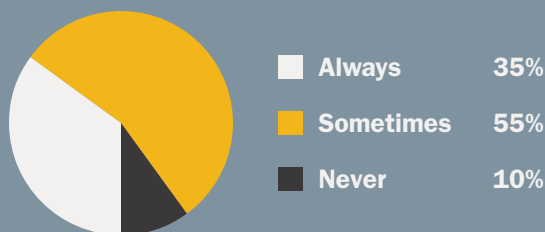
Emergency Response Plan at Each Site



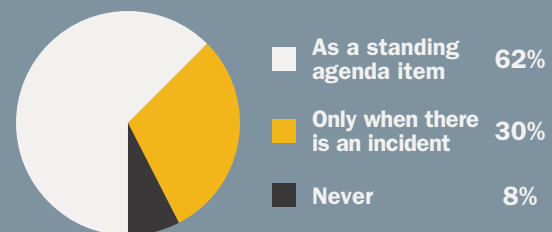
Health and Safety Discussed at Project Site Meetings



Emergency Simulation Exercises



Health and Safety Discussed at Board of Directors' Meetings



What are leading and lagging indicators?

Leading indicators are measures of actions taken prior to incidents happening. For example, safety meetings.

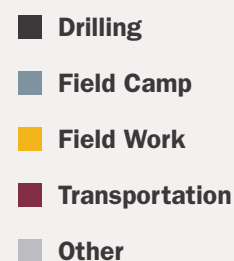
Lagging indicators are measures of actions taken after incidents happened. For example, number of lost time accidents.

Actions prior to incidents happening have the objective of preventing the incident in the first place. These also tell us what kind of incidents happened. An incident is any event that may have implications on the health and safety of workers; not all incidents are injuries – not all incidents result in physical harm or damage to a person.

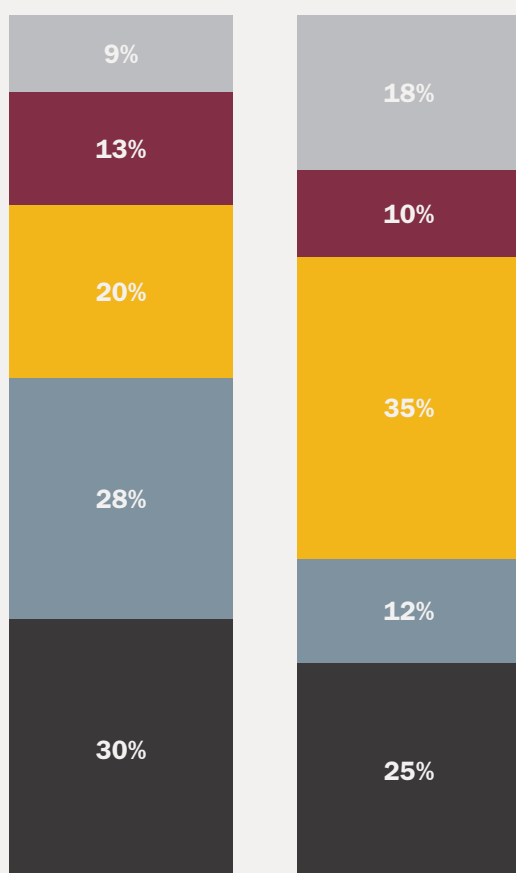
LAGGING INDICATORS

2013 Overview

# of companies	80
# of incidents	536
# of hours	4.2 million



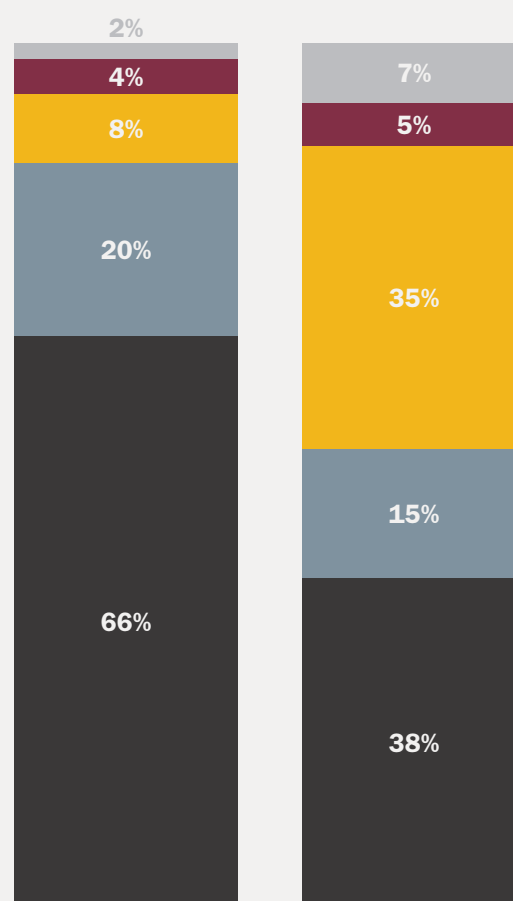
Incidents by Activity



2013

2012

Lost Time and Restricted* Incidents by Activity



2013

2012

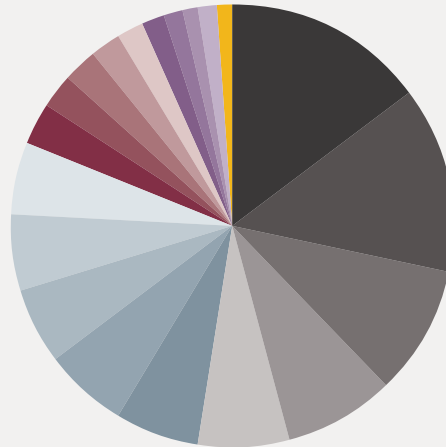
**also called Lost Time and Light Duty*

Cause of Incident

	2013	2012
Slip/fall	15%	13%
Drilling machinery related	13%	10%
Tool use	10%	6%
Object related	8%	4%
Automobile	7%	3%
Falling object	6%	4%
Vehicle - other	6%	4%
Camp equipment related	6%	5%
Helicopter	6%	3%
Other	5%	2%
Animal	3%	2%
Improper lifting	3%	5%
Field work	2%	22%
Snowmobile	2%	1%
Weather	2%	2%
Improper operation	2%	6%
ATV	1%	1%
Chemical	1%	3%
Medical condition	1%	2%
Airplane	1%	<1%
Boat	-	<1%
Not specified	-	2%

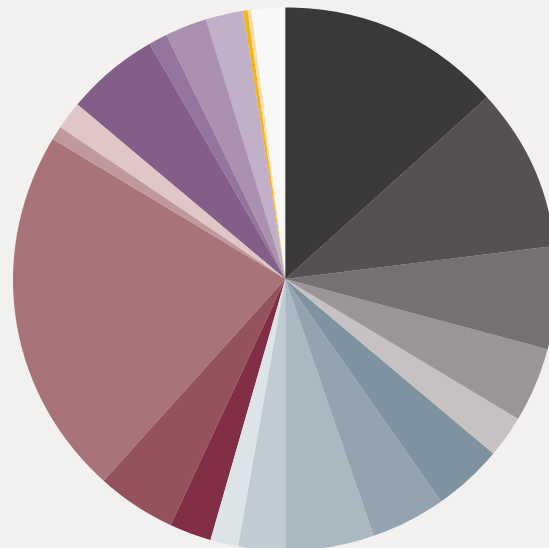
2013

536 Incidents



2012

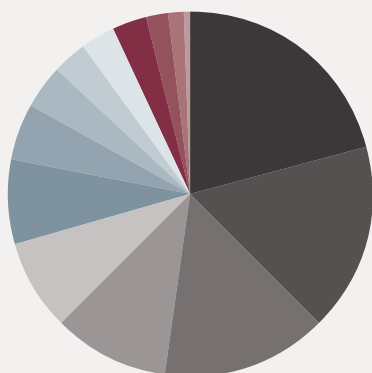
809 Incidents



Nature of Injuries

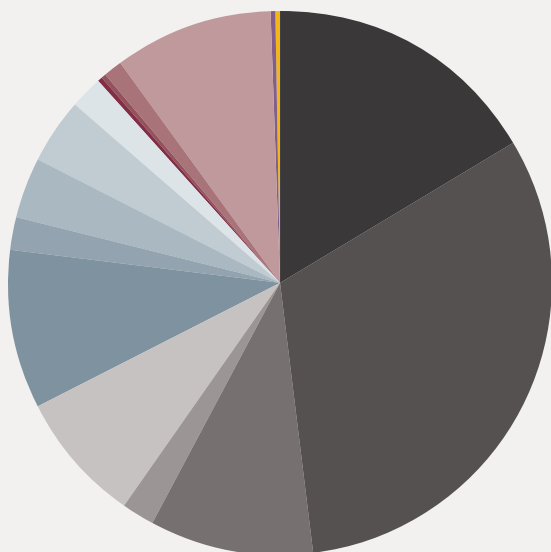
2013

Total Injuries: 233



2012

Total Injuries: 517



	2013	2012
Cut	21%	17%
Bruise/Muscular	17%	31%
Sprain	15%	10%
Skin	10%	2%
Back	8%	8%
Eye	7%	9%
Allergy	5%	2%
Skeletal	4%	3%
Chemical or burn/scald	3%	4%
Internal	3%	2%
Other	3%	<1%
Frostbite	2%	<1%
Pre-existing	1%	1%
Not specified	<1%	9%
Hyperthermia	-	<1%
Hypothermia	-	<1%

FATALITIES

2014 – Bulldozer

A tree struck a bulldozer as two contract workers with a drilling company were leaving a mineral exploration site on June 25. A 26-year-old worker was pinned, resulting in a fatality.

2013 – ATV

A 63-year-old contract worker at a mineral exploration project was fatality injured while operating an ATV on August 31 near Marathon, Ontario. The contractor was driving a four-wheel ATV, and appears to have missed a turn on a bush trail, resulting in a fall over an embankment.

2012 – Avalanche

A 50-year-old surveyor died in an avalanche at a mineral exploration camp near Stewart, BC, just before 4 p.m. on October 23.

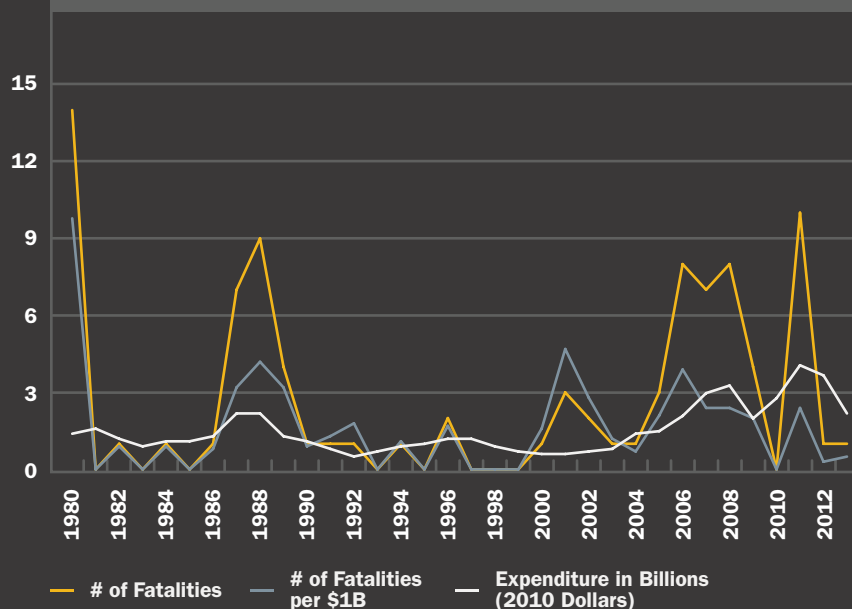
Two experienced surveyors were working on a slope taking GPS coordinates near the camp when an avalanche occurred. One of the workers was able to get to safety; the other was swept off a cliff into a gully and did not survive. A trained emergency rescue team was at the site within minutes.

The Canadian Avalanche Centre had defined the BC northwest coastal region as having early winter conditions; daily avalanche bulletins were scheduled to begin four weeks later on November 20.

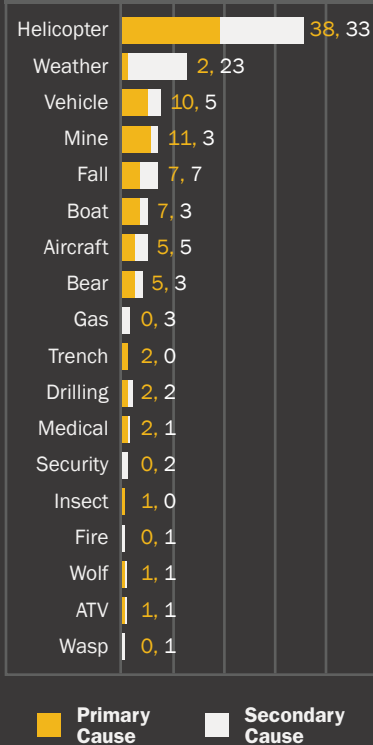
Overall, there have been **94 fatalities** in mineral exploration since 1980, an average of nearly three per year although there have been several fatality-free years, most recently in 2010. Causes of fatalities, both primary and secondary, are listed below.

Fatalities, and as recent data suggest, injury rates have generally corresponded with peaks of activity in the industry. AME BC and the PDAC hope that industry can learn from this trend to prevent any further fatalities in Canada's dynamic mineral exploration industry.

**Fatalities in Mineral Exploration in Canada
1980 – 2013**



**Cause of Fatalities
1980 – 2014**



WHAT YOU CAN DO

The leading preventive measures to safeguard against incidents can be summarized as follows:

- 1** Check that proper equipment and procedures are in place, are functioning properly, are used in all operations, and that procedures are understood by all personnel;
- 2** Check that employees use appropriate personal protective equipment (PPE) and caution in all situations;
- 3** Eliminate unnecessary driving or use extreme caution while driving in hazardous conditions;
- 4** Use extra caution in slippery environments, particularly over logs and in steep terrain;
- 5** Do not lift or carry heavy objects without assistance;
- 6** Use ergonomic lifting techniques; and
- 7** Do not rush any aspect of a program.
- 8** Train employees fully in all of their duties.

It is also important to note that employers are legally responsible to ensure that all employees and contractors:

- ✓ have safety programs in place;
- ✓ provide personal protective and safety equipment;
- ✓ adequately train and supervise personnel; and
- ✓ ensure employees and contractors follow safe work guidelines.

Resources

Safety Guidelines and Manuals

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 the PDAC; it can also be downloaded at <http://www.pdac.ca/policy/health-safety/policy/2011/01/06/health-safety-field-guide>.

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

More detailed information is available in the e3 Plus Health & Safety in Exploration Toolkit developed by the Health & Safety Committee of the PDAC. This toolkit is available online at www.pdac.ca/e3plus.



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OUR AWARD RECIPIENTS

2012 and 2013 Safe Day Everyday Gold Award

Congratulations to BHP Billiton Canada Inc. for recording 560,440 hours of exploration work without a lost workday incident in 2012, compared to 391,549 hours in 2011. The 2013 Safe Day Everyday Gold award for 2013 was presented to Geotech Drilling Services Ltd. for achieving 308,848 hours without a lost workday incident.

2012 Safe Day Everyday Award

Congratulations to the following companies for achieving a lost-workday free record in 2012 – consecutive years of winning the award are in parentheses.

Alexco Resources (2)	IAMGOLD Corporation
Altius Resources Inc	Imperial Metals Corporation
Amarc Resources Ltd.	Independence Gold Corp
Anglo American Exploration (Canada) Ltd. (4)	International Bethlehem Mining Corp
AREVA Resources Canada Inc.	Jien Nunavik Mining Exploration Ltd
AuRico Gold Inc (2)	KGHM International Ltd. (4)
Aztec Geoscience Inc. (2)	Kiska Metals Corporation (2)
BHP Billiton Canada Inc. (2)	Lakehead Helicopters Inc. (2)
Black Panther Mining Corp	Laurion Mineral Exploration Inc. (2)
Buchans Minerals Corp (2)	Lorraine Copper Corp
Burton Consulting Inc	Messina Minerals Inc
Canada Zinc Metals Corp	Minfocus Exploration Corp.
Canadian Zinc Corp	New Brunswick Geological Surveys Branch
Cariboo Rose Resources Ltd	Northern Tiger Resources Inc.
Casselman Geological Services Ltd.	Ontario Geological Survey (5)
Constantia Resources Ltd.	Pacific Ridge Exploration Ltd
Copper Fox Metals Inc	Purepoint Uranium Group Inc
Copper Mountain Mining Corp	Quartz Mountain Resources Ltd
De Beers Canada Inc. - Exploration Division	Rainy River Resources Ltd
Durfeld Geological Management Ltd (2)	Royal Nickel Corporation
Eagle Hill Exploration Corporation (4)	Serengeti Resources
Eastfield Resources Ltd.	Teck Resources Limited (5)
Endurance Gold Corporation (3)	TerraLogic Exploration Inc
FB Drilling Ltd (4)	Trevali Mining Corporation
Finlay Minerals Ltd.	Vale Exploration Canada (2)
Fjordland Exploration Inc (6)	Votorantim Metals Canada Inc (4)
Fladgate Exploration Consulting Corp	Wallbridge Mining Co Ltd
Geological Survey of Newfoundland and Labrador (3)	White Tiger Mining Corp
Gold Reach Resources Ltd	Wildcat Exploration Ltd (2)
Huakan International Mining Inc (3)	Xstrata Copper Canada – Exploration (3)
	Yukon Zinc Corporation (4)

2013 Safe Day Everyday Award

Congratulations to the following companies for achieving a lost-workday free record in 2013 – consecutive years of winning the award are in parentheses.

Altius Resources Inc (2)	Hard Creek Nickel Corporation
Amarc Resources Ltd. (2)	Hunter Dickinson Services Inc.
Anglo American Exploration (Canada) Ltd. (5)	Independence Gold Corp (2)
AREVA Resources Canada Inc. (2)	Kaminak Gold Corp
Aspinall Geological Consulting	KGHM International Ltd. (5)
AuRico Gold Inc (3)	Kiska Metals Corporation (3)
Aurum Geological Consultants Inc.	Manitoba Geological Survey
Avalon Rare Metals Inc	Minfocus Exploration Corp. (2)
Azimut Exploration Inc	New Brunswick Department of Energy and Mines (2)
Aztec Geoscience Inc. (3)	Nova Scotia Geological Services Division
Beaupré Diamond Drilling Ltd.	Ontario Geological Survey (6)
BHP Billiton Canada Inc. (3)	Orex Minerals Inc
Burton Consulting Inc (2)	Pacific Ridge Exploration Ltd (2)
Canada Zinc Metals Corp (2)	PBG Geoscience
Cariboo Rose Resources Ltd (2)	Purepoint Uranium Group Inc (2)
Cartwright Drilling Inc.	Quartz Mountain Resources Ltd (2)
Clifton Star Resources Inc	Rainy River Resources Ltd
Constantia Resources Ltd. (2)	Rio Tinto Exploration Canada Inc
Cyr Drilling International	Rubicon Minerals Corp
Darnley Bay Resources Ltd.	Saskatchewan Geological Survey
De Beers Canada Inc. - Exploration Division (2)	Serengeti Resources Inc (2)
Detour Gold Corporation - Exploration	SnipGold Corp
Eastfield Resources Ltd. (2)	TDB Consultants Inc.
Energold Minerals Inc	Terracod Geoscience Services Ltd.
Excellon Resources Inc	Thundermin Resources Inc
FB Drilling Ltd (5)	Tyhee Gold Corp
First Point Minerals Corp	Vale Exploration Canada (3)
Fjordland Exploration Inc (7)	Victoria Gold Corp
Foran Mining Corp	Votorantim Metals Canada Inc (5)
Geoclimb Consulting	Wallbridge Mining Co Ltd (2)
Geological Survey of Newfoundland and Labrador (4)	Wildcat Exploration Ltd (3)
Geotech Drilling Services Ltd.	
Glencore (4)	

PROFILE: Geotech Drilling Services Ltd.



In 2006, Geotech Drilling Services Ltd. recognized a need for increased safety management and hired a full-time health and safety representative. Over the next two years, the company overhauled its health and safety policy, retrained its staff and emerged as a leader in developing and nurturing a safety culture among its crews that was transferred from client to client. The company designed and manufactured several innovative features on its drills, including guards, rod handlers and easily accessible emergency response equipment. Through consistent safety messaging and positive reinforcement, there was a dramatic decrease in incidents. In 2013, Geotech Drilling recorded 308,848 hours without a lost workday incident – earning the Safe Day Everyday Gold Award. Geotech Drilling has also received the Association for Mineral Exploration British Columbia's 2014 David Barr Award for Excellence in Leadership and Innovation in Mineral Exploration Health and Safety.

Geotech Drilling also takes pride in addressing safety issues as they occur. The Last-Minute Risk Assessment, for example, is a mental review of hazards for any activity, and near-miss and incident reporting forms are available to anyone at any time on the company's website. In short, Geotech Drilling sees safety as a way of life.



TOWARD A SAFE DAY EVERYDAY: The Canadian Mineral Exploration Health & Safety Annual Report 2012/2013 is jointly produced by the Association for Mineral Exploration British Columbia and the Prospectors & Developers Association of Canada.

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For more information or to acquire full survey data (confidential data removed) to help plan your own exploration program, AME BC and PDAC members are welcome to contact Jonathan Buchanan at 604.630.3923 or jbuchanan@amebc.ca.

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