

Potentially Serious Incidents Summary

2019 Q1 - 2022 Q2 DATA

October 2022

TABLE OF CONTENTS

1.0 INTRODUCTION & OBJECTIVE.....	4
2.0 REPORTING RATES & TRENDS OVER TIME.....	4
3.0 REPORTS PER INDUSTRY SECTOR.....	6
4.0 INCIDENT CLASSIFICATIONS	7
4.1 Source per Type.....	8
5.0 INJURED PERSON DEMOGRAPHICS.....	9
6.0 INCIDENT FOLLOW-UP	10
APPENDIX A	11
DISCLAIMERS.....	13

EXECUTIVE SUMMARY

To help industry understand common trends and encourage conversations around prevention efforts, this report summarizes potentially serious incident (PSI) data from the Alberta oil and gas industry for the period Q1 2019 to Q2 2022.

The number of companies reporting PSIs increased from 118 to 152 since the 2021 report; however, only a small portion (6%) of active oil and gas companies have submitted PSI reports. This 6% makes up approximately a third of the industry activity.

Since the last report, the overall number of PSI submissions declined by 28%, which is associated with a decrease in COVID-19 reports. In relation to COVID-19 reporting, the number of people exposed per incident has dropped while the number of injured workers per incident has increased. This may be the result of evolving risk management practices for COVID-19. The submission of non-COVID-19 PSIs has stabilised since the 2021 report.

ESC analyzed *Struck by falling object* and *Inhalation of substance* PSIs, grouping the incidents into various categories to identify additional insights. This analysis is included in Appendix A and identifies the need for a balanced approach to both human performance and organization performance in the prevention of serious incidents and fatalities.

Industry is encouraged to reflect on their operations in relation to these findings, remembering that every PSI is an opportunity to learn and, often, all that separates a PSI from an actual serious incident or fatality is luck.

PSI DEFINITION

According to Alberta OH&S, “a PSI is reportable when the incident had a likelihood of causing a serious injury or illness, and there is reasonable cause to believe that corrective action may need to be taken to prevent recurrence.”

Employers can [report PSIs online](#) and must include a description of the event, the number of people involved and/or injured, and any follow-up actions they implemented.

The definition of PSI was significantly revised at the end of 2018 by Alberta OH&S. Therefore, only data from 2019 onwards is included in this report.

1.0 INTRODUCTION & OBJECTIVE

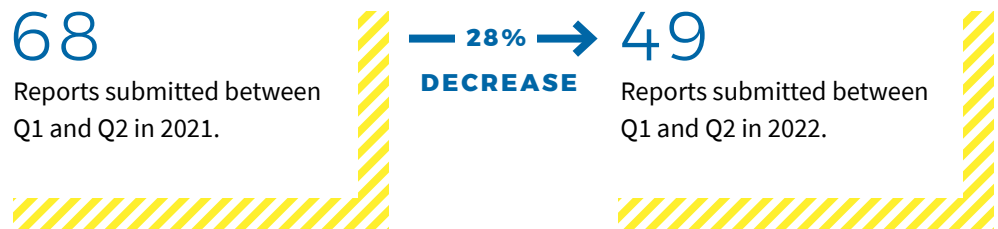
In 2018, it became mandatory for Alberta employers to report potentially serious incidents (PSIs) to Alberta Occupational Health and Safety (OH&S). OH&S has provided some of the resulting data to Energy Safety Canada (ESC), for ESC’s funding industry codes.

This report provides a summary of potentially serious incident data from the Alberta oil and gas industry for the purposes of understanding common trends and encouraging broader conversations around industry prevention efforts.

Data represents the time period of Q1 2019 to Q2 2022.

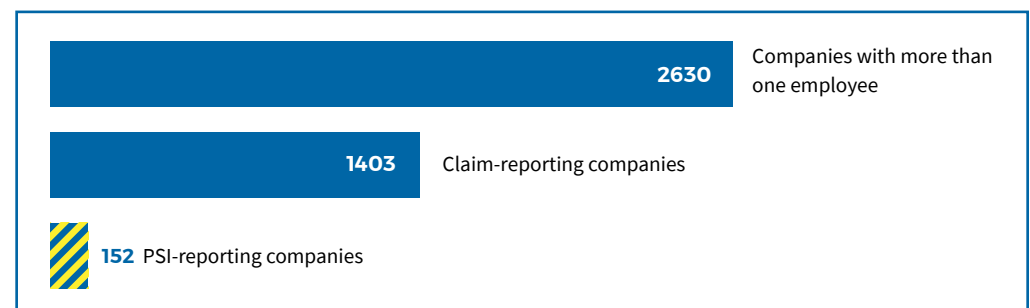
2.0 REPORTING RATES & TRENDS OVER TIME

The number of reports has decreased due to waning COVID-19 numbers.



Over the last two years, there were about 2,600 registered companies in Alberta’s oil and gas industries with more than one employee. Only a small portion of active oil and gas companies (6%) have submitted PSI reports since the program began. For comparison, around half (1,400 companies) had an incident that became an injury claim with the WCB.

COMPANY COUNTS IN ALBERTA O&G



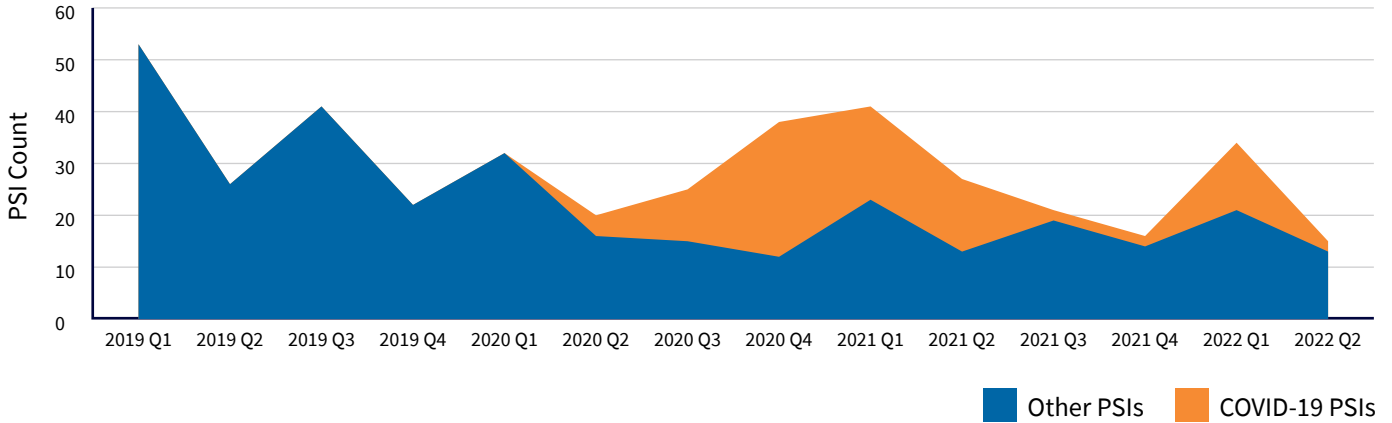
ACTIVITY IN ALBERTA O&G (PERSON YEARS)



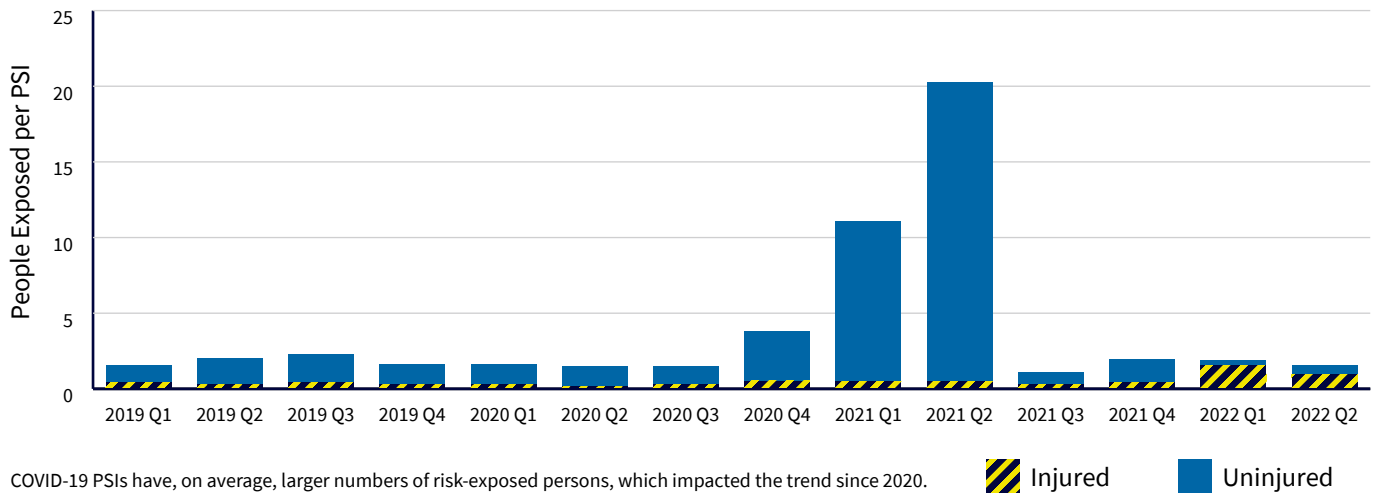
2.0 REPORTING RATES & TRENDS OVER TIME

Opportunities exist to encourage more reporting across the entire industry.

REPORTED POTENTIALLY SERIOUS INCIDENTS, BY QUARTER



EXPOSURE RATE, BY QUARTER



COVID-19 PSIs have, on average, larger numbers of risk-exposed persons, which impacted the trend since 2020.

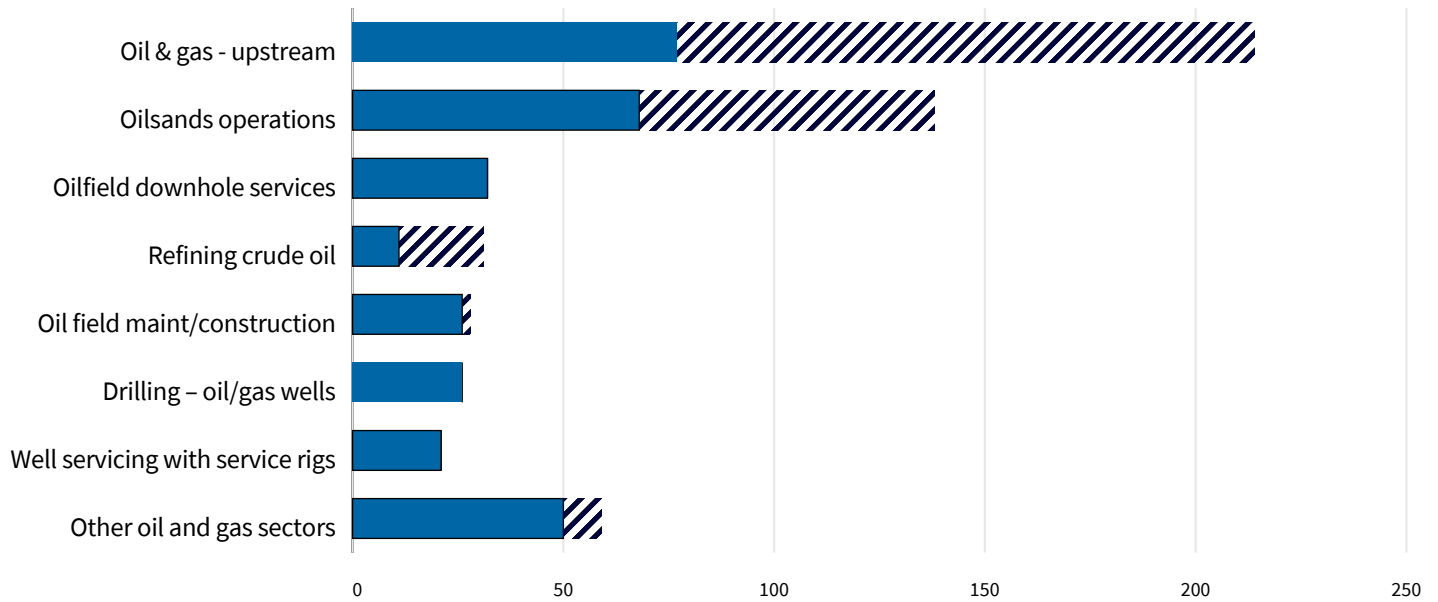
During a PSI, on average four people were exposed to risk, and 12% of exposures resulted in an injury. Companies are encouraged to reflect on their own ratio of near miss PSIs to injury PSIs.

Year	Participating companies	PSI report count	People exposed	People injured	Average exposed per PSI	% injured per exposed
2019	83	142	266	52	1.87	20%
2020	75	115	265	40	2.30	15%
2021	81	105	1055	45	10.05	4%
2022 Q1-Q2	46	49	88	66	1.80	75%*
Total	212	411	1674	203	4.07	12%

*Impact is associated with COVID-19.

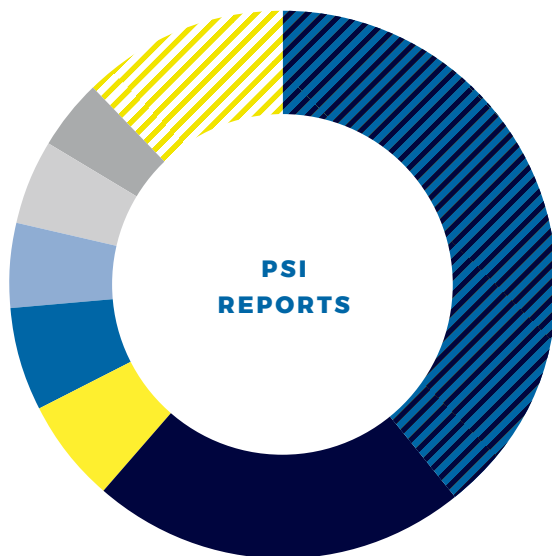
3.0 REPORTS PER INDUSTRY SECTOR

PSI REPORTS (INCIDENT RELATIONSHIP BY SECTOR)



Reports where both a prime contractor and the employer were involved are counted twice.

Prime Contractor Employer



- 39% Oil & gas - upstream
- 22% Oilsands operations
- 6% Oilfield downhole services
- 6% Refining crude oil
- 5% Oilfield maintenance/construction
- 5% Drilling - oil/gas wells
- 4% Well servicing with service rigs
- 12% Other oil and gas sectors

4.0 INCIDENT CLASSIFICATIONS

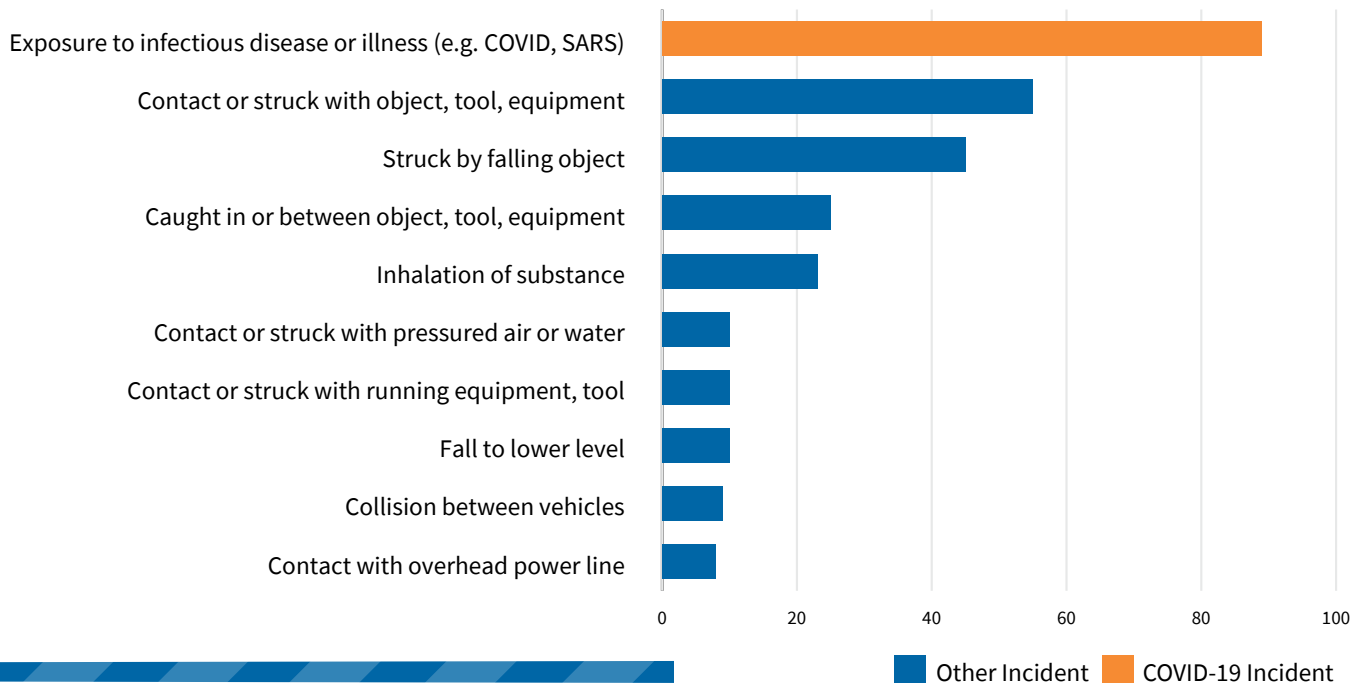
The graphs below show the most common types of incidents that could have caused serious injuries and the sources of those potential injuries.

Outside of COVID-19, over half of the PSIs are line of fire related, most significantly with workers being struck by construction materials.

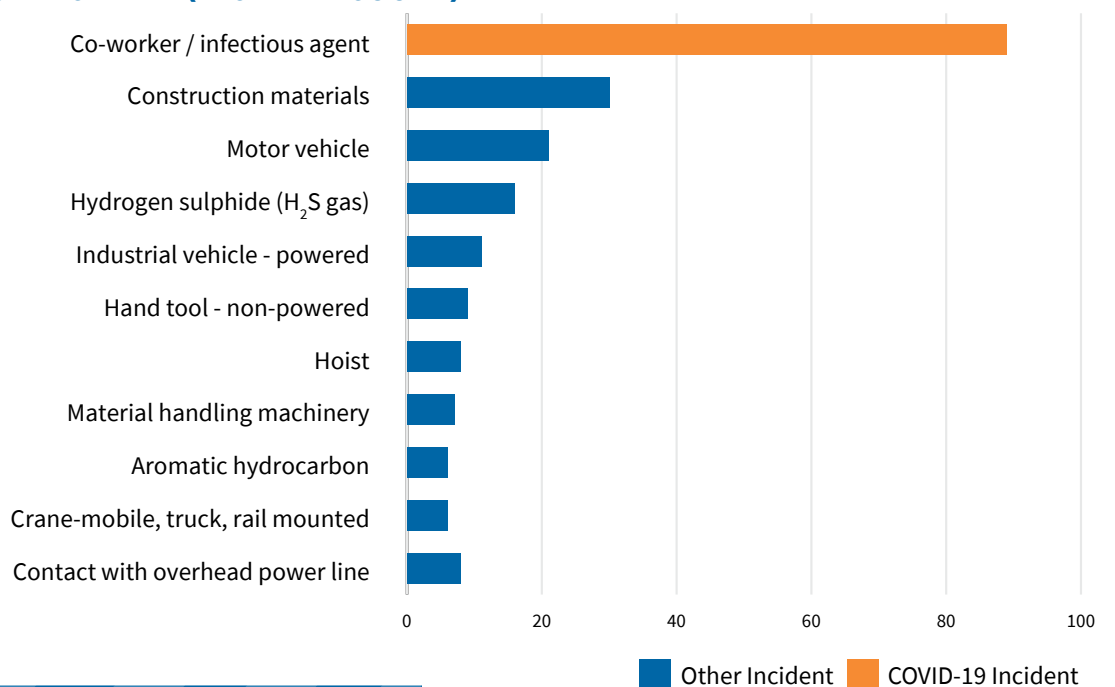


LINE OF FIRE

TOP 10 INCIDENT TYPES (INCIDENT COUNT)



TOP TEN SOURCES OF INCIDENT (INCIDENT COUNT)



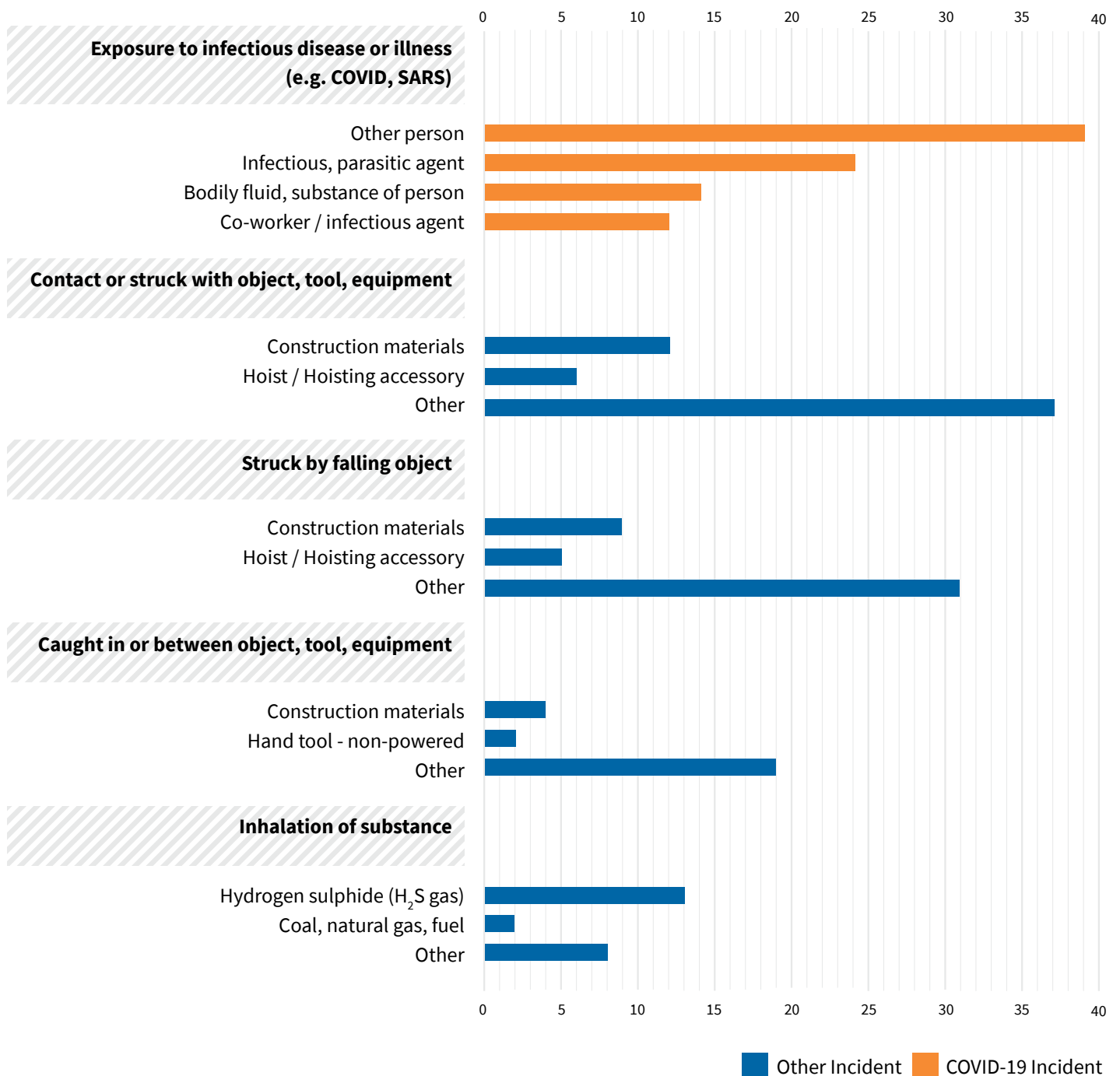
4.0 INCIDENT CLASSIFICATIONS

4.1 SOURCE PER TYPE

The main sources of the top five incident types are listed below.

Note that *Struck by falling object* and *Contact or struck with object, tool, equipment* each have a large *Other* category for source of incident. This is simply due to the large number of potential sources (hoists, machinery, ice, fasteners, etc.); there is no major source of incident that is not shown.

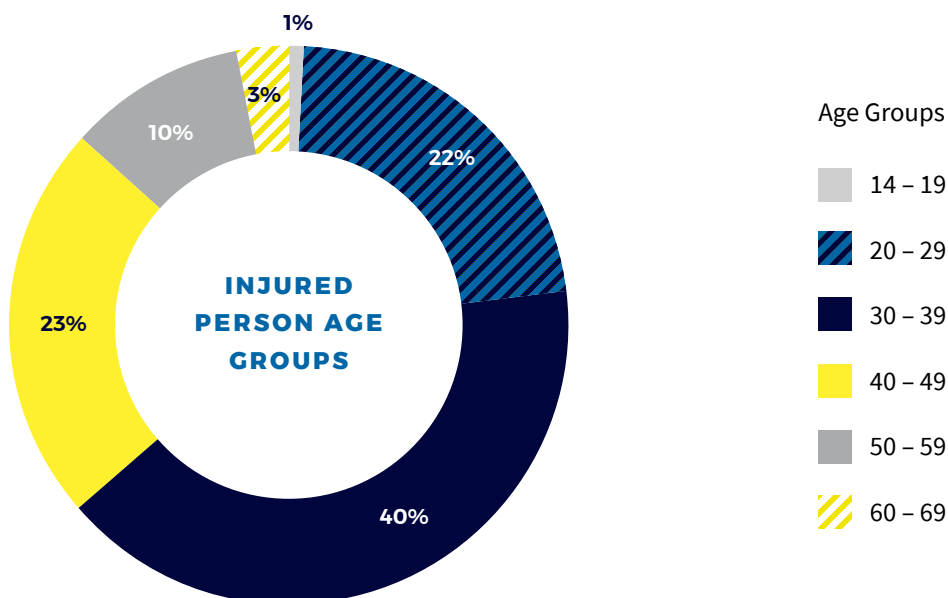
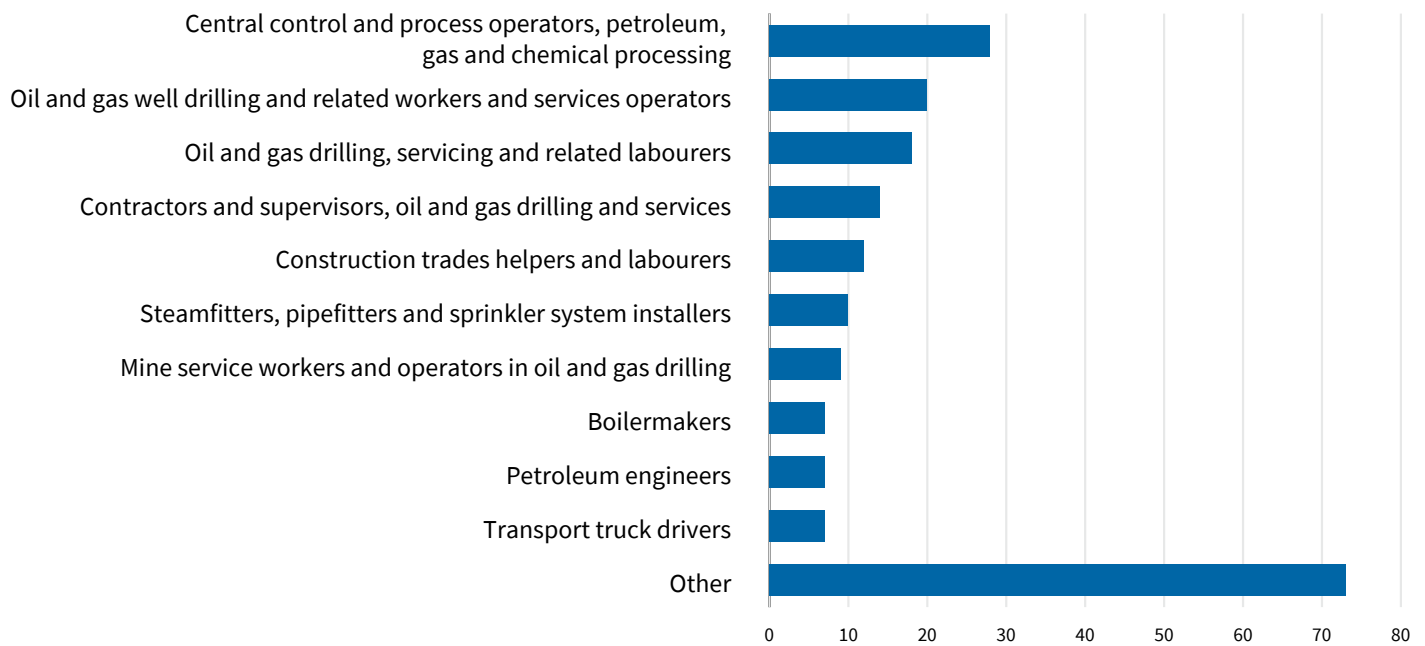
SOURCES OF THE TOP FIVE INCIDENT TYPES (INCIDENT COUNT)



5.0 INJURED PERSON DEMOGRAPHICS

The graphs below show the demographics of people who were injured during a PSI. PSIs where no people were injured are not accounted for.

INJURED PERSON OCCUPATIONS



6.0 INCIDENT FOLLOW-UP

On average, one or two follow-up actions are implemented after a potentially serious incident is reported.

Training and Changed Policy are the most common follow-up actions.

A stronger focus on elimination, substitution and engineering controls should be considered.

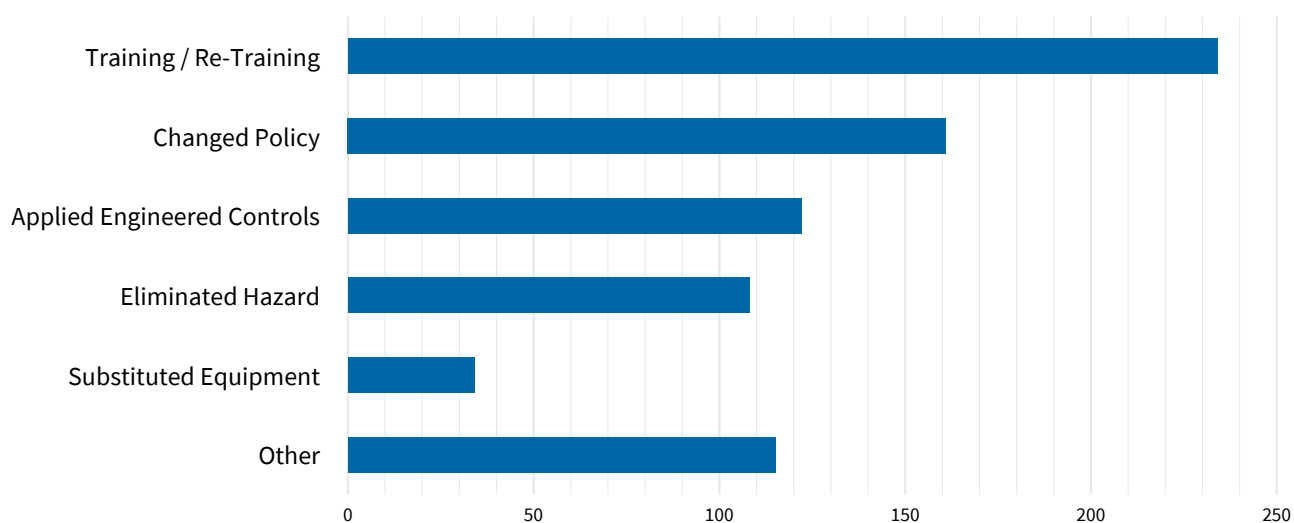


TRAINING



CHANGED POLICY

FOLLOW-UP CONTROLS IMPLEMENTED



YEAR	2019	2020	2021	2022 Q1-Q2	Total
Total PSI Count	142	115	105	49	411
All Controls	210	250	225	89	774
Training / Re-Training	55	77	77	25	234
Changed Policy	56	50	45	10	161
Applied Engineered Controls	26	47	32	17	122
Eliminated Hazard	36	26	26	20	108
Substituted Equipment	11	11	7	5	34
Other	26	39	38	12	115
Controls per PSI	1.5	2.2	2.1	1.8	1.9

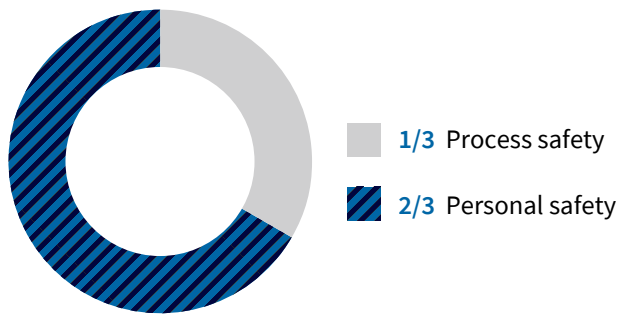
APPENDIX A

Additional analysis of *Struck by object* and *Inhalation of substance* PSIs.

ESC analyzed *Struck by object* and *Inhalation of substance* PSIs to identify additional insights. The data was grouped into categories: personal or process safety, human error or equipment failure, and alignment with Life Saving Rules. However, a few incidents were excluded from the groupings due to their complexity.

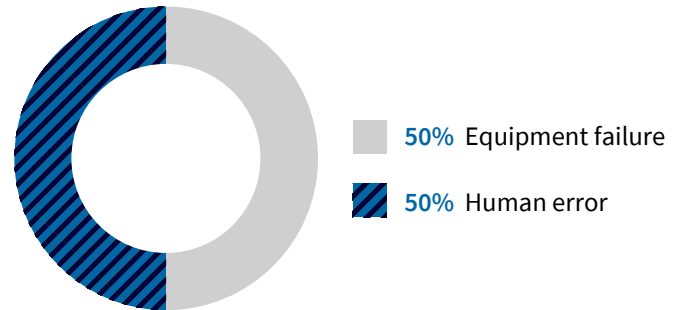
The data consists of a total of 69 data points: 44 *Struck by falling object* and 25 *Inhalation of substance* or related category. Across this data, one-third are process safety while two-thirds are personal safety. Most of the process safety PSIs were *Inhalation of substance* PSIs. These PSIs originated predominantly from exposure to H₂S with a few other hazardous substances, such as SO₂ and hydrocarbons.

PERSONAL SAFETY VERSUS PROCESS SAFETY

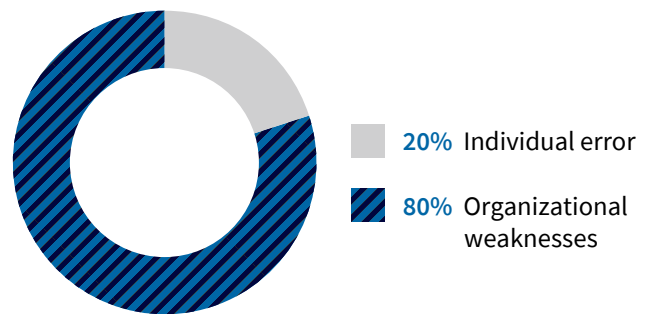


Similarly, across both *Struck by falling object* and *Inhalation of substance* data, roughly half were equipment failure and half were human error, highlighting the need for a balanced approach between human performance and organization performance. The human error category was roughly 20% individual errors PSIs, that is, errors that predominately resided with the individual, while 80% were organizational weaknesses, meaning errors that were strongly associated with system issues where the worker was not set up for success.

EQUIPMENT FAILURE VERSES HUMAN ERROR



HUMAN ERROR COMPLEXITY



Approximately 40% of follow-up actions for PSIs involving human error have built capacity to fail safely if an error or mistake is made, while 60% have not. This 40% is very positive and indicative of follow-up actions that make a lasting difference in preventing serious incidents and fatalities. However, with 60% not building capacity to fail safely, substantial work remains.

One-third of the process safety PSIs involving H₂S were uncontrolled releases while two-thirds were unintentional releases. Similarly, one-third of those same PSIs involved equipment failure while two-thirds involved human error. This identifies the need for improved equipment design, asset management, managing change, work planning and the use of [Life Saving Rules \(LSR\)](#).

Life Saving Rules applied to approximately one-third of both personal and process safety PSIs with the most prevalent being Working at Height and Bypassing Safety Controls, respectively.



**WORKING AT
HEIGHT**



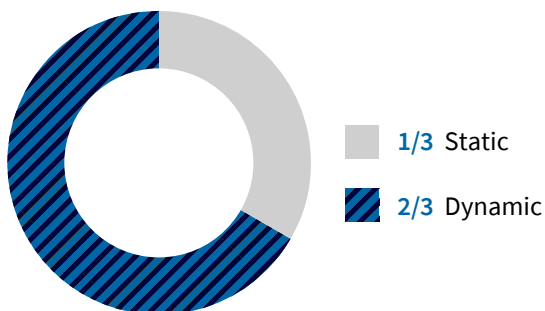
**BYPASSING
SAFETY
CONTROLS**

The top three dropped objects in the PSIs submitted were construction materials, hoists, and hand tools. More than half of these were classified as equipment failure.

**EQUIPMENT
FAILURE > 50%**

Two-thirds of the dropped objects were dynamic and one-third static. In other words, approximately one-third fell on their own, whereas two-thirds fell because of the presence of hazardous energy such as motion, pressure, etc. This further corroborates the need for industry to make improvements in asset management such as equipment risk registries, [reliable securing](#), preventative maintenance, inspection programs, etc. as part of a formal [dropped objects program](#).

DYNAMIC VERSUS STATIC DROPPED OBJECTS



RESOURCES

[Energy Safety Canada PSI Program](#)

[Energy Safety Canada PSI Guideline](#)

[Potentially serious incident reporting: legislation updates](#)

[List of oil and gas industry sectors](#)

GLOSSARY

Industry Sector

Groupings of employers who have similar businesses and risks as one another. Defined by WCB Alberta. This report contains data from all Alberta oil and gas industry sectors.

Person

A PSI is not limited to workers. If it involves someone who is not a worker, it is still considered a PSI if it resulted from work activities at the work site or could have happened to a worker.

PSI

Potentially serious incident. A PSI is reportable when the incident had a likelihood of causing a serious injury or illness, and there is reasonable cause to believe that corrective action may need to be taken to prevent recurrence.

WCB

Workers' Compensation Board. The mandate of the WCB is to provide compensation to workers who are injured on the job, and help them recover and return to work.

DISCLAIMERS

DATA DISCLAIMER/NO WARRANTY

Energy Safety Canada has prepared this report using data submitted to us from third parties. While we take reasonable efforts to accurately compile and reflect the data submitted to us from the third parties, we have not verified the data and provide no warranty to users of this report. Energy Safety Canada does not guarantee the quality, accuracy, completeness or timelines of the information in this report.

COPYRIGHT/RIGHT TO PRODUCE

Copyright for this document is held by Energy Safety Canada. All rights reserved. Energy Safety Canada encourages the copying, reproduction and distribution of this document to promote health and safety in the workplace provided that Energy Safety Canada is acknowledged. However, no part of this publication may be copied, reproduced, published or distributed for profit or other commercial enterprise without written permission from Energy Safety Canada.