

WorkSafeBC Pre-Drilling Season Update

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Agenda

- -State of the Oil and Gas Sector in BC Field Incidents
- -Review of compliance issues
- -Field Incidents
- -Occupational Disease/ECP's
- -Oil and Gas Initiative focus areas 2021-2023
- -Regulatory Changes 2021
- -Questions



Industry Statistical Overview

Oil and Gas Industry 2015-2019



Prepared By: Business Intelligence and Analytics

Data as of Oct, 2020



Industry Classifications

704002 - Oil & Gas Drilling

704003 - Oil & Gas Field Servicing

704009 – Seismic Exploration

713018 - Oil or Gas Production

721038 - Oil and Gas pipeline construction

767005 - Oil or Gas Transmission

Snapshot of the Industry

- In 2019, there were 1,876 employer-CUs in the selected industry(s), which remained stable over past 5
 years.
- The injury rate for the selected industry(s) remains lower than the injury rate for all BC CUs combined.
- The average percentage of workers returning to work within 4 weeks for the selected industry(s) is lower than all BC average over the past 5 years.
- The completed duration for the selected industry(s) remains higher than the completed duration for all BC CUs combined.
- Oil and gas drilling, servicing and related labourers, Oil and gas well drilling and related workers and services operators, and Transport truck drivers account for the most claims in the selected industry(s).
- There were 1,318 prevention orders issued between 2015 and 2019. As of Sep 30, 2020, 125 prevention orders have been issued year-to-date.
- Between 2015 and 2019, there were 9 accepted work-related death claims in the selected industry(s).
 As of Aug 31, 2020, 2 work-related death claims have been accepted year-to-date.



Top Classification Units by Claim Count

Classification Units	# of Claims	% of Claims
704003 - Oil or Gas Field Servicing	152	36%
721038 - Oil or Gas Pipeline Construction or Repair	133	32%
713018 - Oil or Gas Production	52	12%
704002 - Oil or Gas Drilling	43	10%
767005 - Oil or Gas Transmission (oil or gas pipeline)	33	8%
704009 - Seismic Exploration	7	2%
Total	420	100%

Base Rates

CU Number	CU Description	2015	2016	2017	2018	2019	Change from 2014 to 2018
704002	Oil or Gas Drilling	2.09	1.82	2.01	2.15	1.89	-12%
704003	Oil or Gas Field Servicing	2.06	1.7	1.83	1.81	1.89	4%
704009	Seismic Exploration	2.22	1.93	2.13	2.43	2.83	16%
713018	Oil or Gas Production	1.07	1.03	0.91	0.74	0.73	-1%
721038	Oil or Gas Pipeline Construction or Repair	2.93	3.09	3.1	2.94	2.03	-31%
767005	Oil or Gas Transmission (oil or gas pipeline)	0.71	0.81	0.94	0.93	1.02	10%

Additional information on Claims for Work-related Deaths can be viewed online: http://www.worksafebc.com/insurance/premiums/default.asp

Statistical Overview

Measure	2015	2016	2017	2018	2019	Total/Average
STD/LTD/Fatal Claims	118	62	92	71	77	420
Claim Cost Paid	\$11,223,315	\$7,811,536	\$9,356,832	\$8,166,867	\$9,002,214	\$45,560,762
Work Days Lost	8,660	6,956	6,553	5,280	7,874	35,323
Injury Rate*	0.4	0.3	0.4	0.3	0.4	0.4
Person Years**	18,415	13,266	18,630	14,898	16,650	16,372
Return to Work (<=4 weeks)	35%	25%	33%	26%	33%	30%
Serious Injuries	33	17	26	16	19	111
Work-Related Deaths	3	2		1	3	9

In 2019, there were 1,876 employer-CUs*** in the selected industry(s).

^{*}Per 100 person-years of employment

^{**} Person Year values become available in June/July of the following year

^{***}The count is based on the employers submitting payroll information during this 5-year period

Injury Rate Trend

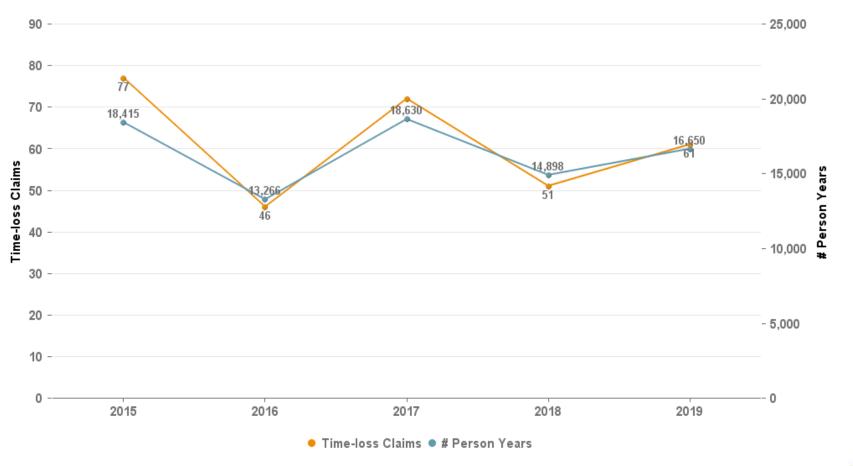
Industry	2015	2016	2017	2018	2019
Selected Industry(s)	0.4	0.3	0.4	0.3	0.4
AII BC	2.2	2.2	2.2	2.2	22





Claims and Employment Trends

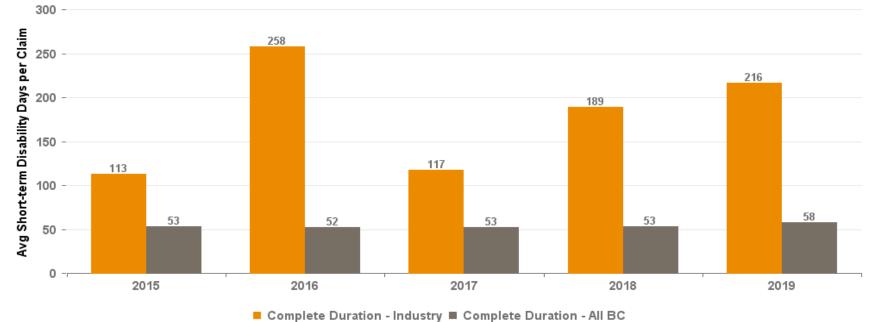
Selected Industry(s)	2015	2016	2017	2018	2019
Time-loss Claims	77	46	72	51	61
# of Person Years	18,415	13,266	18,630	14,898	16,650





Complete Duration

	201!	5	2016	5	2017	,	2018		2019	9
Complete Duration	Selected Industry(s)	All BC	Selected Industry(s)	All BC	Selected Industry(s)	AII BC	Selected Industry(s)		Selected Industry(s)	All BC
< 6 Months	67	46,314	34	45,744	59	47,910	39	48,693	41	49,666
6-12 Months	13	2,328	15	2,356	3	2,490	10	2,674	4	3,115
12-24 Months	7	894	9	834	3	884	6	979	2	1,142
>=24 Months		242	6	228	2	246	3	227	6	278
Total Claims	87	49,778	64	49,162	67	51,530	58	52,573	53	54,201



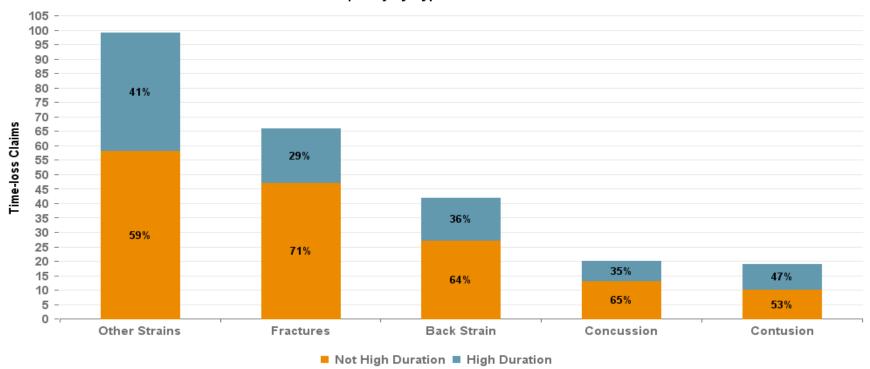
Completed Duration summary year is based on the latest STD payment year for the claims with wage loss payment ended.



High Duration

High Duration Measures	2015	2016	2017	2018	2019	Total/Average
High Duration Claims	29	35	17	22	21	124
Claims Ending Wage loss Payment	87	64	67	58	53	329
% High Duration Claims	33%	55%	25%	38%	40%	38%





High Duration summary year is based on the latest STD payment year for the claims with wage loss payment ended.



Return to Work (RTW)

RTW Claims, 2015 - 2019

RTW	Selected In	dustry(s)	AII	ВС
<=4 Weeks	144	30%	147,979	52%
4-12 Weeks	81	17%	54,004	19%
12-26 Weeks	52	11%	29,643	10%
26+ Weeks	77	16%	21,442	7%
Non RTW	119	25%	33,087	12%
Total	473	100%	286,155	100%

The RTW calculations for BC includes CUs outside of the rateable group (i.e., deposit accounts).



Top 10 Occupations

Occupation Type	# of Claims	% of Claims
Oil and gas drilling, servicing and related laborers	56	13%
Oil and gas well drilling and related workers and services operators	53	13%
Construction trades helpers and laborers	30	7%
Transport truck drivers	30	7%
Oil and gas well drillers, servicers, testers and related workers	26	6%
Contractors and supervisors, oil and gas drilling and services	21	5%
Petroleum, gas and chemical process operators	19	5%
Heavy equipment operators (except crane)	16	4%
Steamfitters, pipefitters and sprinkler system installers	16	4%
Other	153	36%
Total	420	100%



Age and Gender

	Fem	ale	Ma	ale	Total		
Age	# of Claims	% of Claims	# of Claims	% of Claims	# of Claims	% of Claims	
15 to 24	3	1%	54	13%	57	14%	
25 to 34	8	2%	113	27%	121	29%	
35 to 44	2	0%	79	19%	81	19%	
45 to 54	7	2%	72	17%	79	19%	
55 to 64	5	1%	58	14%	63	15%	
65+			19	5%	19	5%	
Total	25	6%	395	94%	420	100%	



Top 10 Accident Types

Accident Type	# of Claims	% of Claims
Overexertion	65	15%
Fall on Same Level	56	13%
Struck By	51	12%
Fall from Elevation	40	10%
Involuntary motion	25	6%
Caught In	22	5%
Exposure to Noise	20	5%
MVI	20	5%
Exposure to Heat, Cold	19	5%
Other	102	24%
Total	420	100%



Accident Types

Top 5 Accident Types	SLF Claims	Percent
Overexertion	65	15%
Fall on Same Level	56	13%
Struck By	51	12%
Fall from Elevation	40	10%
Involuntary motion	25	6%
Other	183	44%
Total	420	100%

Top 5 Accident Types	Work Days Lost	Percent
Struck By	4,955	14%
Overexertion	4,672	13%
MVI	4,214	12%
Fall from Elevation	3,765	11%
Fall on Same Level	3,190	9%
Other	14,527	41%
Total	35,323	100%

Top 5 Accident Types	Claim Cost Paid	Percent
Struck By	\$7,795,552	17%
Fall from Elevation	\$4,930,877	11%
Exposure to Heat, Cold	\$3,841,738	8%
MVI	\$3,524,731	8%
Fall on Same Level	\$3,110,456	7%
Other	\$22,357,409	49%
Total	\$45,560,762	100%



Top 5 Injury Types

Injury Type	# of Claims	% of Claims
Other Strains	114	27%
Fractures	74	18%
Back Strain	44	10%
Contusion	26	6%
Concussion	21	5%
Other	141	34%
Total	420	100%



Injury Types

Top 5 Injury Types	SLF Claims	Percent
Other Strains	114	27%
Fractures	74	18%
Back Strain	44	10%
Contusion	26	6%
Concussion	21	5%
Other	141	34%
Total	420	100%

Top 5 Injury Types	Work Days Lost	Percent
Fractures	10,891	31%
Other Strains	8,310	24%
Back Strain	2,472	7%
Concussion	2,156	6%
Heat Burns	1,807	5%
Other	9,687	27%
Total	35,323	100%

Top 5 Injury Types	Claim Cost Paid	Percent
Fractures	\$12,805,020	28%
Other Strains	\$6,333,661	14%
Heat Burns	\$3,426,473	8%
Concussion	\$2,656,476	6%
Back Strain	\$2,017,325	4%
Other	\$18,321,807	40%
Total	\$45,560,762	100%



Top 5 Source of Injury & Body Part

Source of Injury	# of Claims	% of Claims
Working Surfaces	82	20%
Bodily Motion	47	11%
Metal items	40	10%
Vehicles	36	9%
Boxes, Containers	21	5%
Other	194	46%
Total	420	100%

Body Part	# of Claims	% of Claims
Wrist, Fingers & Hand	51	12%
Back	47	11%
Ankle, Toe & Feet	47	11%
Knee	40	10%
Shoulders	36	9%
Other	199	47%
Total	420	100%



Serious Injury Claims

Accident Types	SI Claims	Percent
Struck By	24	22%
Fall on Same Level	20	18%
Caught In	12	11%
Fall from Elevation	11	10%
Exposure to Heat, Cold	7	6%
Other	37	33%
Total	111	100%

Injury Types	SI Claims	Percent
Fractures	51	46%
Concussion	9	8%
Amputation	7	6%
Heat Burns	6	5%
Back Strain	5	5%
Other	33	30%
Total	111	100%

Between 2015 and 2019, there were 111 serious injury* claims in the selected industry(s). Serious injuries represent 36% of the claims and account for 91% of the claims cost paid to date in the selected industry(s).

^{*}Serious Injuries include time-loss claims that represent either a serious medical diagnosis, or a potentially-serious medical diagnosis with a long recovery period of 50+ days paid (10+ weeks off work). Serious Injuries also include all work-related death claims.

Long Recovery Sprains and Strains Claims

Top 5 Accident Types	LRSS Claims	Percent
Overexertion	21	43%
Fall from Elevation	5	10%
Fall on Same Level	5	10%
Involuntary motion	5	10%
Other Bodily Motion	5	10%
Other	8	16%
Total	49	100%

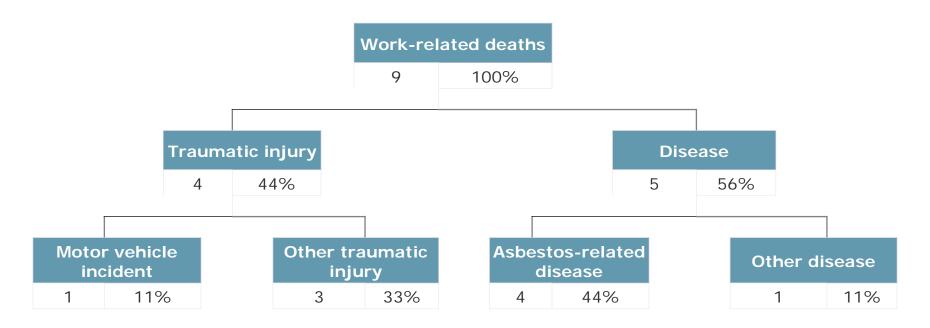
Top 5 Injury Types	LRSS Claims	Percent
Other Strains	43	88%
Back Strain	4	8%
Bursitis & Related	1	2%
Carpal Tunnel Syndrome	1	2%
Total	49	100%

Between 2015 and 2019, there were 49 LRSS* claims in the selected industry(s). LRSS injuries represent 16% of the claims and account for 17% of the claims cost paid to date in the selected industry(s).

^{*}Long Recovery Sprain and Strain Injury Claims include all short-term disability and long-term disability claims with a first payment in the year of injury or in the three months following the year of injury that meet one of the following criteria: 1) Sprain or strain medical diagnosis 2) Rheumatism medical diagnosis 3) Carpal Tunnel medical diagnosis with a long recovery period (50 or more work days lost within the year of injury or in the three months following the year of injury) and excluding work-related death claims.

Accepted Claims for Work-related Deaths

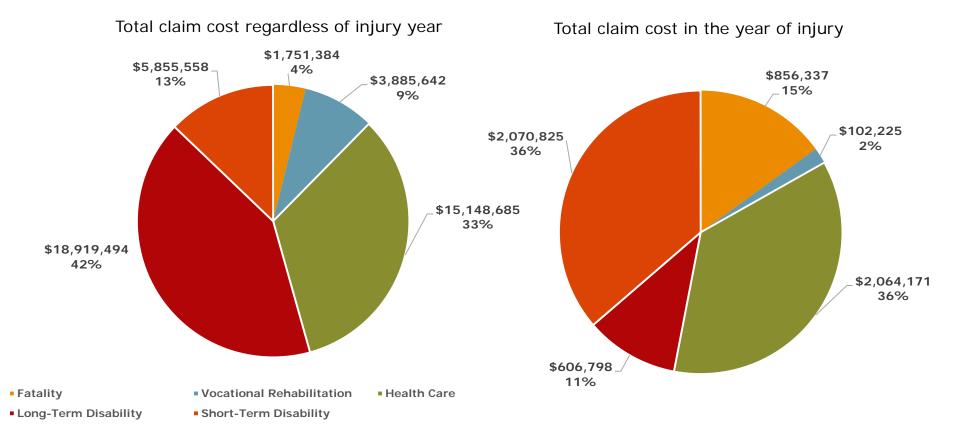
Accepted year between 2015 and 2019



Additional information on Claims for Work-related Deaths can be viewed online:

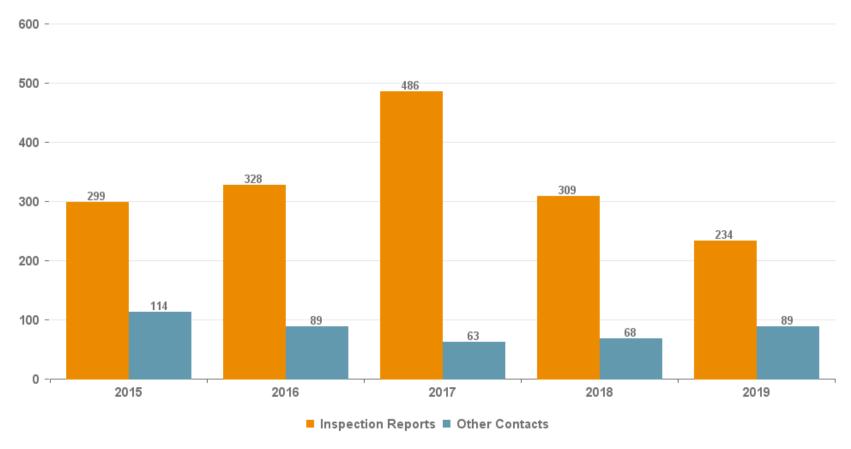
https://public.tableau.com/profile/worksafebc#!/vizhome/Work-relatedDeathsDashboard/Thedashboard

Claim Costs by Benefit Type



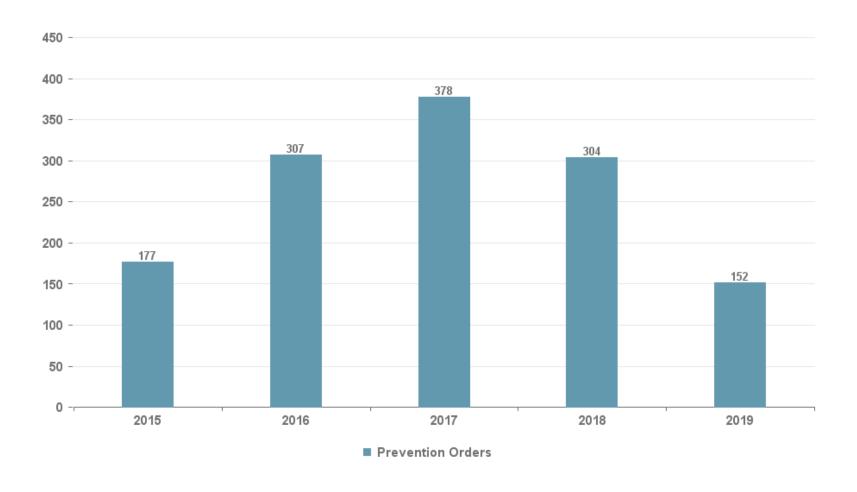
Between 2015 and 2019, the total claim cost paid regardless of year of injury was \$46 million, and from this, \$6 million was paid for costs within the year of injury. The most common benefit type paid was Long-term Disability with a total claim cost of \$19 million, 42% of the total cost; the most common benefit type paid for claim costs in the year of injury was Short-term Disability, with a total claim cost of \$2 million, or 36% of the total cost.

Prevention Activity



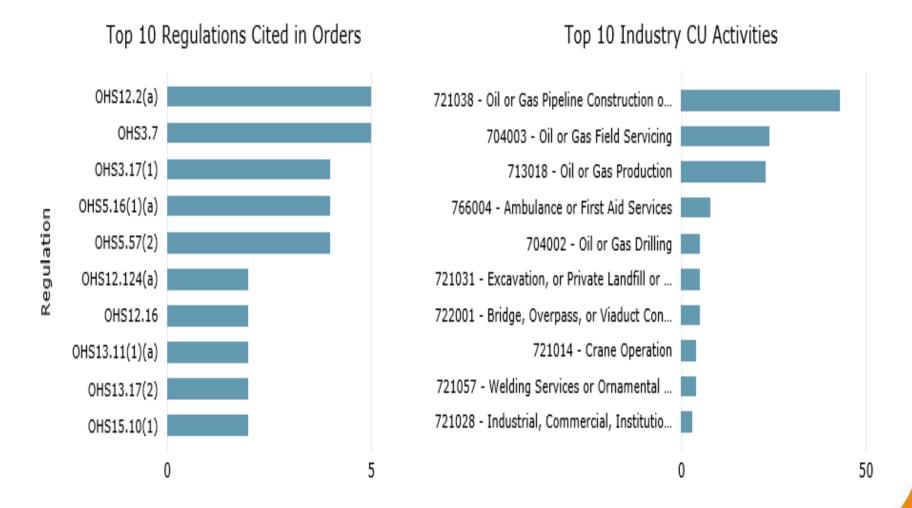
^{*}Other Contacts include consultations, education presentations, notice of incidents, compliance agreements, and various other documents conducted by an authorized WorkSafeBC employee.

Prevention Orders

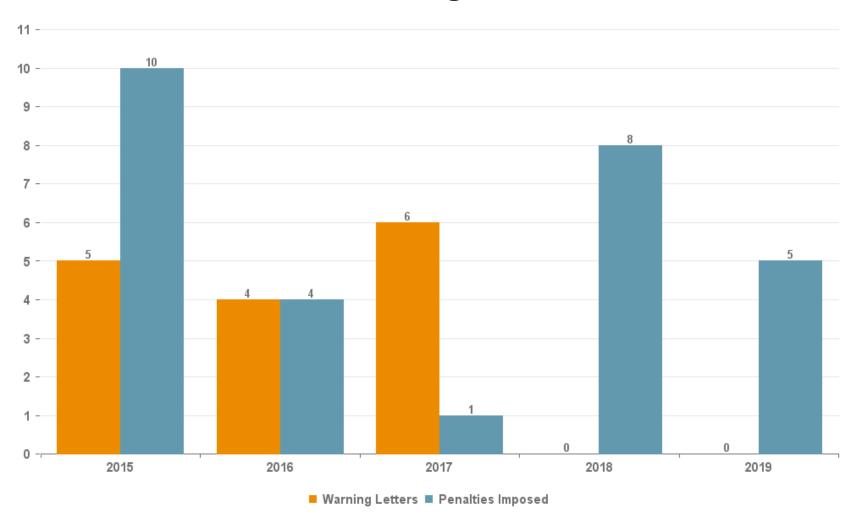




Top Regulations Cited by which Industry Group



Penalties and Warning Letters





Field Issues

Injuries and Fatal's and near misses of concern

Waste Recovery and Fires

- Oil and Gas waste treatment/recovery site.
 Dumping/mixing and off loading product and the waste ignited and a fire ensued that caused considerable damage to the facility. This is the 3rd like incident in NEBC since 2013.
- In the last 2 incidents no workers were seriously injured, 1st incident workers suffered serious burn injuries
- Issues of concern include: lack of adequate waste profile sheets (what is being delivered to site-what is created when products are mixed), control of ignition sources, effective monitoring of flammable vapours that can be generated in the work process. OHSR 4.3(2), 23.5(2), WCAct 21(2)(a) (Three key parties-owner of the waste, transporter and receiver)





Kinetic Energy control

Workers were in the process of attempting to remove a nut from an out of service pump jack to use on another unit. In the process of attempting this work a large metal beam (walking beam) fell onto the worker, crushing the worker who suffered fatal injuries.

Issues of concern: failing to conduct an adequate risk assessment prior to doing the work-hazard id- the pump jack had previously had parts scavenge from the unit, no records kept of what had been removed from any items in the bone yard, Failing to recognize the need to control kinetic energy (the force of gravity that all objects will fall to the ground OHSR 23.5(2), 3.3(b), 10.2, WCAct 21(1), 24.2(b)



Tank Cleaning-Fire and Explosion

Workers cleaning the interior of a P-tank using a vac/steam combo unit. Flammable vapours were generated followed by a flash fire and explosion several workers suffered injuries and were transported to hospital.

Issues of concern: risk assessment-fire and explosion, LEL monitoring, control of ignition sources, ensuring workers safety at the site, proper supervision and PC oversight (ensuring that work onsite is compliant with the OHSR and WCAct) OHSR 23.5(2), 5.27(3), 5.31(c), WCAct 24(1)(a) and 21(1)(a)



Inspections of Equipment

Workers were on the floor of a Service rig when the center floor sliding door dislodged. This caused 2 workers to un-expectantly fall to the ground 10 feet below the floor. One worker suffered multiple serious injuries, with a delay in transport to a hospital as first aid was not available onsite.

Issues of concern: inspection and maintenance of equipment in accordance with the manufacturers manual (no manual for the service rig), guard rails not in place to protect from falling, no first aid/first aid assessment

OHSR 3.16(1)(a)(b), 3.20(b), 4.55, 14.12(2) WCAct 21(1) and 24(1)(b)



Field Issues

Compliance Issues



COVID-19: What's new

- Public health orders (updated Dec. 7): Sports and recreation, gyms and fitness centres, mandatory masks (including new workplace poster), worker health checks, faith-based organizations, performing arts, movie theatres, party buses and limousines, more info.
- · Inspections and consultations during the COVID-19 pandemic
- Resources: Selecting and using face shields in non-health care settings, reviewing and updating your COVID-19 safety plan, revised entry-check poster for workers and visitors, information in other languages



COVID-19: Information and resources

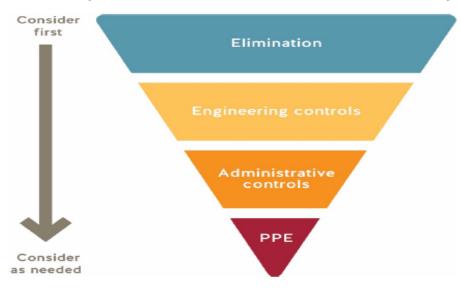
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Protocols for Phase 2 and 3 industries, Protocols for Phase 1 industries, General health and safety, COVID-19 Safety Plan template, OHS guideline G3.3 (COVID-19 Safety Plan), and more resources; Claims, Insurance

Compliance-COVID 19 Safety Plans

COVID-19 Safety Plan for: Company name and location

Different protocols offer different levels of protection. Wherever possible, use the protocol that offers the highest level of protection. Consider controls from additional levels if the first level isn't practicable or does not completely control the risk. You will likely need to incorporate controls from various levels to address the risk at your workplace.



First level protection (elimination) — Limit the number of people in your workplace where possible by implementing work-from-home arrangements, establishing occupancy limits, rescheduling work tasks, or other means. Rearrange work spaces to ensure that workers are at least 2 m (6 ft.) from co-workers, customers, and members of the public.

Second level protection (engineering controls) — If you can't always maintain physical distancing, install barriers such as plexiglass to separate people.

Third level protection (administrative controls) — Establish rules and guidelines, such as posted occupancy limits for shared spaces, designated delivery areas, cleaning practices, and one-way doors and walkways to keep people physically separated.

Fourth level protection (PPE) — If the first three levels of protection aren't enough to control the risk, consider the use of masks. Ensure masks are selected and cared for appropriately and that workers are using masks correctly.

https://www.worksafebc.com/en/resources/health-safety/checklist/covid-19-safety-plan?lang=en WCAct 21 Employer Obligations

Compliance-Flash Fires and Controlling Ignition Sources

Recent incidents with Flash fires/explosion indicate that the RISK is not being adequately assessed and Controlled:

- -This means **assessing all potentials** for the generation and release of **flammable vapours**.
- -What are you planning to do (scope of work)? What permits are needed, what equipment is needed?
- -How could vapours be generated and released during the work?
- -How are we monitoring the hazardous atmosphere? What type of monitors are we using?
- -Are ignition sources being adequately controlled including static electricity?
- -This is more than checking the boxes on a checklist!

OHSR 23.5, 5.27, 5.28 WCAct 21 and WCAct 24





Compliance-Grounding and Bonding

Oil and Gas sites-critical issue to controlling ignition sources.

- -Employers and workers knowing the difference
- -Providing **appropriate grounding onsite** whether a temporary work location of permanent
- -**Testing** the ground-different instrument from checking bonding-also proper calculations required to ensure the ground is adequate).
- -Location of the **bonding attachment points** so that operators are fully aware of where and how to attach their equipment to the grounding and bonding system
- -Operators then **validating** the bond-testing with an appropriate OM meter (also what is the maximum allowable resistance when testing)
- -Training / education of workers in what's required and what are hazards associated with failing to do a proper job and what to do if the system at site is not adequate. *OHSR 5.27, 5.28, 23.6, 23.74*





Compliance-Use of Scavengers to clean produced water of H2S

-Toxic Process Gases – CHLO2 (Chlorine Dioxide) being used in a cleaning scavenger for H2S liquids (Part 6.116-6.127 for CHLO2 Risk assessment, specific ECP, Training/Education, separate enclosure for CHLO2 equipment, ventilation, emergency shutdown and ventilation, Monitors and Alarms)

As well as using Hydrogen Peroxide-H2O2 is highly reactive when mixed with organics, Oxidizer and when mixed with Oxygen is highly flammable AND EXPLOSIVE OHSR 23.5 risk assessment and appropriate SWP





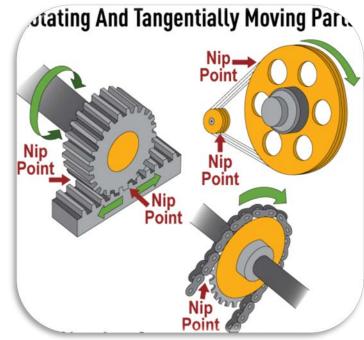
Compliance-Safe Guarding and radio use

Safe Guarding of equipment to protect workers from the inadvertent contact with moving, rotating spinning parts. Continues to be an issue when guards have not been installed or are removed and not replaced back onto Fracing equipment.

This is also a concern with access to running and hoisting lines on service rigs, swabbing units and drilling rigs

In the perforating side of completions – the radio frequency assessment requirements have changed BUT still require the Operator to follow the defined assessment process on site.

OHSR 12.2 and 21.61-62







Compliance-First Aid Services, Supplies and Equipment and Written Procedures

What is needed based upon a site assessment of the workplace (5 items to consider) and no less than the Tables in Schedule 3-A

The employer **MUST** also develop written First aid Procedures (6 items displayed in conspicuous locations at the worksite). Note: special procedures are required if air transport is the primary means of transport



See the complete Guidelines for First aid:

https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-guidelines/guidelines-part-03#998F33D891434F2D915491565A68E1F9

-see the conditions for using an MTC in place of a dressing station or First aid room, also an MTC MUST be attached to the vehicle chassis OHSR 3.16-17 & 17.10



Compliance- Contractor Service Providers brought to site

-Producers what is in place to ensure that when you bring contract services to site that they are compliant with the OHSR and WCAct requirements? and are you providing adequate hazardous product SDS information.

Common areas of deficiency include:

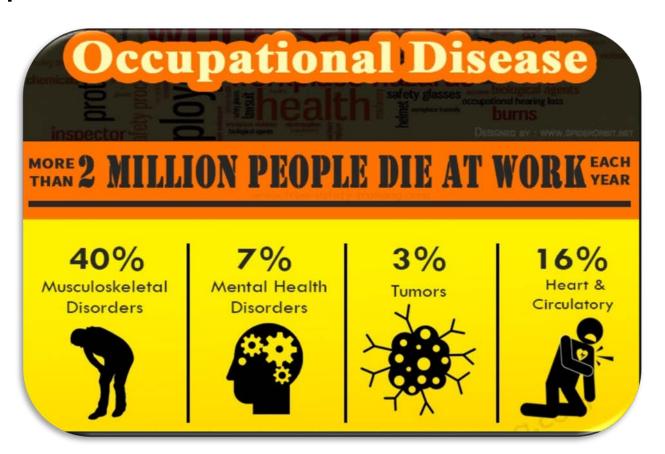
- -High pressure line restraint not adequately anchored at both ends, not restraining the full length the piping, lack of documentation available for workers for the installation and inspection of the restraint system
- -Emergency egress systems on service and drilling rigscertifications and inspections out of date, not anchored or installed correctly
- -SDS for produced water being used i.e. to kill a well **WCAct 24,25, OHSR 23.69, 23.39**





Field Issues

Occupational Disease





Occupational Disease – ECP's

-Occupational Disease continues to expand in impacts and scope (occupational Disease fatalities continue to eclipse traumatic injury claims each year-As of November 147 fatalities- 61 traumatic injury and 86 Disease))

-Areas for monitoring and ECP development:
Silica, Lead, Hydrocarbon based drilling fluids, Diesel
Exhaust, Benzene, Mercury, Hearing Loss, NORMS,
H2S and all designated substances require ECP's
MSI risk assessments and risk control *OHSR 4.47-53*(Part 5.48-5.59 for an outline of what is required around site surveys, monitor and development of ECP's)

-Toxic Process Gases – CHLO2 (Chlorine Dioxide) being used in a cleaning scavenger for H2S liquids (Part 6.116-6.127 for CHLO2 Risk assessment, specific ECP, Training/Education, separate enclosure for CHLO2 equipment, ventilation, emergency shutdown and ventilation, Monitors and Alarms)



Oil and Gas Initiative 2021-2023

What will WSBC be focusing upon over the next 3 years?



Oil and Gas 2021-2023 Initiative Focus

Background

Problem

The Oil and Gas Initiative is designed to focus on areas of concern within the oil and gas sector that is generating their serious injury claims.

Primary goal

Prevent serious and fatal injuries in the following areas:

- -Fire and explosions across the oil and gas sector, with particular emphasis upon well servicing and waste disposal
- -Control of hazardous energy
- -Restraint/Engineering of Temporary flow piping systems
- -Manual free falling
- -Pipeline construction
- -Occupational exposures



Oil and Gas 2021-2023 Initiative Focus Continued

Focus

3 year time frame

- -Conduct targeted inspections within the focus areas
- -Support the development tools and resources relating to safe work procedures in high risk operations
- -Support and partner with Energy Safety Canada and industry trade associations to see that their initiatives align with mitigation measures relating to strategic focus areas
- -Deliver key messaging and information to employers and workers through the HSA and sector associations



Additional Areas to Consider





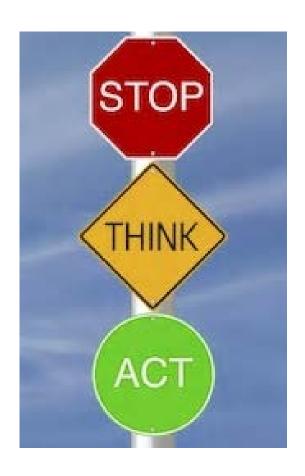
Additional areas of consideration and Planning

- -Process safety/engagements were initiated 3 years ago and will continue for the next 3 years-several new Producers are part of the program
- -New MSI Team, all WSBC Officers have received additional training in this area-expect to asked about your companies Ergonomic program (lots of strain/stress and repetitive motion injuries
- -Bullying and Harassment and Discriminatory action programs-continued complaints what is your program like, training of workers and supervisors
- -Mental Health Safety-fastest growing area of Occupational Health concerns and issues, what are you doing to support your workers especially in these trying time? (resources and training being developed for employers).





What's changing in 2021?





Regulation Review and Changes 2021

-First aid changes to the tables 3-A (preliminary consultation underway)

Public Hearings (virtual where held December 10, 2020

- -<u>Part 6</u> Restricted intervals for pesticide application
- -Part 8 High visibility apparel
- -Part 8 Safety headgear
- <u>-Part 16</u> Mobile equipment
- -Part 18 Traffic control
- -Part 21 Blasting



Recommendations to the BOD in February 2021 and implemented in July 2021

Questions?

