



Workplace Safety and Health Report 2021

— National Statistics —



MINISTRY OF
MANPOWER

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NOTATIONS

- : Nil or negligible
- n.a. : Not applicable/Not available

Note:

- (I) Data presented in this report reflect revised methodology and improved classification of entities by industries, including the revision due to Singapore Standard Industrial Classification 2015 (version 2018). Data prior to 2013 is strictly not comparable.
 - (II) Prior to January 2021, workplace major and minor injury numbers pertain to injuries sustained by employees that resulted in four or more days of medical leave, or at least 24 hours of hospitalisation. Following the amendments to the Work Injury Compensation Act (WICA) which took effect from September 2020, employers need to report all work injuries with any instance of medical leave or light duties. From January 2021, major and minor injury numbers shared in this report will include injuries with at least one day of light duty or medical leave issued. Numbers presented under this new series will be marked with [N].
 - (III) Occupational Disease cases contributed by workplace COVID-19 infections that were previously reported in 2020 and 2021 were removed due to low number of iReports submitted by employers.
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KEY FACTS

OVERALL 2021 WSH PERFORMANCE COMPARABLE TO PRE-COVID LEVELS

There were 37 workplace fatal injuries in 2021, 2 fatal injuries (5%) fewer than the pre-COVID year of 2019. The workplace fatal injury rate in 2021 was the same as 2019 at 1.1 fatal injury per 100,000 workers. In 2021, there were 610 workplace major injuries, slightly lower than the 629 in 2019. However, due to the smaller workforce in 2021 than in 2019, the major injury rate in 2021 increased slightly to 18.5 injuries per 100,000 workers from 18.1 in 2019.

Under the new provisions in the Work Injury Compensation Act (WICA) which took effect from 1 September 2020, employers need to report all work injuries with any instance of medical leave or light duties. Previously, reportable injuries pertain to those resulting in four or more days of medical leave or at least 24 hours of hospitalisation. With this change, there was a total of 21,539 minor injuries in 2021, of which 9,420 were injuries with three or fewer days of medical leave or with light duties. The new minor injury rate was 653 per 100,000 workers in 2021. Comparing based on the previous series (four or more days of medical leave or more than 24 hours of hospitalisation), there were 368 minor injuries per 100,000 workers in 2021, a slight decrease from 376 in 2019. To facilitate year-on-year comparisons, MOM will continue to release both the new [N] and previous injury rate series.

Occupational Diseases (ODs) incidence rate grew to 20.0 cases per 100,000 workers in 2021, from 15.0 in 2020 and 14.8 in 2019. This increase was compounded by the clearance of medical assessments and backlog cases delayed from 2020 due to COVID-19 disruptions.

Table 1: Number of workplace injuries, dangerous occurrences and occupational diseases, 2019 - 2021

	2019	2020	2021
Workplace Injuries¹	13,779	11,350	12,766
(Workplace Injuries [N]³)	(n.a.)	(n.a.)	(22,186)
Fatal Injuries	39	30	37
Major Injuries	629	463	610
Minor Injuries ²	13,111	10,857	12,119
(Minor Injuries [N] ³)	(n.a.)	(n.a.)	(21,539)
Dangerous Occurrences⁴	21	10	13
Occupational Diseases	517	494	659

¹ A workplace injury is any personal injury or death resulting from a workplace accident, including work-related traffic injuries. Refer to Annexes E and F for the types of workplace injuries covered.

² Prior to January 2021, workplace major and minor injury numbers only include injuries sustained by employees that resulted in four or more days of medical leave, or at least 24 hours of hospitalisation.

³ Following the amendments to the Work Injury Compensation Act (WICA) which took effect from September 2020, employers need to report all work injuries with any instance of medical leave or light duties. From January 2021, major and minor injury numbers will include injuries with any instance of medical leave or light duties.

⁴ Dangerous Occurrences refers to incident where no person is injured, but which had the potential to cause serious injury and death.

Table 2: Key safety and health indicators, 2019 - 2021

Per 100,000 workers

	2019	2020	2021
Workplace Injury Rate⁵	395	344	387
(Workplace Injury Rate [N])³	(n.a.)	(n.a.)	(673)
Fatal Injury rate	1.1	0.9	1.1
Major Injury rate	18.1	14.0	18.5
Minor Injury rate ²	376	329	368
(Minor Injury rate [N] ³)	(n.a.)	(n.a.)	(653)
Occupational Disease Incidence Rate⁶	14.8	15.0	20.0

⁵ Workplace Injury Rate = $\frac{\text{No. of Fatal and Non-Fatal Workplace Injuries}}{\text{No. of Workers}} \times 100,000$

⁶ Occupational Disease Incidence Rate = $\frac{\text{No. of Occupational Disease Cases}}{\text{No. of Workers}} \times 100,000$

In addition to reporting outcome indicators like workplace injury rates and occupational disease incidence rates, this report also included indicators from prevention activities. The proactive activities included workplace Medical and Hygiene surveillance, which monitors health risks from exposures to physical and toxic or harmful substances at work, and Business under Surveillance (BUS), which guides poor performing companies to improve their WSH management system.

The main findings on the workplace safety and health performance for 2021 were:

WORKPLACE INJURIES

- 37 workers were fatally injured, at a rate of 1.1 fatalities per 100,000 workers.
- 610 workers sustained workplace major injuries, at a rate of 18.5 injuries per 100,000 workers.
- [New Series] 21,539 workers sustained workplace minor injuries with at least one day of medical leave or light duty, at a rate of 653 injuries per 100,000 workers.
- 12,119 workers sustained workplace minor injuries with at least four days of medical leave or 24 hours of hospitalisation, at a rate of 368 injuries per 100,000 workers.

DANGEROUS OCCURRENCES (DO)

- 13 dangerous occurrences were reported to MOM in 2021.

OCCUPATIONAL DISEASES (OD)

- 659 OD cases were confirmed in 2021, with an incidence rate of 20.0 per 100,000 workers.
- The leading OD was Work-related Musculoskeletal Disorders (WRMSD) with 379 cases, including back injury cases due to ergonomic risks. The second most common OD was Noise-induced Deafness (NID) with 168 cases.

BUSINESS UNDER SURVEILLANCE⁷ (BUS)

- 9 companies entered the Business under Surveillance (BUS) programme in 2021.

MEDICAL AND HYGIENE SURVEILLANCE

- 107,479 workers from 2,262 workplaces were monitored under the Medical Surveillance⁸ Programme.
- Under the Hygiene Surveillance⁹ Programme, 80% of the workplaces had static noise levels greater than 85dBA.

⁷ Refer to Annex B and website below for information on BUS programme.

<https://www.mom.gov.sg/workplace-safety-and-health/monitoring-and-surveillance/business-under-surveillance-programme>

⁸ Medical surveillance monitors the results of the medical examinations of workers who are exposed to specific hazards for early detection and prevention of potential ill health. Examinations are conducted by Designated Workplace Doctors (DWDs). Refer to Annex C for more information.

⁹ Hygiene surveillance determines the levels of persons' exposure to noise and airborne toxic substances in the workplace. Refer to Annex C for more information.

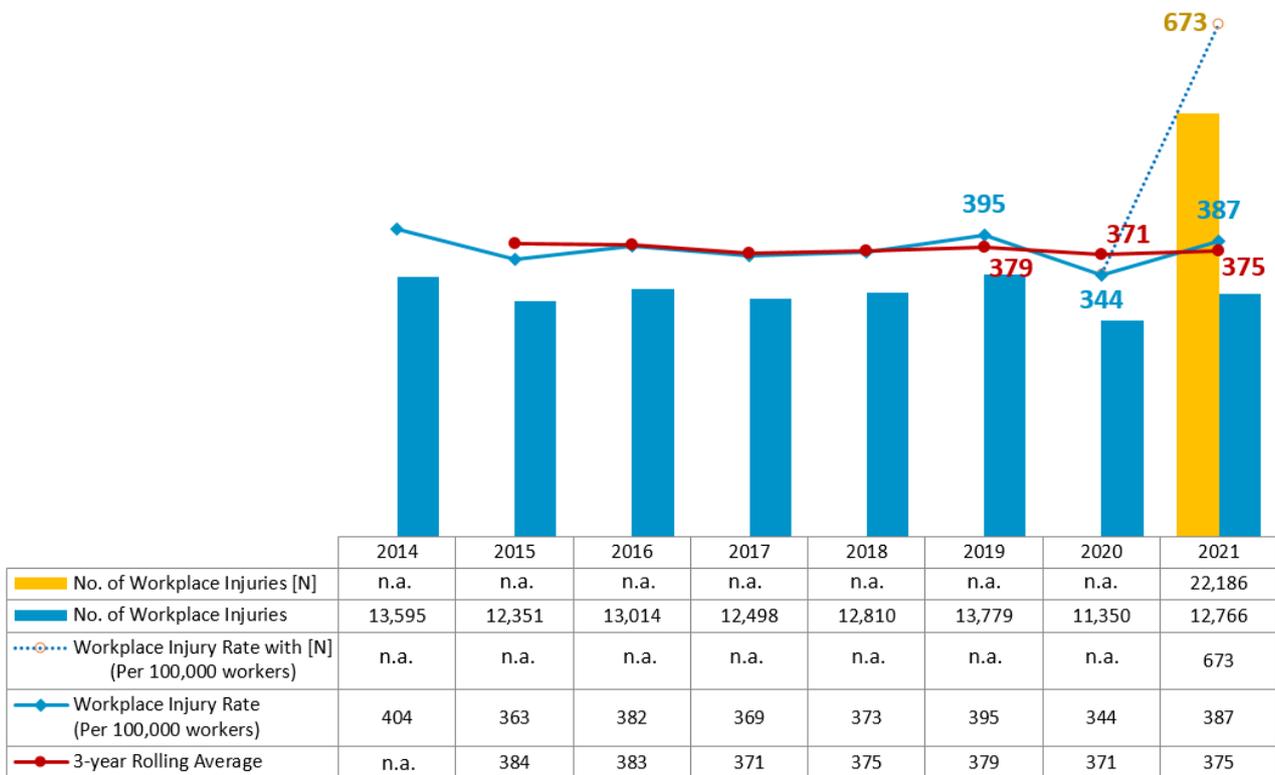
OVERVIEW OF TRENDS

WORKPLACE INJURIES

Prior to January 2021, workplace major and minor injury numbers pertain to injuries sustained by employees that resulted in four or more days of medical leave, or at least 24 hours of hospitalisation. Following the amendments to the Work Injury Compensation Act (WICA) which took effect from September 2020, employers need to report all work injuries with any instance of medical leave or light duties. From January 2021, major and minor injury numbers shared in this report will include all injuries with at least one day of light duty days or medical leave issued. Numbers presented under this new series will be marked with [N].

With the inclusion of injuries reported under the new series, the overall number of reported workplace injuries in 2021 stood at 22,186, with 9,420 were injuries with three or fewer days of medical leave or with light duties. The resultant workplace injury rate for 2021 was 673 injuries per 100,000 workers.

The overall number of reported¹⁰ workplace injuries under the former series in 2021 was 12,776, a 7% decline compared to 13,779 injuries in the pre-COVID year of 2019. The workplace injury rate consequently decreased from 395 injuries per 100,000 workers in 2019 to 387 in 2021.



[N] New Series . Injuries with any instance of medical leave or light duties.

Figure 1: Number and rate of workplace injuries, 2014-2021

¹⁰ Employer or Occupier has to report work incidents to the Ministry of Manpower under the WSH (Incident Reporting) Regulations.

WORKPLACE FATAL INJURIES

There were 37 workplace fatal injuries in 2021, 2 fatal injuries fewer compared to 39 in the pre-COVID year 2019. The workplace fatal injury rate remained at 1.1 fatal injuries per 100,000 workers, the same as 2019.



Figure 2: Number and rate of workplace fatal injuries, 2014-2021

INDUSTRIES CONTRIBUTING TO WORKPLACE FATAL INJURIES

The Construction sector remained as the top contributor with 13 fatal injuries. This was followed by Transportation & Storage industry with 9 fatal injuries and Manufacturing sector with 4 fatal injuries. These top three industries saw comparable numbers in the pre-COVID year of 2019.

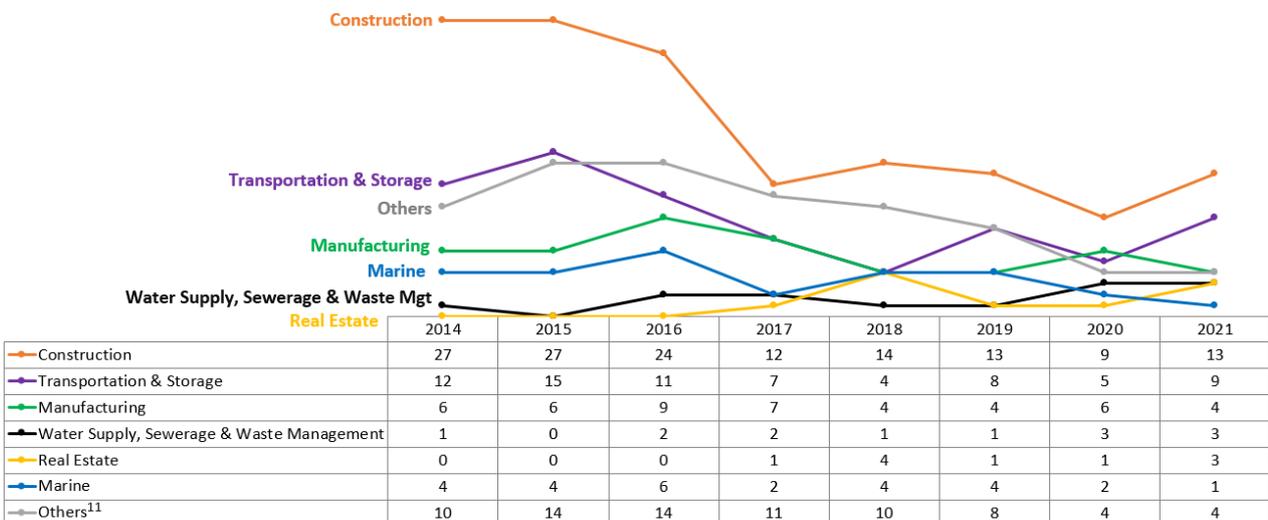


Figure 3: Number of workplace fatal injuries by industry, 2014-2021

¹¹ Others refer to the summation of various industries with lower incidence of workplace fatalities in recent years. For more information, please refer to the statistical tables in Annex A.

CAUSES OF WORKPLACE FATAL INJURIES

The top two causes of workplace fatalities were (i) Vehicular Incidents and (ii) Falls from Height. These collectively accounted for 51% (19 fatal injuries) of the total number of workplace fatal injuries in 2021.

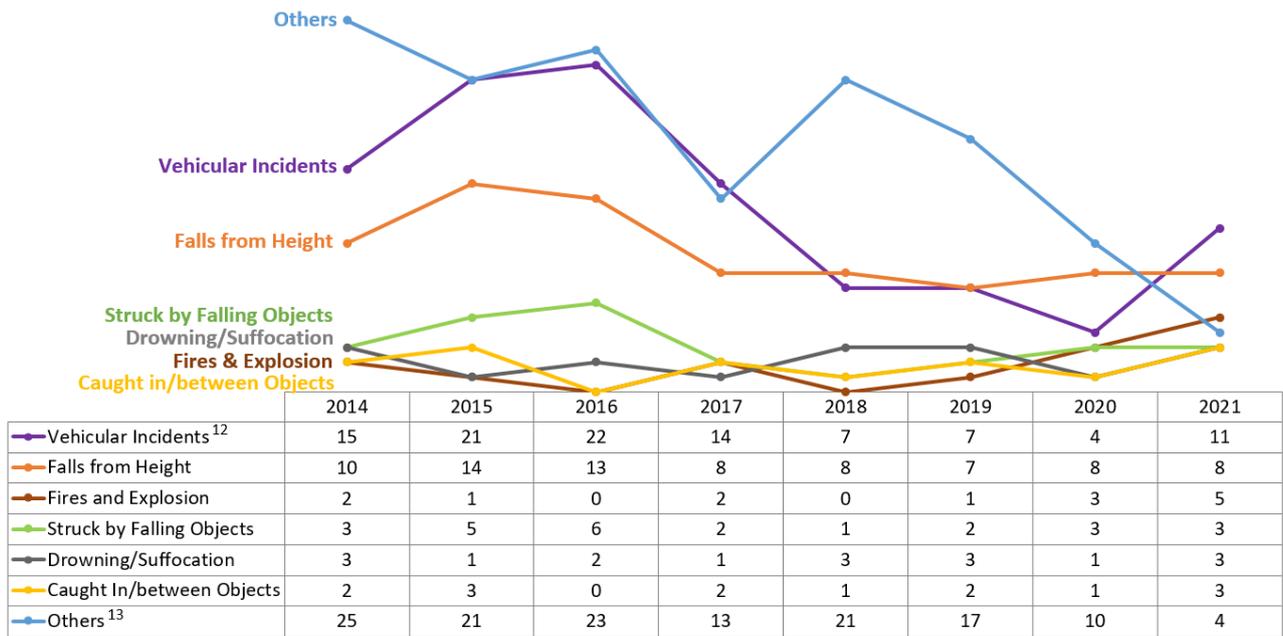


Figure 4: Number of workplace fatal injuries by cause of injury, 2014-2021

¹² Vehicular Incidents include Struck by Moving Objects and Caught In/Between Objects where the agent(s) is a vehicle.

¹³ Others refer to the summation of various fatal injury causes with lower incidence of workplace fatalities in recent years. For more information, please refer to the statistical tables in Annex A.

WORKPLACE FATAL INJURIES BY INDUSTRY

CONSTRUCTION

There were 13 workplace fatal injuries in the Construction sector in 2021, similar to 2019. However, the workplace fatal injury rate rose from 2.9 fatal injuries per 100,000 workers in 2019 to 3.3 in 2021, due to a smaller Construction workforce in 2021.

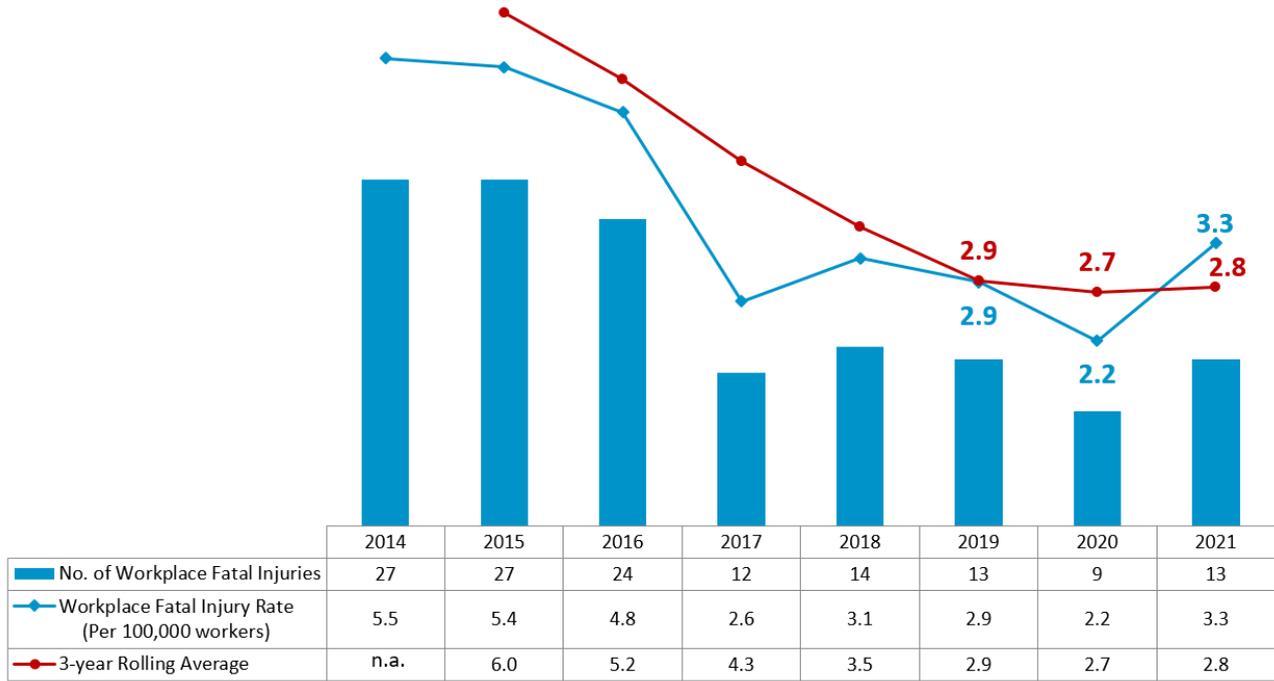


Figure 5: Number and rate of workplace fatal injuries for Construction sector, 2014-2021

MARINE

There was 1 workplace fatal injury in the Marine industry¹⁴ in 2021, 3 fatal injuries fewer than 2019. The workplace fatal injury rate consequently decreased from 5.9 fatal injuries per 100,000 workers in 2019 to 1.8 in 2021.

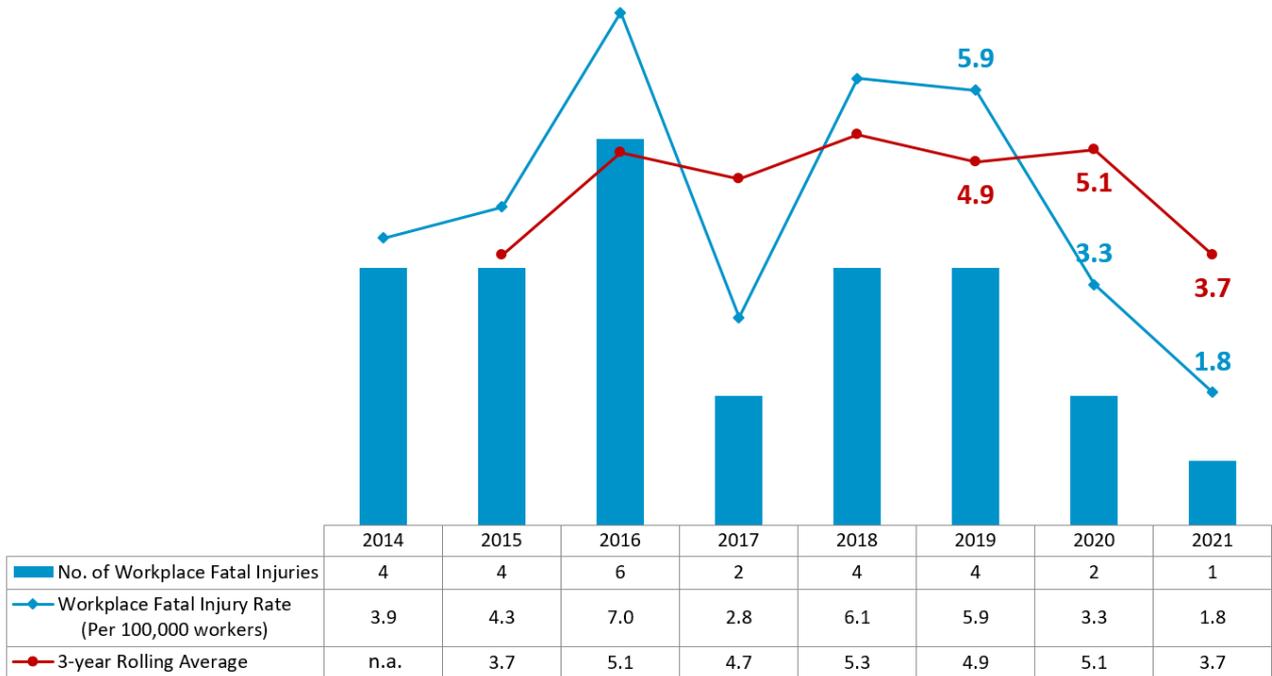


Figure 6: Number and rate of workplace fatal injuries for Marine industry, 2014-2021

¹⁴ The marine industry includes the following activities:

- Shipbuilding and Ship Repair
- Marine Surveying Services (other than classification societies)
- Salvaging of distressed vessels and cargo

Works carried out in the anchorage are also included.

MANUFACTURING

There were 4 workplace fatal injuries in the Manufacturing sector in 2021, similar to 2019. The workplace fatal injury rate for the sector remained the same at 1.0 fatal injuries per 100,000 workers in both years.

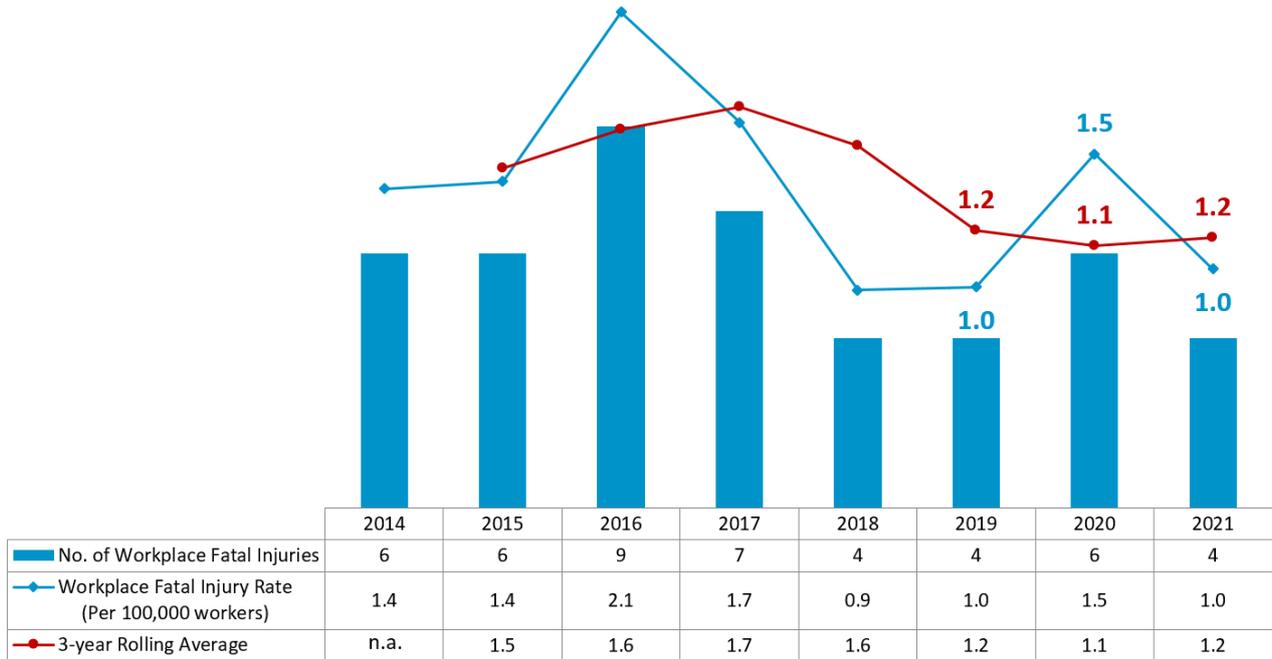


Figure 7: Number and rate of workplace fatal injuries for Manufacturing sector, 2014-2021

TRANSPORTATION & STORAGE

There were 9 workplace fatal injuries in the Transportation & Storage industry in 2021, 1 fatal injury more than the pre-COVID year of 2019. The workplace fatal injury rate for the industry consequently increased from 3.1 fatal injuries per 100,000 workers in 2019 to 3.6 in 2021.



Figure 8: Number and rate of workplace fatal injuries for Transportation & Storage industry, 2014-2021

WORKPLACE MAJOR INJURIES

There were 610 workplace major injuries¹⁵ in 2021, slightly lower than the 629 cases in 2019. However, the major injury rate rose from 18.1 major injuries per 100,000 workers in 2019 to 18.5 in 2021, due to the smaller workforce size in 2021.

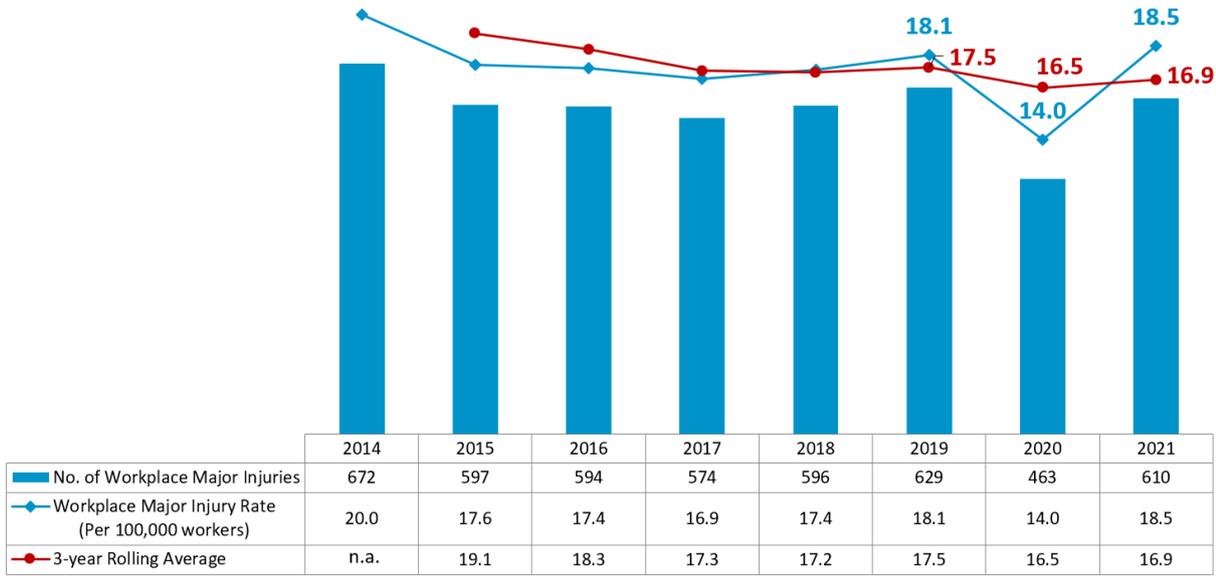


Figure 9: Number and rate of workplace major injuries, 2014-2021

INDUSTRIES CONTRIBUTING TO WORKPLACE MAJOR INJURIES

In 2021, the top contributing sector/industry for major injuries was Manufacturing sector with 141 major injuries, followed by the Construction sector with 126 major injuries. These top 2 contributing sectors collectively accounted for 44% (267 injuries) of the total major injuries in 2021.

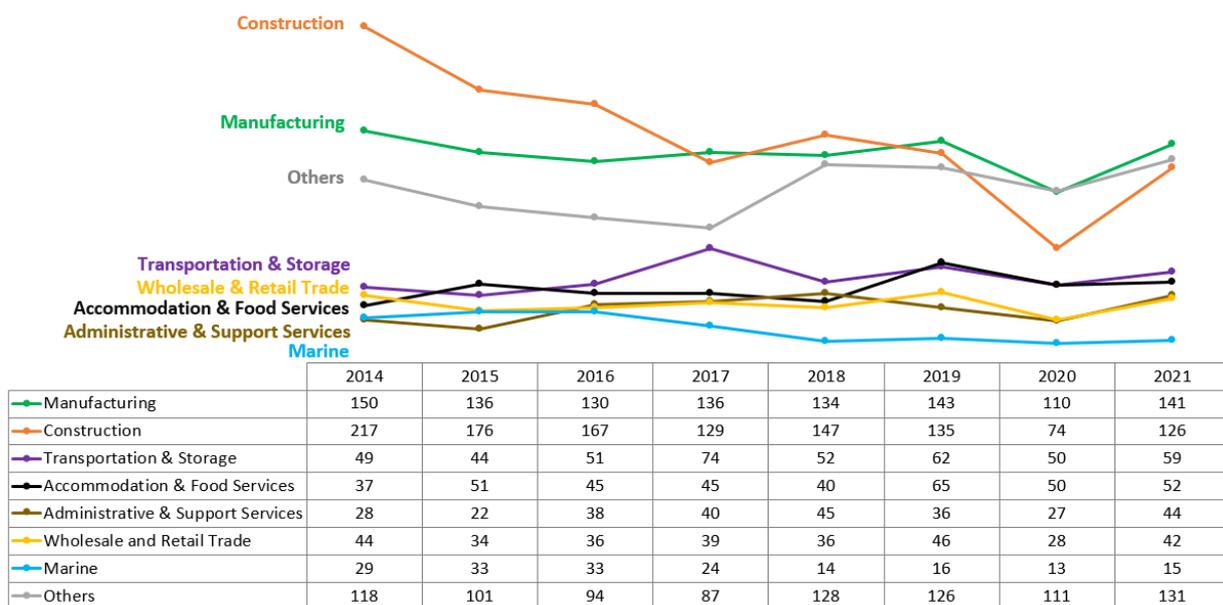


Figure 10: Number of workplace major injuries by industry, 2014-2021

¹⁵ Refer to Annex F for the detailed definition of workplace major injuries.

CAUSES OF WORKPLACE MAJOR INJURIES

The top three causes of workplace major injuries were (i) Slips, Trips & Falls, (ii) Machinery Incidents,¹⁶ and (iii) Falls from Height. These collectively accounted for 55% (334 injuries) of the total number of workplace major injuries in 2021.

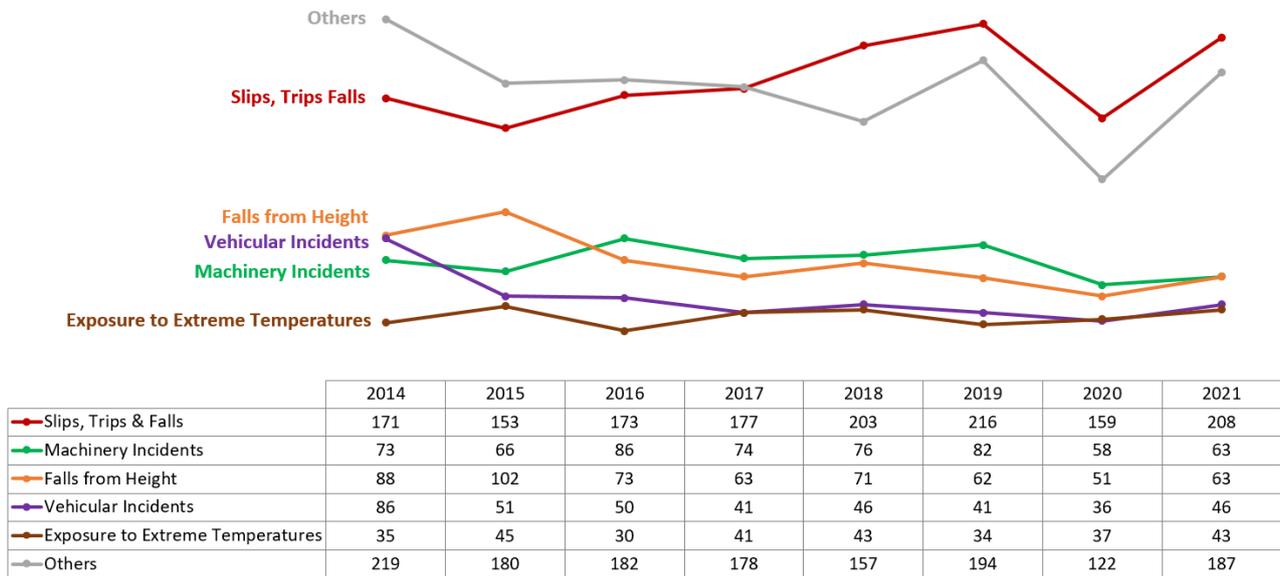


Figure 11: Number of workplace major injuries by cause of injury, 2014-2021

¹⁶ Machinery Incidents include Struck by Moving Objects, Caught In/Between Objects and Cut/Stabbed by Objects where the agent(s) is an industrial machine, industrial hand tool or other machines and tools.

WORKPLACE MAJOR INJURIES BY INDUSTRY

CONSTRUCTION

There were 126 workplace major injuries in the Construction sector in 2021, 9 injuries fewer than 2019. However, the workplace major injury rate for the sector increased from 29.7 major injuries per 100,000 workers in 2019 to 32.1 in 2021, due to the smaller Construction workforce size in 2021.

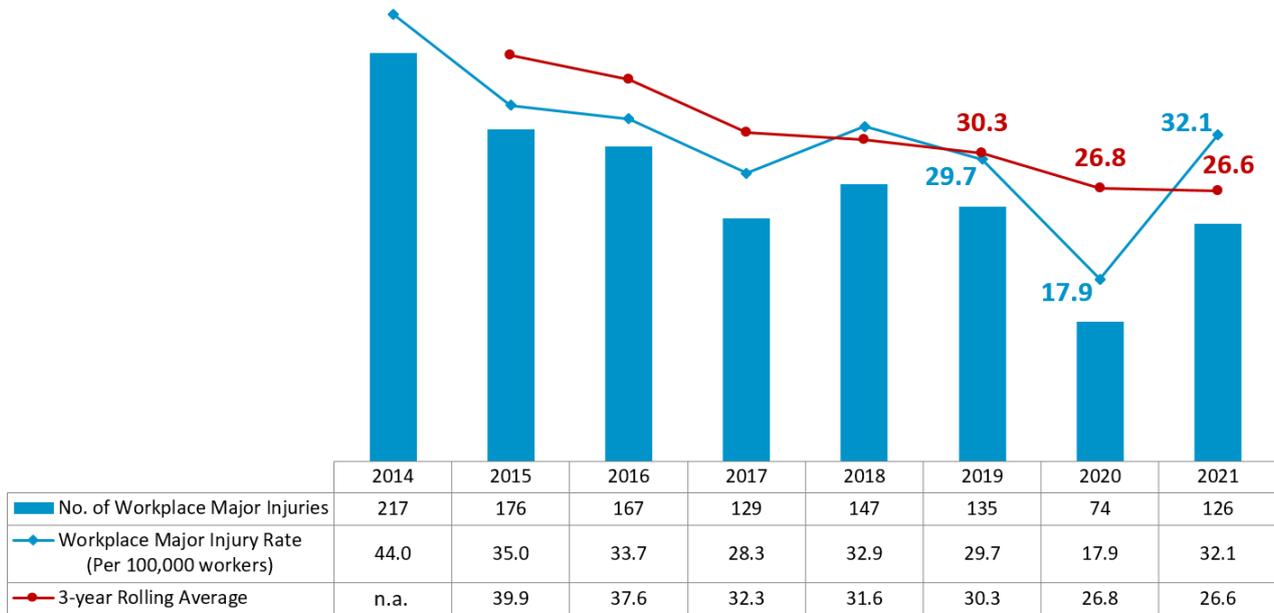


Figure 12: Number and rate of workplace major injuries for Construction sector, 2014-2021

MARINE

There were 15 workplace major injuries in the Marine industry in 2021, 1 injury fewer than 2019. The workplace major injury rate for the sector was higher at 27.0 per 100,000 workers in 2021 compared with 23.6 in 2019, due to the smaller workforce size for the industry in 2021.

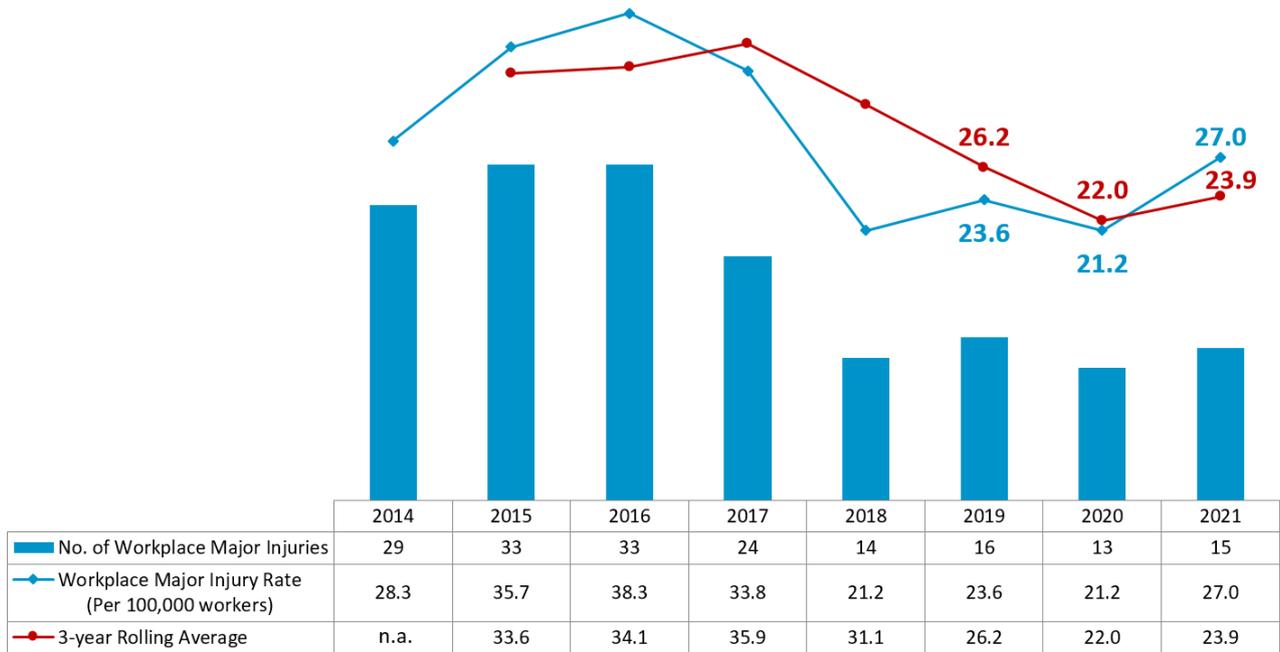


Figure 13: Number and rate of workplace major injuries for Marine industry, 2014-2021

MANUFACTURING

There were 141 workplace major injuries in the Manufacturing sector in 2020, 2 major injuries fewer than 2019. The workplace major injury rate for the sector increased from 34.1 major injuries per 100,000 workers in 2019 to 36.4 in 2021, due to the smaller workforce size for the sector in 2021.

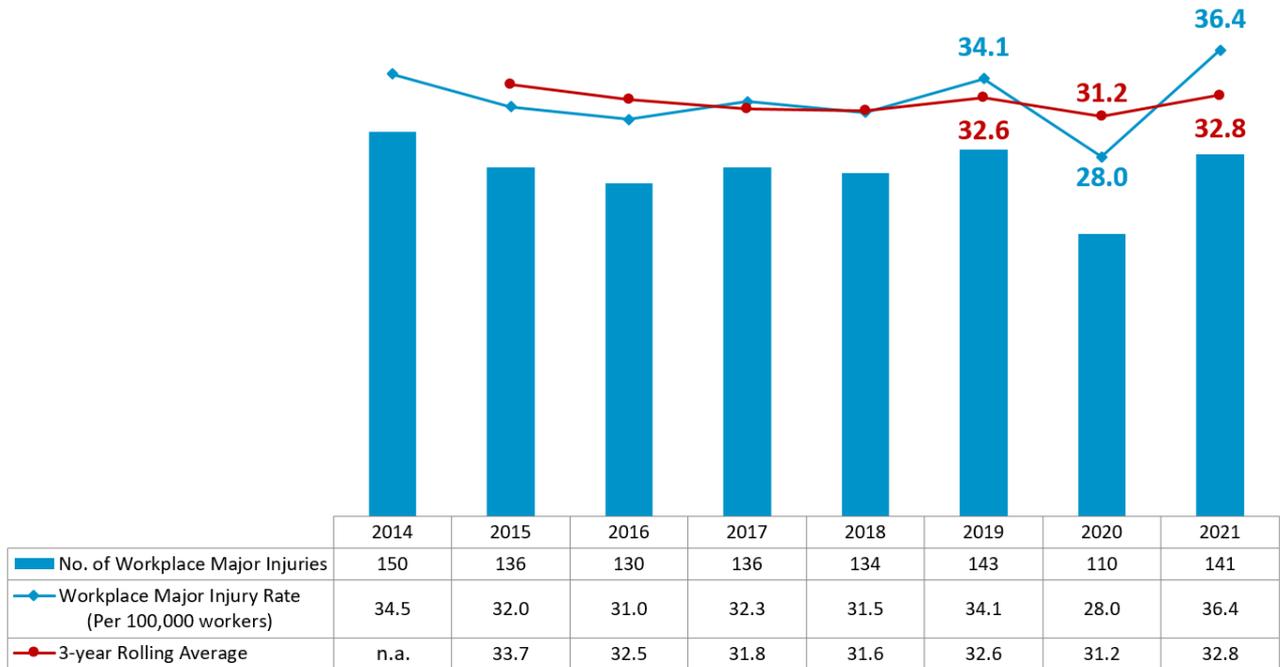


Figure 14: Number and rate of workplace major injuries for Manufacturing sector, 2014-2021

TRANSPORTATION & STORAGE

There were 59 workplace major injuries in the Transportation & Storage industry in 2021, 3 fewer major injuries than 2019. The workplace major injury rate for the industry decreased slightly from 23.8 major injuries per 100,000 workers in 2019 to 23.3 per 100,000 workers in 2021.

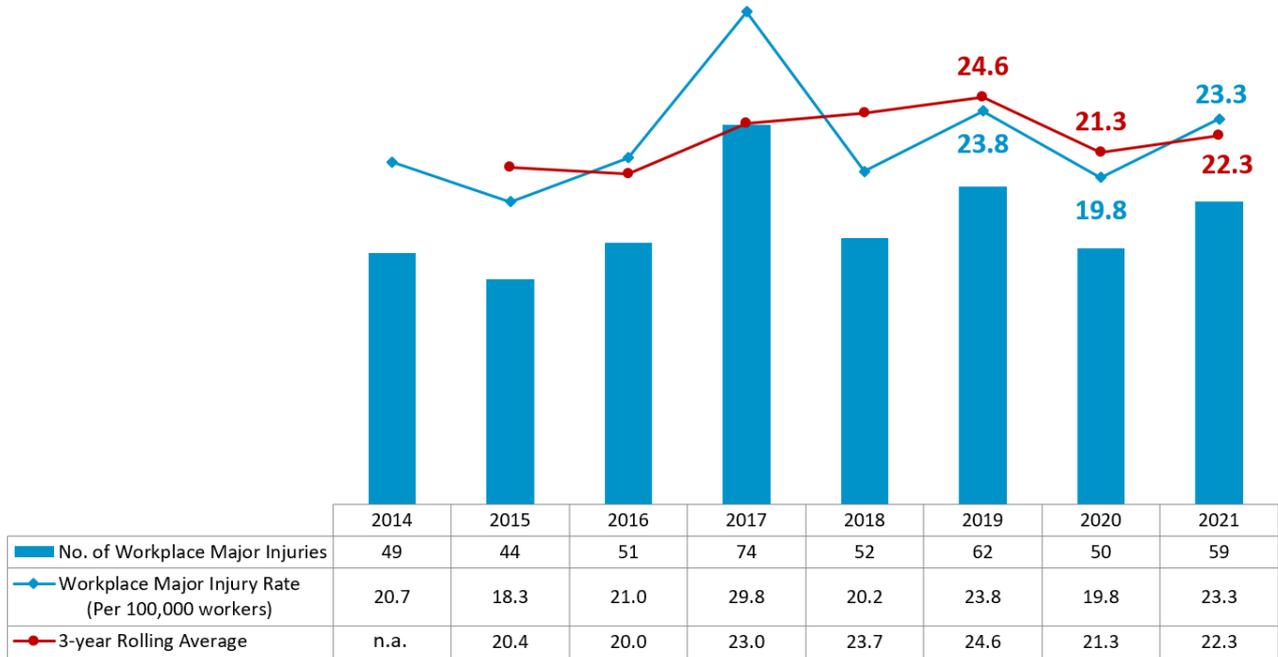


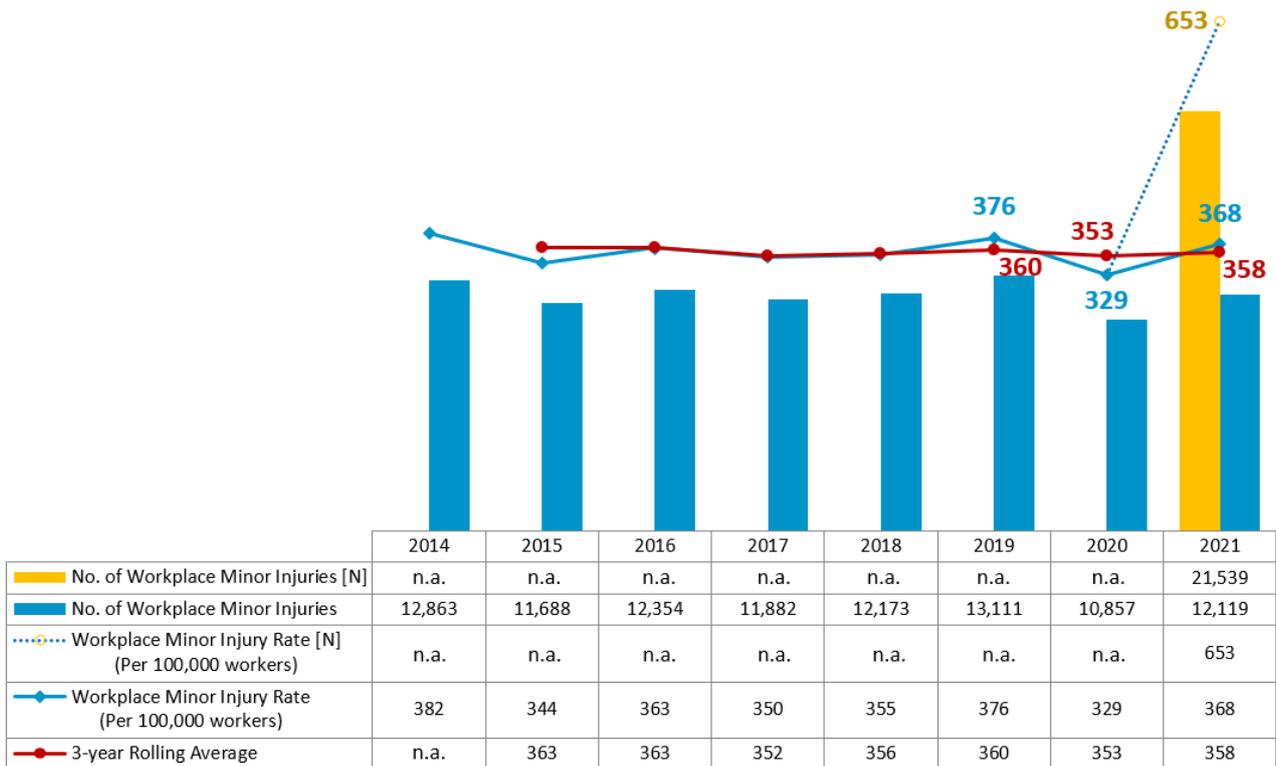
Figure 15: Number and rate of workplace major injuries for Transportation & Storage industry, 2014-2021

WORKPLACE MINOR INJURIES

Prior to January 2021, workplace major and minor injury numbers include injuries sustained by employees that resulted in four or more days of medical leave, or at least 24 hours of hospitalisation. Following the amendments to the Work Injury Compensation Act (WICA) which took effect from September 2020, employers need to report all work injuries with any instance of medical leave or light duties. Numbers presented under this new series will be marked with [N].

With this change, the overall number of reported minor injuries in 2021 was 21,539, including with 9,420 injuries with three or fewer days of medical leave or with light duties. The resultant minor injury rate for 2021 was 653 minor injuries per 100,000 workers.

To facilitate year-on-year comparisons, the Ministry of Manpower (MOM) will continue to release both the new and previous injury rate “series”. Comparing based on the previous series (four or more days of medical leave only), there were 368 minor injuries per 100,000 workers in 2021, a slight decrease from 376 in 2019.

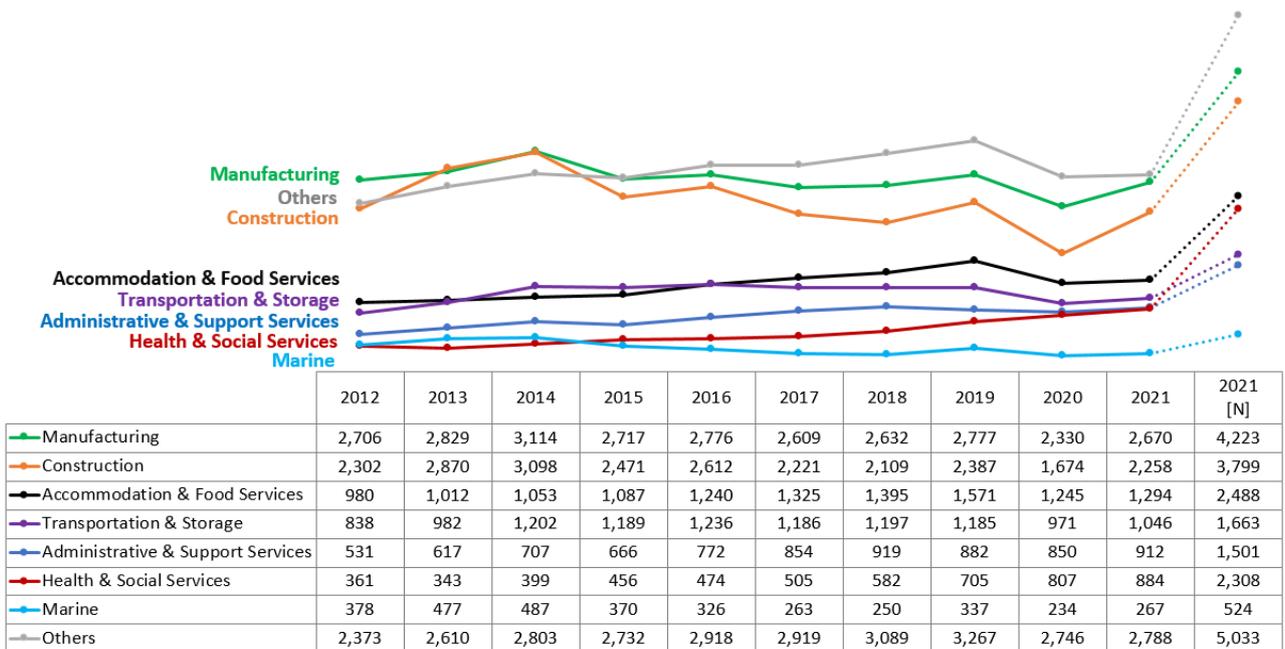


[N] New Series . Injuries with any instance of medical leave or light duties.

Figure 16: Number and rate of workplace minor injuries, 2014-2021

INDUSTRIES CONTRIBUTING TO WORKPLACE MINOR INJURIES

With the new series, the relative rankings for the top three leading industries were Manufacturing (4,223), Construction (3,799) and Accommodation & Food Services industry (2,488). These three industries accounted for 49% (10,510 injuries) of the 21,539 minor injuries in 2021. This rank order is similar to the top three contributing industries under the former definition and consistent with past year trends.

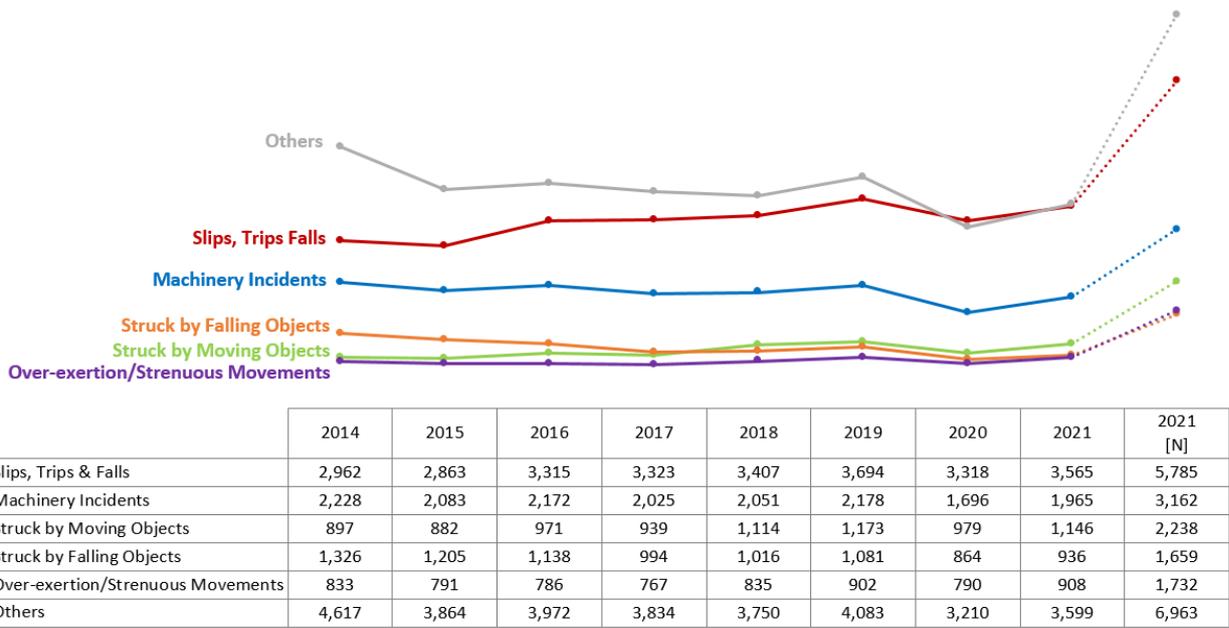


[N] New Series. Injuries with any instance of medical leave or light duties.

Figure 17: Number of workplace minor injuries by industry, 2014-2021

CAUSES OF WORKPLACE MINOR INJURIES

Under the new series, (i) Slips, Trips & Falls, (ii) Machinery Incidents, and (iii) Struck by Moving Objects remained the top three leading causes of minor injuries, accounting for 52% (11,185 injuries) of 21,539 minor injuries in 2021.



[N] New Series. Injuries with any instance of medical leave or light duties.

Figure 18: Number of workplace minor injuries by cause of injury, 2014-2021

DANGEROUS OCCURRENCES (DO)

There were 13 cases of DOs reported to MOM in 2021, 8 cases fewer than 2019. Amongst the DO cases, 9 cases involved Collapse/Failure of Structures & Equipment and 4 cases involved Fires & Explosion.

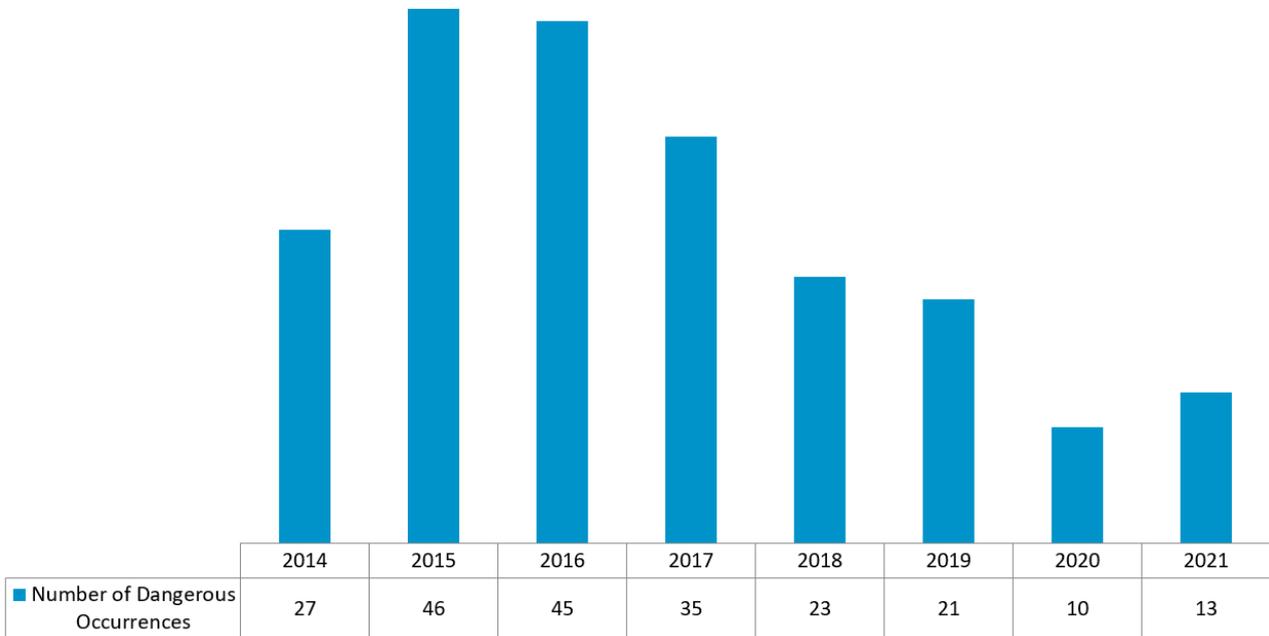


Figure 19: Number of dangerous occurrences, 2014-2021

In 2021, Construction sector was the top contributor accounting for 62% (8 cases) of the total number of DO cases. The second top contributing industry were Manufacturing and Transportation & Storage industries with 2 DO cases each.

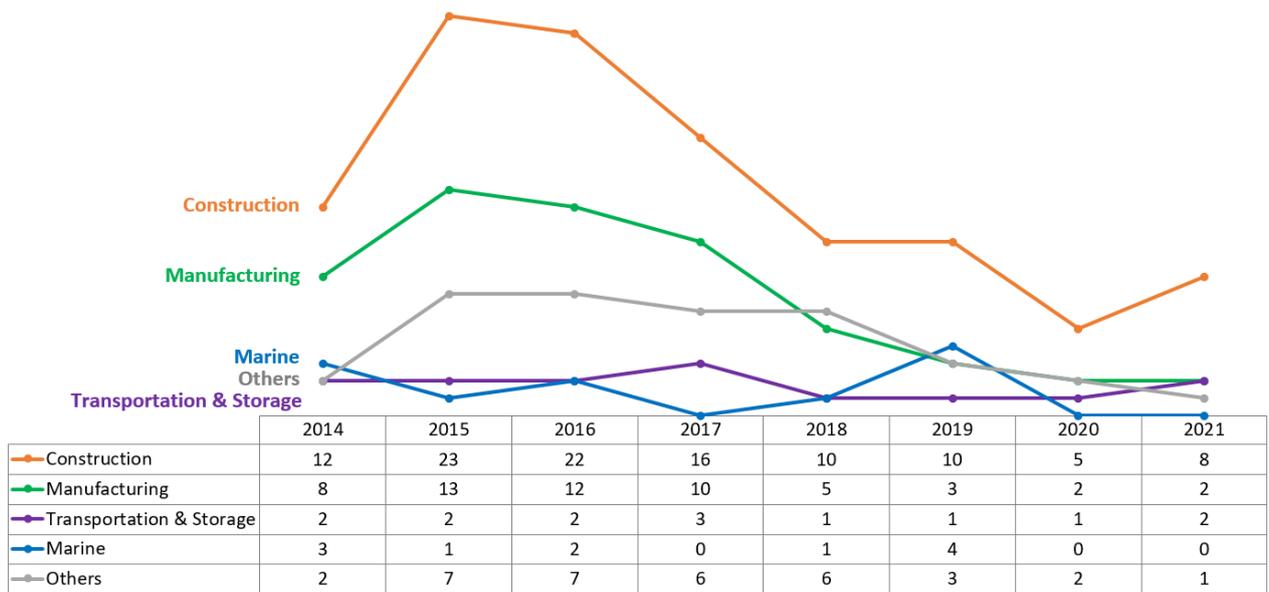


Figure 20: Number of dangerous occurrences by industry, 2014-2021

OCCUPATIONAL DISEASES (OD)

There were 659 cases of ODs confirmed in 2021, an increase of 27% (142 cases) compared to the 517 OD cases confirmed in 2019. The OD incidence rate consequently increased from 14.8 confirmed cases per 100,000 workers in 2019 to 20.0 in 2021.

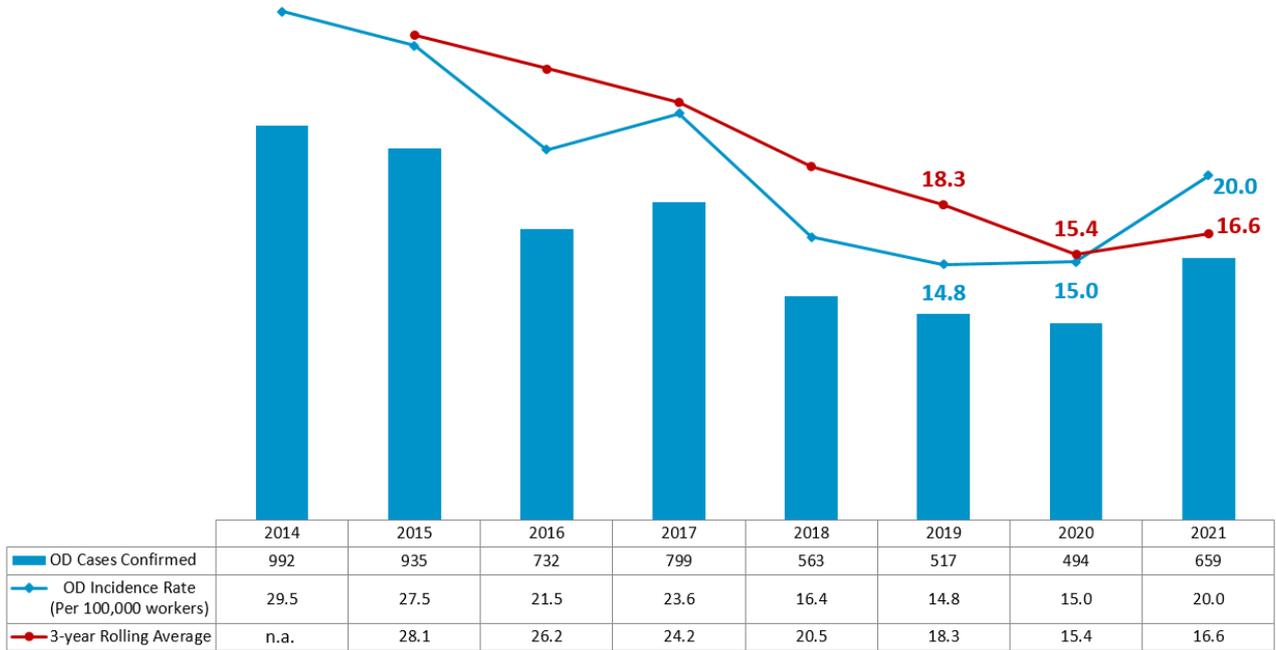


Figure 21: Number and rate of occupational diseases, 2014-2021

The Manufacturing sector was the top contributor in 2021 with 165 confirmed OD cases, followed by the Construction sector and the Health Services industry with 97 and 87 confirmed cases, respectively. These industries collectively accounted for 53% (349 cases) of all confirmed OD cases in 2021.

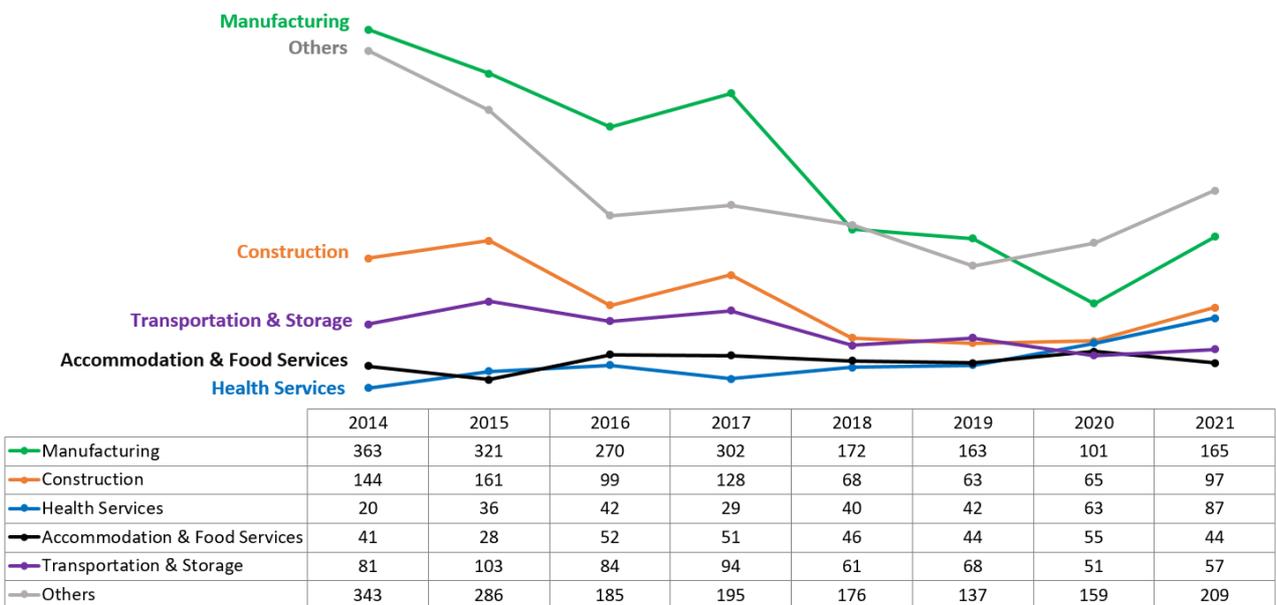


Figure 22: Number of occupational diseases by industry, 2014-2021

TYPES OF OCCUPATIONAL DISEASES¹⁷

The top two types of OD cases confirmed were (i) Work-related Musculoskeletal Disorders¹⁸ and (ii) Noise-induced Deafness. These collectively accounted for 83% (547 cases) of all OD cases confirmed in 2021.

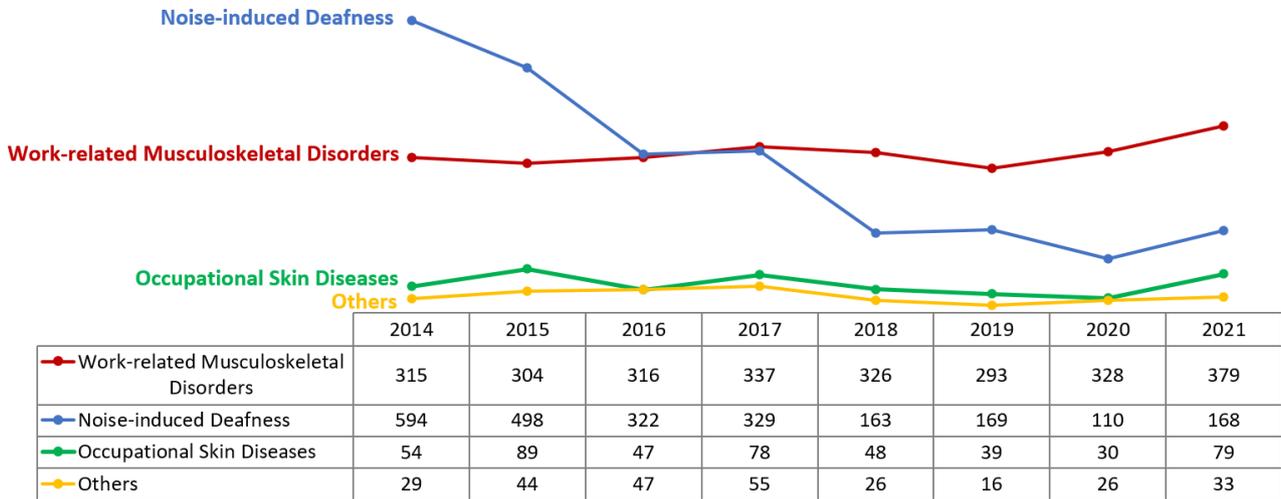


Figure 23: Number of occupational diseases by type, 2014-2021

¹⁷ Occupational Disease cases contributed by workplace COVID-19 infections that were previously reported in 2020 and 2021 were removed from the series as the number of iReport submitted by employers were fewer compared to the total number of COVID-19 infections in Singapore. Based on administrative data covering the period of January to mid-September 2021, when extensive contact tracing was conducted, it is estimated that ~13% of all COVID-19 infections could have been transmitted in the workplace during this period.

¹⁸ Back injuries due to ergonomic risks were considered as Work-related Musculoskeletal Disorders and included as an occupational disease since 2013.

WORK-RELATED MUSCULOSKELETAL DISORDERS (WRMSD)

WRMSD cases increased from 293 cases in 2019 to 379 cases in 2021. The top contributor by industry was Manufacturing sector, accounting for 17% (66 cases) of all WRMSD cases, followed by Health & Social Services industries and Construction sector with 64 (22%) and 45 (12%) WRMSD cases respectively.

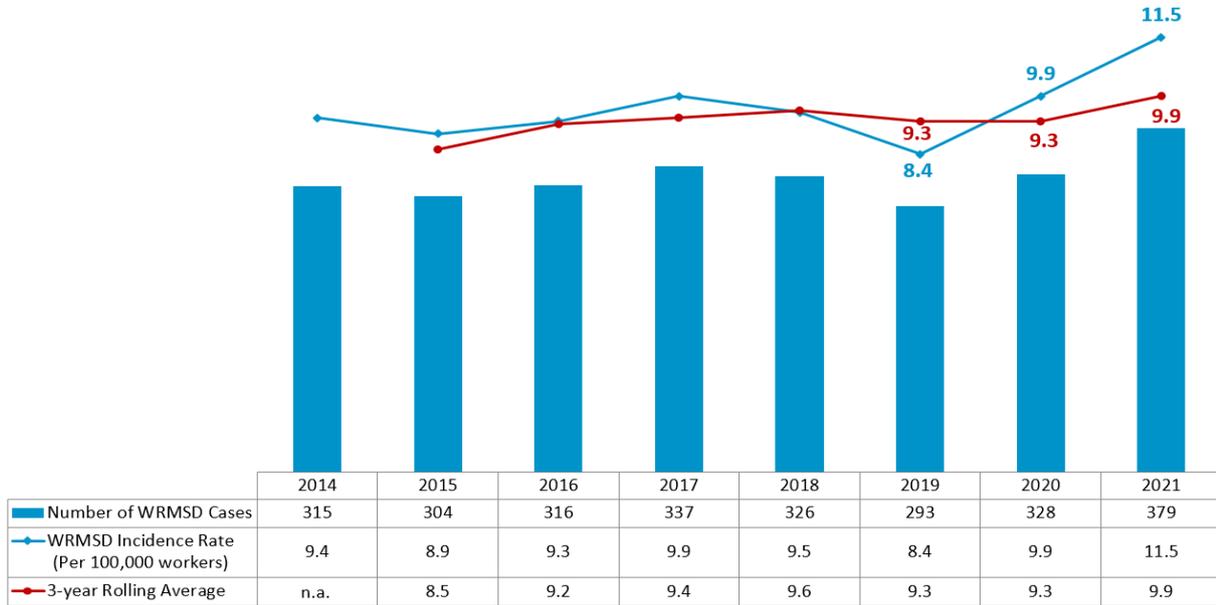


Figure 24: Number and rate of work-related musculoskeletal disorders, 2014-2021

NOISE-INDUCED DEAFNESS (NID)

There were 168 NID cases in 2021, similar to the 169 cases in 2019. The Manufacturing sector continued to be the top contributor to NID cases, accounting for 49% (82 cases) of all NID cases. This was followed by the Construction sector and Marine industry with 29 (17%) and 25 (15%) cases, respectively.

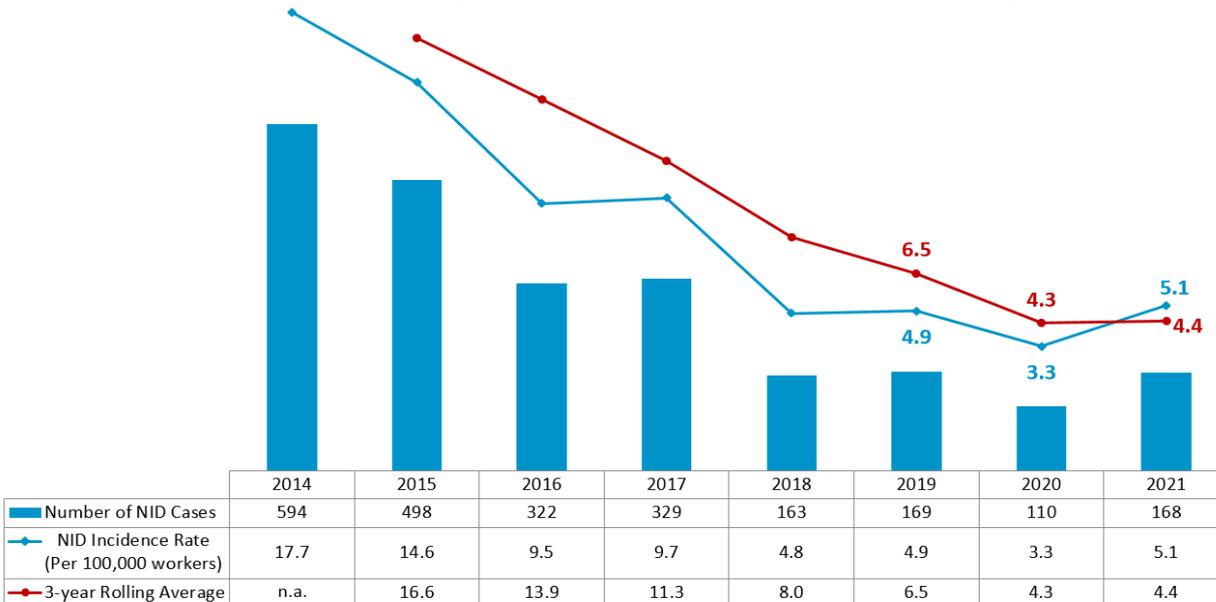


Figure 25: Number and rate of noise-induced deafness, 2014-2021

WORK INJURY COMPENSATION

The Work Injury Compensation Act (WICA) lets employees make claims for work-related injuries or diseases without having to file a civil suit under common law. It is a low-cost and quicker alternative to common law for settling compensation claims.

NUMBER OF WORK INJURY CLAIMS AND PAYOUT AMOUNT AWARDED

The total number of work injury claims¹⁹ awarded increased by 42% from 16,371 cases in 2020 to 23,207 cases in 2021. This was mainly contributed by the increase in number of temporary Incapacity in 2021, due to changes to reporting requirements from WICA 2019, where employers would need to report any instance of medical leave arising from work injury (including light duties) starting from 1 Sept 2020.

Due to the increase in number of cases, the total compensation payout²⁰ awarded consequently rose by about 10% from \$99.24 million in 2020 to \$108.97 million in 2021.

Table 3: Number of TI and PI workplace injuries compensation claims and amount awarded, 2019-2021

Year	Temporary Incapacity (TI) ²¹		Permanent Incapacity (PI) ²²		
	No. of cases	MC Wages (\$million)	No. of cases	MC Wages (\$million)	PI Compensation (\$million)
2019	11,496	\$11.22	4,370	\$14.92	\$76.26
2020	12,599	\$10.20	3,664	\$14.39	\$60.01
2021	19,347	\$15.37	3,730	\$14.66	\$61.30

Table 4: Number of Fatal and Total workplace injuries compensation claims and amount awarded, 2019-2021

Year	Fatal		Total		
	No. of cases	Death Compensation (\$million)	No. of cases	MC Wages (\$million)	PI/Death Compensation (\$million)
2019	126	\$17.62	15,992	\$26.14	\$93.88
2020	108	\$14.64	16,371	\$24.59	\$74.65
2021	130	\$17.64	23,207	\$30.03	\$78.94

¹⁹ Work injury compensation data excludes cases that were withdrawn, cases with No-Further-Action required and cases that were not admitted under WICA.

²⁰ Total compensation payout is the sum of Total MC Wages and Total PI/Death Compensation.

²¹ Temporary incapacity claims arise from non-permanent work injuries where an injured employee is temporarily unable to perform work and earn his usual wages after being placed on medical leave.

²² Permanent incapacity claims arise from injuries which cause permanent injuries or loss of bodily functions to an injured employee.

BUSINESS UNDER SURVEILLANCE

Proactive surveillance of high-risk workplaces enables preventive measures to be taken early. The Business Under Surveillance (BUS) programme focuses on improvement of WSH management systems.

BUSINESS UNDER SURVEILLANCE

More than 300 companies had been placed under the programme since its inception in 2007. Companies with poor WSH performance which includes having (i) fatalities, (ii) multiple workplace injuries or Dangerous Occurrences, (iii) issued with Stop Work Orders (SWO), (iv) accumulated a substantial number of demerit points, or (v) poor enforcement records, will be assessed on their risk management and WSH management system. If the company demonstrates inability to manage WSH properly or shows signs of systemic lapses, it will formally enter the BUS programme. Companies will exit the programme only when they have shown significant improvement in its WSH performance. In 2021, 9 companies entered the BUS programme. They were from the Construction, Manufacturing and Transportation & Storage Industries. None had exited the programme in 2021.

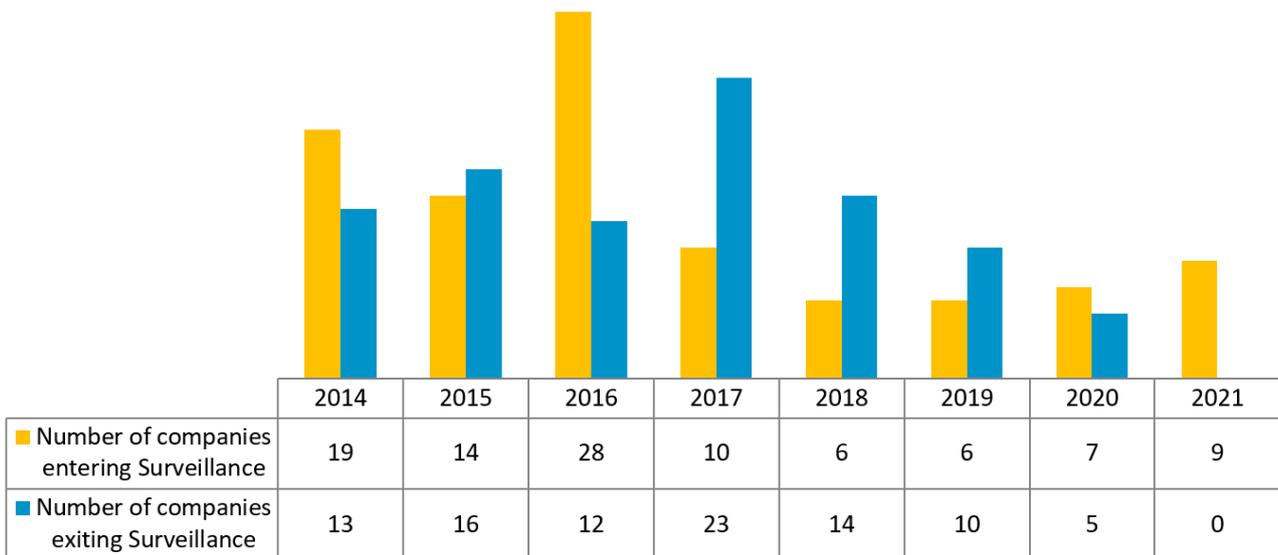


Figure 26: Number of companies entering and exiting surveillance, 2014-2021

MEDICAL AND HYGIENE SURVEILLANCE

Hygiene and Medical surveillance programmes monitor workers' exposure and health effects from exposure to the list of hazards under the Workplace Safety and Health (General Provisions) Regulations, Workplace Safety and Health (Noise) Regulations and the Workplace Safety and Health (Medical Examinations) Regulations.

MEDICAL SURVEILLANCE

Workplaces with hazards listed in the Schedule of the WSH (Medical Examinations) Regulations are required to send their exposed workers for pre-placement and periodic medical examinations. The number of workers under surveillance rose slightly from 107,069 in 2020 to 107,479 in 2021. Similarly, the number of workplaces under medical surveillance had also increased from 2,125 in 2020 to 2,262 in 2021.

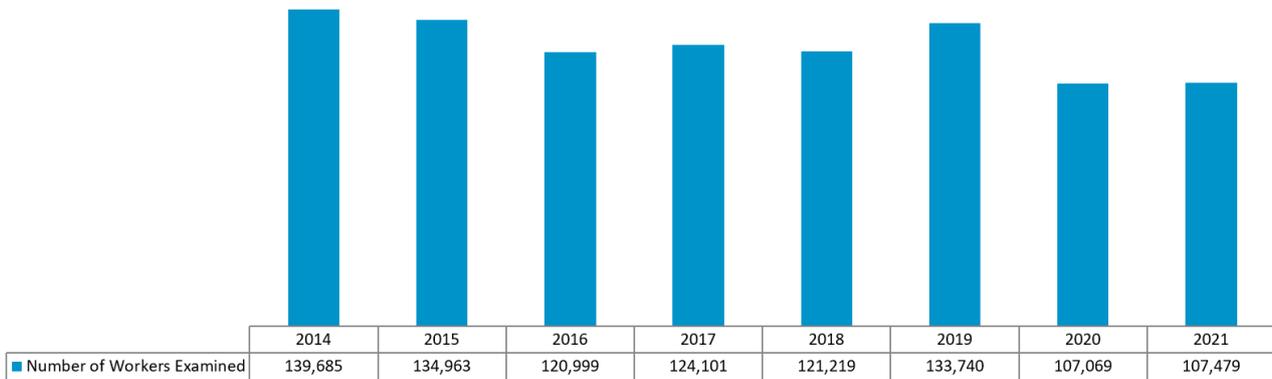


Figure 27: Number of workers under medical surveillance, 2014-2021

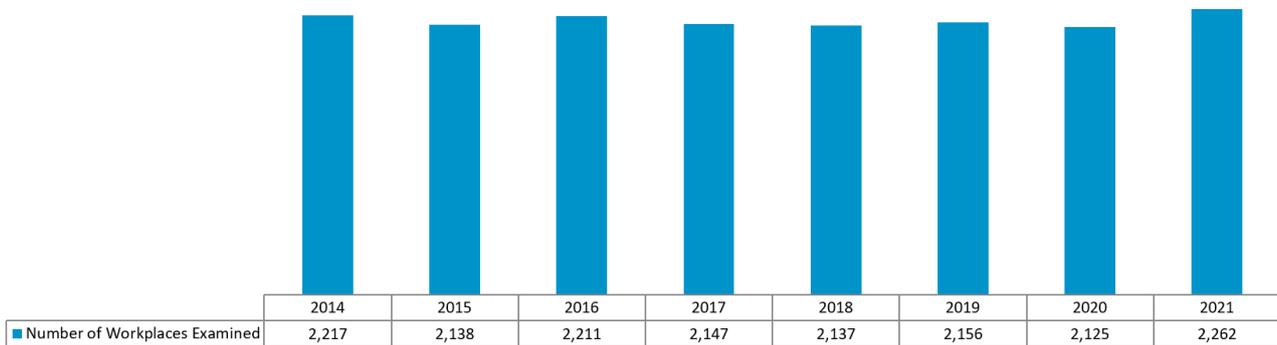


Figure 28: Number of workplaces under medical surveillance, 2014-2021

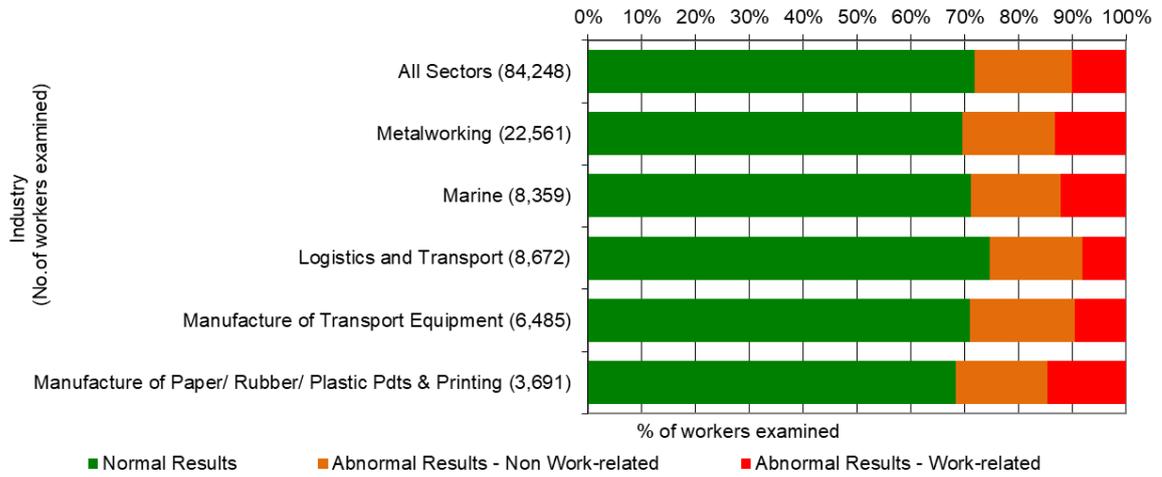


Figure 29: Medical monitoring for noise exposure by Top 5 industries, 2021

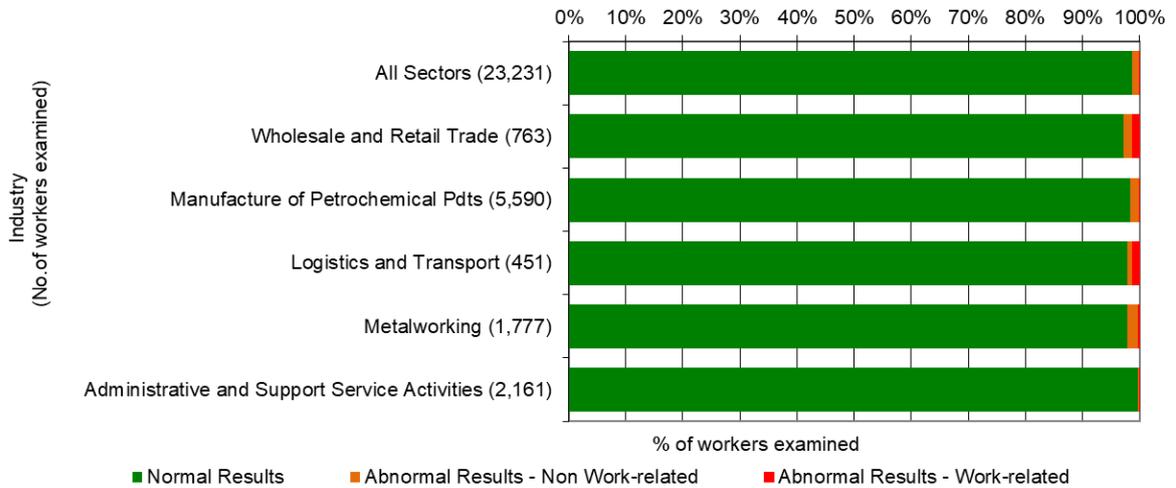


Figure 30: Medical monitoring for chemical exposure by Top 5 industries, 2021

HYGIENE SURVEILLANCE

Workplaces where persons are likely to be exposed to excessive noise or toxic substances are required to conduct regular hygiene monitoring to measure their workers' exposure to noise and chemicals under the WSH (Noise) Regulations and the WSH (General Provisions) Regulations respectively.

NOISE EXPOSURE LEVELS

Based on the noise monitoring results submitted over the past three years, 80% of the workplaces had noisy processes exceeding 85dBA. 73% of the workplaces that conducted personal exposure monitoring had workers who were exposed to excessive noise (above an equivalent sound pressure level of 85dBA over an eight-hour workday). Workplaces with noisy processes or workers who are exposed to excessive noise will need to implement additional control measures to reduce or control the noise generated from machinery or equipment in order to reduce workers' exposure to below the permissible limits as stipulated in the Schedule of the WSH (Noise) Regulations.

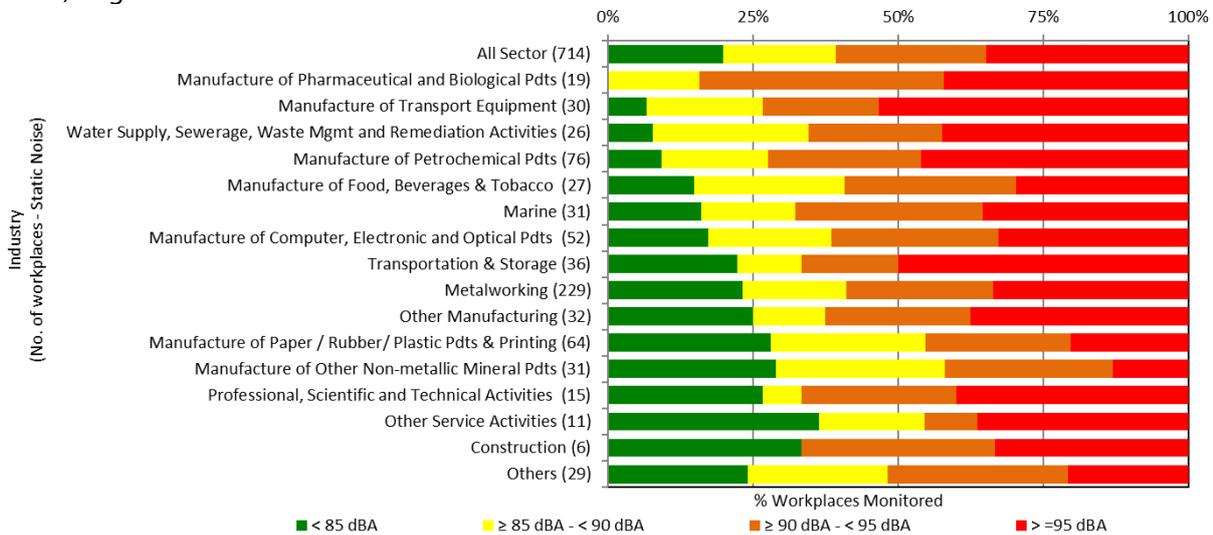


Figure 31: Static noise monitoring results by industry, 2019-2021

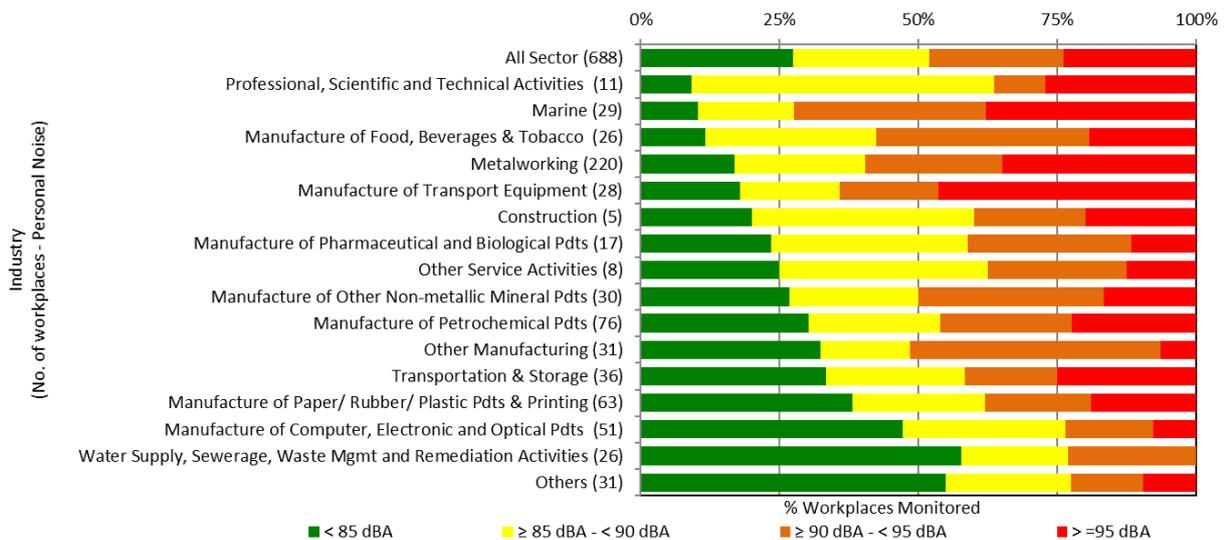


Figure 32: Personal noise exposure results by industry, 2019-2021

CHEMICAL EXPOSURE LEVELS

A total of 9,199 chemical monitoring results were received in 2021, of which 47% of the results were from the Manufacture of Petrochemical Products industry (24%) and Manufacture of Computer, Electronic & Optical Products industry (23%). Workplaces with chemical exposure levels higher than permissible exposure level (PEL²³) will require implementation of additional engineering control measures to eliminate or reduce workers' exposure to below the PEL.

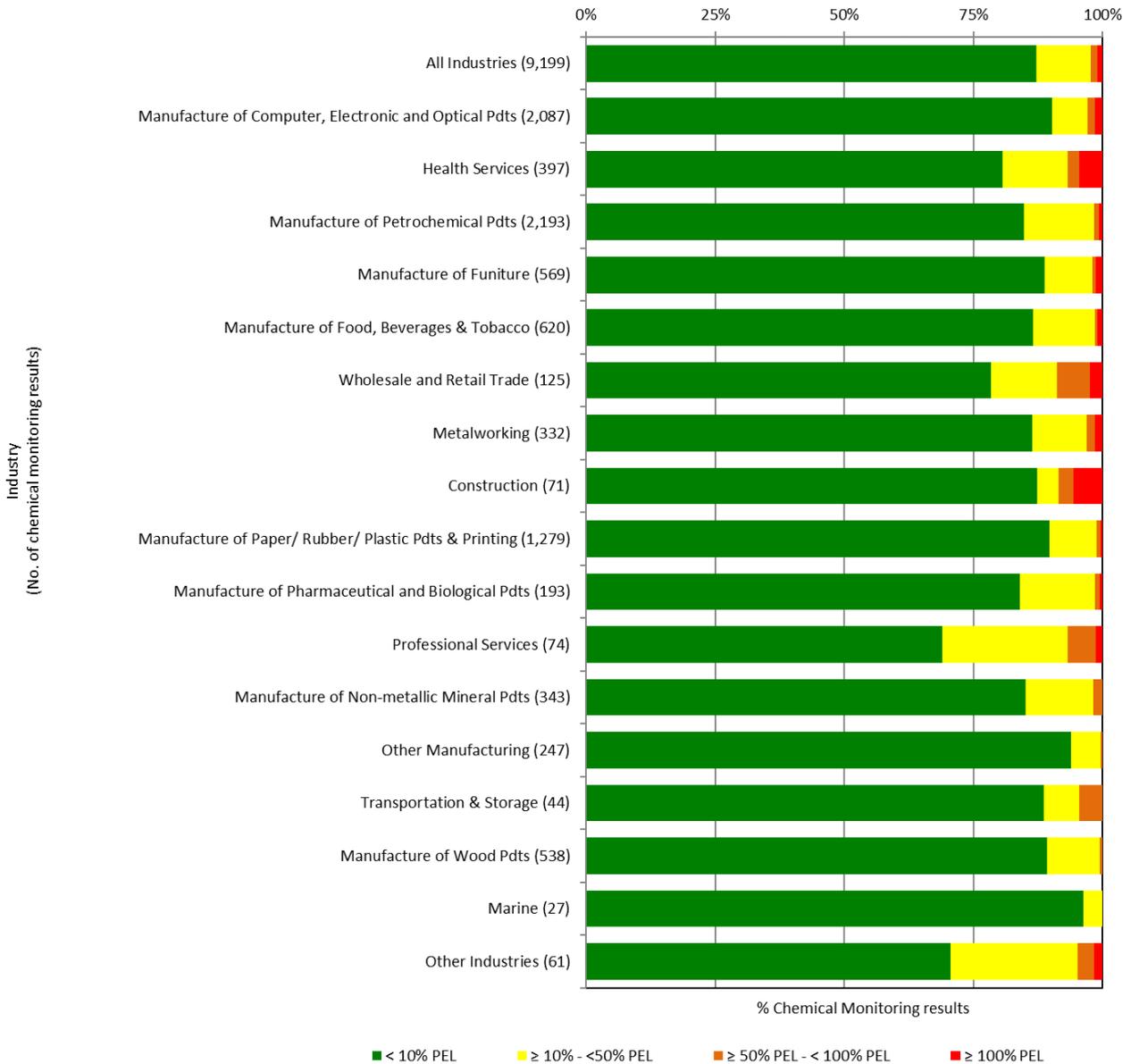


Figure 33: Chemical exposure results by industry, 2021

²³ Permissible Exposure Level (PEL) refer to the maximum time weighted average concentration of a toxic substance to which any person may be exposed.

ANNEX A

STATISTICAL TABLES

Table 5: Number of workplace fatal injuries by industry, 2019 - 2021

Industry	2019	2020	2021
All Industries	39	30	37
Construction	13	9	13
Transportation & Storage	8	5	9
<i>Logistics & Transport</i>	3	4	4
Manufacturing	4	6	4
<i>Other Manufacturing</i>	0	0	3
<i>Manufacture of Other Non-metallic Mineral Products</i>	0	0	1
<i>Manufacture of Petrochemical Products</i>	1	3	0
<i>Metalworking</i>	3	1	0
Water Supply; Sewerage, Waste Management & Remediation Activities	1	3	3
Real Estate Activities	1	1	3
Marine	4	2	1
Wholesale & Retail Trade	2	2	1
<i>Wholesale Trade</i>	2	2	1
Agriculture and Fishing	0	0	1
Administrative & Support Service Activities	2	1	0
<i>Cleaning & Landscape Maintenance Activities</i>	0	1	0
Community, Social & Personal Services	1	1	2
Other Service Activities	0	0	2
<i>Arts, Entertainment & Recreation</i>	0	1	0

Table 6: Workplace fatal injury rates by industry, 2019 - 2021

Per 100,000 workers

Industry	2019	2020	2021
All Industries	1.1	0.9	1.1
Construction	2.9	2.2	3.3
Transportation & Storage	3.1	2.0	3.6
<i>Logistics & Transport</i>	2.7	3.8	3.8
Manufacturing	1.0	1.5	1.0
<i>Other Manufacturing</i>	0	0	12.1
<i>Manufacture of Other Non-metallic Mineral Products</i>	0	0	30.3
<i>Manufacture of Petrochemical Products</i>	1.9	6.1	0
<i>Metalworking</i>	2.8	1.0	0
Water Supply; Sewerage, Waste Management & Remediation Activities	n.a.	n.a.	n.a.
Real Estate Activities	1.2	1.3	4.2
Marine	5.9	3.3	1.8
Wholesale & Retail Trade	0.4	0.4	0.2
<i>Wholesale Trade</i>	0.6	0.6	0.3
Agriculture and Fishing	0	0	n.a.
Administrative & Support Service Activities	0.8	0.4	0
<i>Cleaning & Landscape Maintenance Activities</i>	0	1.3	0
Community, Social & Personal Services	0.1	0.1	0.2
Other Service Activities	0	0	n.a.
<i>Arts, Entertainment & Recreation</i>	0	2.4	0

Table 7: Number of workplace fatal injuries by incident type and incident agent, 2019 - 2021

Incident Type	Incident Agent	2019	2020	2021
Total Workplace Fatal Injuries		39	30	37
Falls	Total	10	11	10
Falls From Height	Total	7	8	8
	<i>Means of Access - Ladders</i>	1	2	3
	<i>Physical Workplace - Structures</i>	4	5	3
	<i>Physical Workplace - Formwork</i>	0	1	1
	<i>Means of Access - Scaffold</i>	0	0	1
	<i>Means of Access - Others</i>	1	0	0
	<i>Other Incident Agents</i>	1	0	0
Slips, Trips & Falls	Total	3	3	2
	<i>Vehicles - Forklifts</i>	0	0	1
	<i>Vehicles - Transport Equipment</i>	0	0	1
	<i>Physical Workplace - Floors/Level Surfaces</i>	2	1	0
	<i>Means of Access - Stairs or Steps</i>	0	1	0
	<i>Animals, Plants & Insects</i>	0	1	0
	<i>Goods/Cargo</i>	1	0	0
Traffic Accidents	Total	4	3	6
	<i>Vehicles - Transport Equipment</i>	4	3	6
Caught In/ Between Objects	Total	4	4	6
	<i>Industrial Machines</i>	2	2	1
	<i>Lifting Equipment - Mobile Work Platform</i>	0	1	1
	<i>Vehicles - Industrial Trucks</i>	0	1	1
	<i>Lifting Equipment - Lifts & Hoists</i>	1	0	1
	<i>Material & Substances - Metal Items</i>	0	0	1
	<i>Vehicles - Forklifts</i>	0	0	1
<i>Other Incident Agents</i>	1	0	0	
Fires & Explosion	Total	1	3	5
	<i>Material & Substances - Dust, Gas, Liquid/Chemicals</i>	0	0	3
	<i>Electrical Equipment</i>	0	0	2
	<i>Material & Substances - Explosives/Flammable</i>	0	3	0
	<i>Pressurised Equipment</i>	1	0	0
Struck By Falling Objects	Total	2	3	3
	<i>Goods/Cargo</i>	0	1	1
	<i>Industrial Machines</i>	0	0	1
	<i>Vehicles - Transport Equipment</i>	0	0	1
	<i>Material & Substances - Metal Items</i>	2	1	0
	<i>Physical Workplace - Formwork</i>	0	1	0

(Continued) Table 7: Number of workplace fatal injuries by incident type and incident agent, 2019 - 2021

Incident Type	Incident Agent	2019	2020	2021
Struck By Moving Objects	Total	5	1	3
	<i>Vehicles - Industrial Trucks</i>	1	0	2
	<i>Vehicles - Transport Equipment</i>	1	0	1
	<i>Material & Substances - Metal Items</i>	0	1	0
	<i>Vehicles - Forklifts</i>	1	0	0
	<i>Lifting Equipment - Lifting appliances/gears</i>	1	0	0
	<i>Other Incident Agents</i>	1	0	0
Suffocation /Drowning	Total	3	1	3
	<i>Physical Workplace - Confined Space</i>	0	0	2
	<i>Other Incident Agents</i>	3	1	1
Crane-related	Total	1	0	1
	<i>Lifting Equipment - Cranes</i>	1	0	1
Collapse/Failure of Structure & Equipment	Total	7	2	0
	<i>Material & Substances - Metal Items</i>	0	1	0
	<i>Pressurised Equipment</i>	0	1	0
	<i>Physical Workplace - Structures</i>	3	0	0
	<i>Lifting Equipment - Cranes</i>	1	0	0
	<i>Lifting Equipment - Mobile Work Platform</i>	1	0	0
	<i>Means of Access - Scaffold</i>	1	0	0
<i>Goods/Cargo</i>	1	0	0	
Exposure To/Contact With Extreme Temperatures (Heat/Cold)	Total	1	1	0
	<i>Other Incident Agents</i>	0	1	0
	<i>Material & Substances - Hot scalding liquid/steam</i>	1	0	0
Exposure To/Contact With Harmful Substances	Total	0	1	0
	<i>Material & Substances - Dust, Gas, Liquid/Chemicals</i>	0	1	0
Electrocution	Total	1	0	0
	<i>Electrical Equipment</i>	1	0	0

Table 9: Number of workplace major injuries by selected industry, 2019 - 2021

Industry	2019	2020	2021
All Industries	629	463	610
Manufacturing	143	110	141
<i>Metalworking</i>	47	39	46
<i>Manufacture of Food, Beverages & Tobacco</i>	26	29	32
<i>Manufacture of Petrochemical Products</i>	10	8	12
<i>Other Manufacturing</i>	8	4	11
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	12	5	11
Construction	135	74	126
Transportation & Storage	62	50	59
<i>Logistics & Transport</i>	43	38	39
Accommodation & Food Service Activities	65	50	52
<i>Food & Beverage Service Activities</i>	51	42	47
<i>Accommodation</i>	14	8	5
Administrative & Support Service Activities	36	27	44
<i>Cleaning & Landscape Maintenance Activities</i>	13	15	27
<i>Security & Investigation Activities</i>	11	7	9
Wholesale & Retail Trade	46	28	42
<i>Wholesale Trade</i>	23	12	25
<i>Retail Trade</i>	23	16	17
Professional, Scientific & Technical Activities	14	10	23
Real Estate Activities	18	13	17
Marine	16	13	15
Community, Social & Personal Services	76	73	70
<i>Health & Social Services</i>	26	21	22
<i>Education</i>	17	18	19
<i>Other Services Activities</i>	19	16	16

Table 10: Workplace major injury rates by selected industry, 2019 - 2021

Per 100,000 workers

Industry	2019	2020	2021
All Industries	18.1	14.0	18.5
Manufacturing	34.1	28.0	36.4
<i>Metalworking</i>	44.2	38.2	45.3
<i>Manufacture of Food, Beverages & Tobacco</i>	49.5	59.5	63.2
<i>Manufacture of Petrochemical Products</i>	18.9	16.4	24.5
<i>Other Manufacturing</i>	31.7	16.7	44.5
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	41.8	18.9	43.3
Construction	29.7	17.9	32.1
Transportation & Storage	23.8	19.8	23.3
<i>Logistics & Transport</i>	38.3	36.3	36.7
Accommodation & Food Service Activities	24.7	21.4	21.7
<i>Food & Beverage Service Activities</i>	22.5	20.3	21.9
Accommodation	38.1	29.9	20.2
Administrative & Support Service Activities	14.2	11.1	18.2
<i>Cleaning & Landscape Maintenance Activities</i>	16.3	19.5	35.2
<i>Security & Investigation Activities</i>	22.2	14.3	18.8
Wholesale & Retail Trade	9.5	6.1	9.3
<i>Wholesale Trade</i>	7.1	3.9	8.4
<i>Retail Trade</i>	14.3	10.6	11.2
Professional, Scientific & Technical Activities	5.5	3.9	8.9
Real Estate Activities	21.5	17.0	23.6
Marine	23.6	21.2	27.0
Community, Social & Personal Services	8.9	9.1	8.7
<i>Health & Social Services</i>	15.4	12.1	11.8
<i>Education</i>	n.a.	n.a.	n.a.
<i>Other Services Activities</i>	n.a.	n.a.	n.a.

Table 11: Types of workplace major injuries, 2019 - 2021

Workplace Major Injury Types	2019	2020	2021
Total	629	463	610
Crushing, Fractures & Dislocations	368	253	360
Amputations	132	87	102
Burns, With More Than 20 MC Days	57	58	70
Multiple Injuries	38	36	44
Concussion, With More Than 20 MC Days	13	11	17
Exposure To/ Contact With Electric Current	14	9	10
Mosquito Borne	1	6	2
Blindness	3	1	2
Paralysis	1	0	0
Others	2	2	3

Table 12: Number of workplace major injuries by key incident type and key incident agent, 2019 - 2021

Incident Type	Incident Agent	2019	2020	2021
Total Workplace Major Injuries		629	463	610
Falls	Total	278	210	271
Slips, Trips & Falls	Total	216	159	208
	<i>Physical Workplace - Floors/Level Surfaces</i>	113	92	110
	<i>Means of Access - Stairs or Steps</i>	29	19	28
Falls From Height	<i>Vehicles</i>	25	23	26
	Total	62	51	63
	<i>Means of Access - Ladders</i>	29	25	36
	<i>Physical Workplace - Structure</i>	15	12	8
Struck By Moving Objects	<i>Means of Access - Scaffold</i>	7	5	8
	Total	86	47	61
	<i>Vehicles</i>	22	18	17
	<i>Metal Items (excluding knives/needles)</i>	14	4	12
Caught In/ Between Objects	<i>Furniture & Fittings</i>	4	1	8
	Total	59	48	58
	<i>Industrial Machines</i>	24	23	29
	<i>Metal Items (excluding knives/needles)</i>	13	6	10
Exposure To/ Contact With Extreme Temperatures	<i>Vehicles</i>	2	6	4
	Total	34	37	43
	<i>Hot scalding liquid/Steam</i>	31	25	36
Struck By Falling Objects	<i>Pressurised Equipment</i>	1	1	2
	Total	35	28	42
	<i>Metal Items (excluding knives/needles)</i>	8	11	14
Cut/Stabbed By Objects	<i>Goods/Cargo</i>	4	10	7
	Total	30	22	25
	<i>Industrial Machines</i>	22	13	18
Traffic Accident	<i>Industrial Hand Tools</i>	5	7	4
	Total	17	12	25
Over-exertion/ Strenuous Movements	<i>Motor vehicles</i>	17	12	25
	Total	21	8	21
	<i>Goods/Cargo</i>	8	2	9
Exposure To Electric Current	<i>Human Factors</i>	10	4	7
	Total	23	14	18
	<i>Electrical Installation</i>	11	4	10
	<i>Industrial Machines</i>	8	7	4

Table 13: Top 3 incident types for workplace major injuries by industry, 2021

Industry	Top 3 Incident Types		
	1 st	2 nd	3 rd
All Industries	STF	FFH	SBMO
Construction	FFH	STF	SBMO
Marine	CIBO	SBFO	TA, SBMO
Manufacturing	STF	CIBO	SBMO
<i>Metalworking</i>	CIBO	STF, SBMO	-
<i>Manufacture of Food, Beverages & Tobacco</i>	STF	CSBO	SBMO
<i>Manufacture of Petrochemical Products</i>	CIBO, ETET, ETHS, FE	-	-
<i>Other Manufacturing</i>	CIBO	SBFO	STF, FFH, OESM, CSBO
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	STF	SBFO, SBMO	-
Transportation & Storage	STF	TA	SBMO
<i>Logistics & Transport</i>	STF	SBMO	SAO, SBFO
Accommodation & Food Service Activities	STF, ETET	-	TA
<i>Food & Beverage Service Activities</i>	ETET	STF	TA
<i>Accommodation</i>	STF	SAO, SBMO	-
Administrative & Support Service Activities	STF	SBMO	FFH
<i>Cleaning & Landscape Maintenance Activities</i>	STF	FFH	SBMO
<i>Security & Investigation Activities</i>	STF	SBMO	-
Wholesale & Retail Trade	STF	ETET	CIBO
<i>Wholesale Trade</i>	STF	CIBO, ETHS	-
<i>Retail Trade</i>	STF, ETET	-	FFH
Real Estate Activities	STF	FFH	ETET, ETEC, PA, SBMO
Professional, Scientific & Technical Activities	STF	FFH	ETET, SAO, SBMO
Community, Social & Personal Services	STF	OESM	FFH, SBMO
<i>Health & Social Services</i>	STF	OESM	ETET
<i>Education</i>	STF	FFH	CIBO, CSBO, ETET, SBFO, SBMO
<i>Other Services Activities</i>	STF	SBFO	CIBO, ETHS, OESM, SAO, SBMO

Legend:

CIBO	Caught In/Between Objects	ETHS	Exposure to/ Contact with Hazardous Substances	SAO	Strike Against Objects
CSBO	Cut/Stabbed by Objects	FE	Fires & Explosion	SBFO	Struck by Falling Objects
CFOS	Collapse/Failure of Structures	FFH	Falls from Height	SBMO	Struck by Moving Objects
ETEC	Exposure to/ Contact with Electric Current	OESM	Over-exertion and Strenuous Movements	STF	Slips, Trips and Falls
ETET	Exposure to/ Contact with Extreme Temperature	OTH	Other Incident Types	TA	Traffic Accidents
ETBM	Exposure to/ Contact with Biological Materials	PA	Physical Assault		

Table 14: Number of workplace minor injuries by selected industry, 2019 - 2021

Industry	2019	2020	2021	2021 [N]
All Industries	13,111	10,857	12,119	21,539
Manufacturing	2,777	2,330	2,670	4,223
<i>Metalworking</i>	1,169	939	1,077	1,681
<i>Manufacture of Food, Beverages & Tobacco</i>	554	505	519	801
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	190	155	176	266
<i>Manufacture of Computer, Electronic & Optical Products</i>	158	150	170	329
Construction	2,387	1,674	2,258	3,799
Accommodation & Food Service Activities	1,571	1,245	1,294	2,488
<i>Food & Beverage Service Activities</i>	1,116	944	992	1,802
<i>Accommodation</i>	455	301	302	686
Transportation & Storage	1,185	971	1,046	1,663
<i>Logistics & Transport</i>	892	704	820	1,256
Administrative & Support Service Activities	882	850	912	1,501
<i>Cleaning & Landscape Maintenance Activities</i>	414	404	476	769
<i>Security & Investigation Activities</i>	215	203	204	376
Wholesale & Retail Trade	824	764	804	1,353
<i>Wholesale Trade</i>	384	360	406	561
<i>Retail Trade</i>	440	404	398	792
Professional, Scientific & Technical Activities	496	365	363	742
Marine	337	234	267	524
Real Estate Activities	316	276	262	428
Financial & Insurance Services	195	136	122	247
Water Supply; Sewerage, Waste Management & Remediation Activities	140	169	116	193
Community, Social & Personal Services	1,846	1,656	1,837	3,922
<i>Health & Social Services</i>	705	807	884	2,308
<i>Education</i>	444	314	418	700
<i>Other Services Activities</i>	415	310	318	554
<i>Arts, Entertainment & Recreation</i>	196	140	149	250

[N] – New Series. All work injuries with any instance of medical leave or light duties.

Table 15: Workplace minor injury rates by selected industry, 2019 – 2021

Per 100,000 workers

Industry	2019	2020	2021	2021 [N]
All Industries	376	329	368	653
Manufacturing	663	594	689	1,089
<i>Metalworking</i>	1,099	921	1,061	1,656
<i>Manufacture of Food, Beverages & Tobacco</i>	1,055	1,037	1,026	1,583
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	662	585	693	1,047
<i>Manufacture of Computer, Electronic & Optical Products</i>	178	178	215	415
Construction	525	404	575	968
Accommodation & Food Service Activities	597	533	541	1,040
<i>Food & Beverage Service Activities</i>	492	456	463	840
<i>Accommodation</i>	1,240	1,123	1,218	2,766
Transportation & Storage	455	384	413	657
<i>Logistics & Transport</i>	794	673	771	1,182
Administrative & Support Service Activities	348	349	377	620
<i>Cleaning & Landscape Maintenance Activities</i>	520	524	621	1,003
<i>Security & Investigation Activities</i>	433	413	425	783
Wholesale & Retail Trade	170	166	178	300
<i>Wholesale Trade</i>	119	117	136	187
<i>Retail Trade</i>	274	267	261	520
Professional, Scientific & Technical Activities	196	143	140	287
Marine	498	382	480	942
Real Estate Activities	377	361	364	594
Financial & Insurance Services	98	67	59	119
Water Supply; Sewerage, Waste Management & Remediation Activities	n.a.	n.a.	n.a.	n.a.
Community, Social & Personal Services	217	207	228	487
<i>Health & Social Services</i>	419	464	475	1,240
<i>Education</i>	n.a.	n.a.	n.a.	n.a.
<i>Other Services Activities</i>	n.a.	n.a.	n.a.	n.a.
<i>Arts, Entertainment & Recreation</i>	340	333	387	649

[N] – New Series. All work injuries with any instance of medical leave or light duties.

Table 16: Types of workplace minor injury, 2019 - 2021

Workplace Minor Injury Types	2019	2020	2021	2021 [N]
Total	13,111	10,857	12,119	21,539
Cuts and Bruises	4,500	3,895	4,263	8,356
Crushing, Fractures and Dislocations	3,107	2,577	2,950	3,349
Sprains & Strains	1,982	1,791	1,829	3,622
Burns	459	394	397	823
Multiple Injuries	276	182	232	337
Puncture Wounds	168	150	182	320
Bites and Stings	102	82	85	273
Concussions	85	56	58	96
Mosquito Borne	14	55	23	24
Others	2,418	1,675	2,100	4,339

[N] – New Series. All work injuries with any instance of medical leave or light duties.

Table 17: Number of workplace minor injuries by key incident type and key incident agent, 2019 - 2021

Incident Type	Incident Agent	2019	2020	2021	2021 [N]
Total Workplace Minor Injuries		13,111	10,857	12,119	21,539
Falls	Total	4,313	3,711	4,037	6,406
Slips, Trips & Falls	Total	3,694	3,318	3,565	5,785
	<i>Physical Workplace - Floors/Level Surfaces</i>	2,008	1,899	1,888	3,079
	<i>Means of Access - Stairs or Steps</i>	604	501	497	805
Falls from Height	<i>Vehicles</i>	282	235	335	434
	Total	619	393	472	621
	<i>Means of Access - Ladders</i>	431	307	372	483
	<i>Means of Access - Scaffold</i>	55	40	36	52
Struck by Moving Objects	<i>Physical Workplace - Structure</i>	47	29	33	45
	Total	2,207	1,773	2,056	3,771
	<i>Metal Items (excluding knives/needles)</i>	452	381	506	878
	<i>Industrial Hand Tools</i>	455	330	384	711
Cut/Stabbed by Objects	<i>Vehicles</i>	339	280	327	492
	Total	1,452	1,115	1,299	2,111
	<i>Knives & Needles</i>	625	491	537	934
	<i>Industrial Hand Tools</i>	277	222	270	439
Struck by Falling Objects	<i>Industrial Machines</i>	305	220	298	379
	Total	1,093	869	942	1,667
	<i>Metal Items (excluding knives/needles)</i>	335	305	320	538
	<i>Goods/Cargo</i>	143	113	139	254
Caught in/ between Objects	<i>Furniture & Fittings</i>	166	123	103	225
	Total	934	768	933	1,438
	<i>Industrial Machines</i>	269	240	272	370
	<i>Metal Items (excluding knives/needles)</i>	207	172	224	379
Over-exertion/Strenuous Movements	<i>Furniture & Fittings</i>	112	80	113	210
	Total	902	790	908	1,732
	<i>Human Factors</i>	561	466	501	949
	<i>Goods/Cargo</i>	186	179	219	425
Striking against Objects	<i>Vehicles</i>	23	20	38	51
	Total	784	638	689	1,442
	<i>Others - Metal Items (excluding knives/needles)</i>	241	175	233	459
	<i>Others - Furniture & Fittings</i>	184	181	162	377
Exposure to Extreme Temperatures	<i>Industrial Machines</i>	71	57	54	128
	Total	398	351	353	740
	<i>Hot scalding liquid / Steam</i>	320	274	281	575
	<i>Industrial Machines</i>	24	23	24	48
	<i>Welding Equipment</i>	5	9	8	14

[N] – New Series. All work injuries with any instance of medical leave or light duties.

Table 18: Top 3 incident types for workplace minor injuries by industry, 2021

Industry	Top 3 Incident Types		
	1 st	2 nd	3 rd
All Industries	STF	SBMO	CSBO
Construction	SBMO	STF	SBFO
Marine	SBMO	STF	CIBO
Manufacturing	STF	SBMO	CSBO
<i>Metalworking</i>	SBMO	CIBO	STF
<i>Manufacture of Food, Beverages & Tobacco</i>	STF	CSBO	SBMO
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	STF	CSBO	CIBO, SBMO
<i>Manufacture of Computer, Electronic & Optical Products</i>	STF	SBMO	CIBO
Accommodation & Food Service Activities	STF	CSBO	ETET
<i>Food & Beverage Service Activities</i>	CSBO	STF	ETET
<i>Accommodation</i>	STF	CSBO	SBMO
Transportation & Storage	STF	SBMO	CIBO
<i>Logistics & Transport</i>	STF	SBMO	CIBO
Administrative & Support Service Activities	STF	SBMO	CSBO
<i>Cleaning & Landscape Maintenance Activities</i>	STF	SBMO	CSBO
<i>Security & Investigation Activities</i>	STF	SBMO	OESM
Wholesale & Retail Trade	STF	SBMO	CSBO
<i>Wholesale Trade</i>	STF	SBMO	OESM
<i>Retail Trade</i>	STF	CSBO, SBMO	-
Professional, Scientific & Technical Activities	STF	SBMO	OESM
Real Estate Activities	STF	SBMO	OESM
Water Supply; Sewerage, Waste Management & Remediation Activities	STF	SBMO	SBFO
Financial & Insurance Services	STF	CSBO, SBMO	-
Community, Social & Personal Services	STF	OESM	SBMO
<i>Health & Social Services</i>	STF	OESM	PA
<i>Education</i>	STF	SBMO	OESM
<i>Other Services Activities</i>	STF	SBMO	OESM
<i>Arts, Entertainment & Recreation</i>	STF	ETBM	SBMO

Legend:

CIBO	Caught In/Between Objects	ETHS	Exposure to/ Contact with Hazardous Substances	SAO	Strike Against Objects
CSBO	Cut/Stabbed by Objects	FE	Fires & Explosion	SBFO	Struck by Falling Objects
CFOS	Collapse/Failure of Structures	FFH	Falls from Height	SBMO	Struck by Moving Objects
ETEC	Exposure to/ Contact with Electric Current	OESM	Over-exertion and Strenuous Movements	STF	Slips, Trips and Falls
ETET	Exposure to/ Contact with Extreme Temperature	OTH	Other Incident Types	TA	Traffic Accidents
ETBM	Exposure to/ Contact with Biological Materials	PA	Physical Assault		

Table 19: Top 3 incident types for workplace minor injuries by industry, 2021[N]

Industry	Top 3 Incident Types		
	1 st	2 nd	3 rd
All Industries	STF	SBMO	CSBO
Construction	SBMO	STF	SBFO
Marine	SBMO	STF	CIBO
Manufacturing	SBMO	STF	CSBO
<i>Metalworking</i>	SBMO	CIBO	STF
<i>Manufacture of Food, Beverages & Tobacco</i>	STF	CSBO	SBMO
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	STF	SBMO	CSBO
<i>Manufacture of Computer, Electronic & Optical Products</i>	STF	SBMO	CIBO
Accommodation & Food Service Activities	STF	CSBO	ETET
<i>Food & Beverage Service Activities</i>	CSBO	STF	ETET
<i>Accommodation</i>	STF	CSBO	SBMO
Transportation & Storage	STF	SBMO	OESM
<i>Logistics & Transport</i>	STF	SBMO	CIBO
Administrative & Support Service Activities	STF	SBMO	CSBO
<i>Cleaning & Landscape Maintenance Activities</i>	STF	SBMO	CSBO
<i>Security & Investigation Activities</i>	STF	SBMO	OESM
Wholesale & Retail Trade	STF	SBMO	CSBO
<i>Wholesale Trade</i>	STF	SBMO	OESM
<i>Retail Trade</i>	STF	CSBO	SBMO
Professional, Scientific & Technical Activities	STF	SBMO	OESM
Real Estate Activities	STF	SBMO	CSBO
Water Supply; Sewerage, Waste Management & Remediation Activities	STF	SBMO	SBFO
Financial & Insurance Services	STF	SBMO	CSBO, OESM
Community, Social & Personal Services	STF	OESM	PA
<i>Health & Social Services</i>	STF	PA	OESM
<i>Education</i>	STF	SBMO	OESM
<i>Other Services Activities</i>	STF	SBMO	OESM
<i>Arts, Entertainment & Recreation</i>	STF	ETBM	SBMO

[N] – New Series. All work injuries with any instance of medical leave or light duties.

Legend:

CIBO	Caught In/Between Objects	ETHS	Exposure to/ Contact with Hazardous Substances	SAO	Strike Against Objects
CSBO	Cut/Stabbed by Objects	FE	Fires & Explosion	SBFO	Struck by Falling Objects
CFOS	Collapse/Failure of Structures	FFH	Falls from Height	SBMO	Struck by Moving Objects
ETEC	Exposure to/ Contact with Electric Current	OESM	Over-exertion and Strenuous Movements	STF	Slips, Trips and Falls
ETET	Exposure to/ Contact with Extreme Temperature	OTH	Other Incident Types	TA	Traffic Accidents
ETBM	Exposure to/ Contact with Biological Materials	PA	Physical Assault		

Table 20: Number of dangerous occurrences by industry, 2019 - 2021

Industry	2019	2020	2021
All Industries	21	10	13
Construction	10	5	8
<i>Manufacturing</i>	3	2	2
<i>Manufacture of Petrochemical Products</i>	1	1	1
<i>Other Manufacturing</i>	0	0	1
<i>Manufacture of Other Transport Equipment excl Building & Repairing of Ships & Boats</i>	0	1	0
<i>Manufacture of Computer, Electronic & Optical Products</i>	1	0	0
<i>Printing & Reproduction of Recorded Media</i>	1	0	0
Transportation & Storage	1	1	2
<i>Logistics & Transport</i>	1	1	1
Water Supply; Sewerage, Waste Management & Remediation Activities	0	1	1
Administrative & Support Service Activities	0	1	0
<i>Cleaning & Landscape Maintenance Activities</i>	0	1	0
Marine	4	0	0
Wholesale & Retail Trade	2	0	0
<i>Retail Trade</i>	2	0	0
Accommodation & Food Service Activities	1	0	0
<i>Food & Beverage Service Activities</i>	1	0	0

Table 21: Types of dangerous occurrences, 2019 - 2021

Incident Type	Incident Agent	2019	2020	2021
Total Dangerous Occurrences		21	10	13
Collapse/Failure of Structure & Equipment	Total	13	7	9
	<i>Lifting Equipment - Cranes</i>	8	6	4
	<i>Lifting Equipment - Others</i>	0	0	2
	<i>Lifting Equipment - Piling Machines</i>	1	0	1
	<i>Lifting Equipment - Mobile Work Platform</i>	2	1	0
	<i>Lifting Equipment - Lifts & Hoists</i>	1	0	0
	<i>Physical Workplace – Formwork</i>	1	0	2
Fires & Explosion	Total	8	3	4
	<i>Explosives/ Flammable Substances</i>	1	2	2
	<i>Dust, Gas, Liquid & Chemicals</i>	2	1	1
	<i>Electrical Installation</i>	0	0	1
	<i>Pressurised Equipment</i>	2	0	0
	<i>Goods/Cargo</i>	1	0	0
	<i>Other Incident Agents</i>	2	0	0

Table 22: Number of confirmed occupational diseases cases by selected industry, 2019 - 2021

Industry	2019	2020	2021
All Industries	517	594	659
Manufacturing	163	101	165
<i>Metalworking</i>	43	36	61
<i>Manufacture of Food, Beverages & Tobacco</i>	24	20	21
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	7	6	21
Construction	63	65	97
Accommodation & Food Service Activities	44	55	44
<i>Food & Beverage Service Activities</i>	26	35	31
<i>Accommodation</i>	18	20	13
Transportation & Storage	68	51	57
<i>Logistics & Transport</i>	44	31	42
Wholesale & Retail Trade	26	26	34
<i>Wholesale Trade</i>	17	12	13
<i>Retail Trade</i>	9	14	21
Administrative & Support Service Activities	17	21	25
<i>Cleaning & Landscape Maintenance Activities</i>	5	8	12
<i>Security & Investigation Activities</i>	1	8	5
Professional, Scientific & Technical Activities	22	21	22
Marine	10	11	34
Financial & Insurance Services	11	10	18
Water Supply; Sewerage, Waste Management & Remediation Activities	4	5	4
Real Estate Activities	4	6	5
Electricity, Gas & Air-Conditioning Supply	6	7	9
Community, Social & Personal Services	74	112	139
<i>Health & Social Services</i>	48	79	107
<i>Other Services Activities</i>	12	21	13
<i>Education</i>	10	8	9
<i>Arts, Entertainment & Recreation</i>	3	4	7

Table 23: Occupational diseases incidence rates by Selected industry, 2019 – 2021

Per 100,000 workers

Industry	2019	2020	2021
All Industries	14.8	15.0	20.0
Manufacturing	38.9	25.7	42.6
<i>Metalworking</i>	40.4	35.3	60.1
<i>Manufacture of Food, Beverages & Tobacco</i>	45.7	41.1	41.5
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	24.4	22.6	82.7
Construction	13.9	15.7	24.7
Accommodation & Food Service Activities	16.7	23.5	18.4
<i>Food & Beverage Service Activities</i>	11.5	16.9	14.5
<i>Accommodation</i>	49.0	74.6	52.4
Transportation & Storage	26.1	20.2	22.5
<i>Logistics & Transport</i>	39.2	29.6	39.5
Wholesale & Retail Trade	5.4	5.6	7.5
<i>Wholesale Trade</i>	5.3	3.9	4.3
<i>Retail Trade</i>	5.6	9.3	13.8
Administrative & Support Service Activities	6.7	8.6	10.3
<i>Cleaning & Landscape Maintenance Activities</i>	6.3	10.4	15.6
<i>Security & Investigation Activities</i>	2.0	16.3	10.4
Professional, Scientific & Technical Activities	8.7	8.2	8.5
Marine	14.8	18.0	61.2
Financial & Insurance Services	5.5	4.9	8.7
Water Supply; Sewerage, Waste Management & Remediation Activities	n.a.	n.a.	n.a.
Real Estate Activities	4.8	7.8	6.9
Electricity, Gas & Air-Conditioning Supply	n.a.	n.a.	n.a.
Community, Social & Personal Services	8.7	14.0	17.2
<i>Health & Social Services</i>	28.5	45.4	57.5
<i>Other Services Activities</i>	n.a.	n.a.	n.a.
<i>Education</i>	n.a.	n.a.	n.a.
<i>Arts, Entertainment & Recreation</i>	5.2	9.5	18.2

Table 24: Number of confirmed occupational diseases cases by type, 2019 - 2021

Occupational Diseases by Types	2019	2020	2021
Total	517	494	659
Work-related Musculoskeletal Disorders	293	328	379
<i>Back injuries due to ergonomic risks</i>	279	307	323
<i>Tendinitis</i>	6	11	21
<i>Trigger Finger/Thumb</i>	4	4	6
<i>Nerve Disorder such as Carpal Tunnel Syndrome, Cubital Tunnel Syndrome</i>	3	4	8
<i>Lateral Epicondylitis (Tennis elbow)</i>	0	0	3
<i>Tenosynovitis</i>	1	0	0
<i>Others</i>	0	2	18
Noise-induced Deafness	169	110	168
<i>NID (E) - Early</i>	163	108	165
<i>NID (A) - Advanced</i>	6	2	3
Occupational Skin Disease	39	30	79
<i>Eczema</i>	36	29	74
<i>Others</i>	3	1	5
Infectious Disease	2	0	2
Barotrauma	2	6	8
<i>Aural</i>	0	5	4
<i>Sinus</i>	2	1	4
Occupational Lung Disease	4	5	2
<i>Occupational Asthma</i>	3	3	1
<i>Silicosis</i>	1	2	1
Compressed Air Illness	2	5	9
<i>CAI Type 1</i>	2	5	7
<i>CAI Type 2</i>	0	0	2
Heat Disorder	2	5	5
Poisoning	0	3	0
Cancers	2	2	5
<i>Mesothelioma</i>	2	1	5
<i>Occupational Lung Cancer</i>	0	1	0
Others	2	0	2

Table 25: Number of confirmed work-related musculoskeletal disorders cases by industry, 2019 - 2021

Industry	2019	2020	2021
All Industries	293	328	379
Manufacturing	43	49	66
<i>Metalworking</i>	9	18	23
<i>Manufacture of Food, Beverages & Tobacco</i>	8	12	13
<i>Manufacture of Computer, Electronic & Optical Products</i>	4	2	7
<i>Other Manufacturing</i>	9	4	6
<i>Manufacture of Furniture</i>	0	1	5
<i>Manufacture of Pharmaceutical and Biological Products</i>	2	0	4
Construction	37	35	45
Transportation & Storage	45	32	44
<i>Logistics & Transport</i>	34	23	29
Accommodation & Food Service Activities	39	54	41
<i>Food & Beverage Service Activities</i>	23	34	28
<i>Accommodation</i>	16	20	13
Wholesale & Retail Trade	21	25	30
<i>Wholesale Trade</i>	13	11	9
<i>Retail Trade</i>	8	14	21
Administrative & Support Service Activities	14	16	17
<i>Cleaning & Landscape Maintenance Activities</i>	5	7	10
<i>Security & Investigation Activities</i>	0	5	2
Professional, Scientific & Technical Activities	11	9	14
Financial & Insurance Services	10	7	9
Electricity, Gas & Air-Conditioning Supply	2	5	8
Real Estate Activities	4	5	5
Marine	2	5	5
Information & Communications	2	2	4
Community, Social & Personal Services	60	83	90
<i>Health & Social Services</i>	39	61	64
<i>Other Services Activities</i>	8	10	11
<i>Education</i>	9	8	7
<i>Arts, Entertainment & Recreation</i>	3	4	5

Table 26: Number of confirmed noise-induced deafness cases by industry, 2019 - 2021

Industry	2019	2020	2021
All Industries	169	110	168
Manufacturing	107	47	82
<i>Metalworking</i>	29	17	32
<i>Manufacture of Paper / Rubber / Plastic Products & Printing</i>	4	3	18
<i>Manufacture of Transport Equipment excluding Building & Repairing of Ships & Boats</i>	6	5	10
<i>Manufacture of Food, Beverages & Tobacco</i>	14	6	7
<i>Manufacture of Computer, Electronic & Optical Products</i>	2	2	6
Construction	20	13	29
Marine	5	4	25
Transportation & Storage	19	18	8
<i>Logistics & Transport</i>	7	7	8
Financial & Insurance Services	0	3	8
Administrative & Support Service Activities	0	4	6
Water Supply; Sewerage, Waste Management & Remediation Activities	0	4	4
Professional, Scientific & Technical Activities	7	10	3
Wholesale & Retail Trade	3	1	2
Electricity, Gas & Air-Conditioning Supply	4	2	1
Information & Communications	1	0	0
Community, Social & Personal Services	3	4	0
<i>Other Services Activities</i>	2	4	0
<i>Education</i>	1	0	0

Table 27: Number of confirmed occupational skin diseases cases by industry, 2019 - 2021

Industry	2019	2020	2021
All Industries	39	30	79
Manufacturing	12	2	14
<i>Metalworking</i>	4	0	4
<i>Other Manufacturing</i>	1	0	3
<i>Manufacture of Transport Equipment excluding Building & Repairing of Ships & Boats</i>	4	0	3
<i>Manufacture of Petrochemical Products</i>	0	1	2
<i>Manufacture of Food, Beverages & Tobacco</i>	2	1	1
Construction	3	3	8
Transportation & Storage	2	0	4
<i>Logistics & Transport</i>	1	0	4
Accommodation & Food Service Activities	5	1	3
Administrative & Support Service Activities	1	1	2
Wholesale & Retail Trade	1	0	2
Professional, Scientific & Technical Activities	1	1	1
Financial & Insurance Services	0	0	1
Marine	2	0	0
Community, Social & Personal Services	10	22	44
<i>Health & Social Services</i>	8	18	40
<i>Other Service Activities</i>	2	4	2
<i>Arts, Entertainment & Recreation</i>	0	0	1
<i>Education</i>	0	0	1

Table 28: Top Causative Agents of Occupational Skin Diseases, 2021

Causative Agents	No. of Cases
All Occupational Skin Diseases	79
Alcohol	27
Cement	6
Foodstuff	3
Oils	3

Table 29: Number of man-days lost²⁴ to workplace incidents in selected industries, 2019 - 2021

Industry	2019	2020	2021	2021 [N]*
All Industries	544,664	417,063	512,017	530,858
Construction	148,319	92,704	142,238	144,804
Marine	34,680	16,887	13,676	14,058
Manufacturing	90,649	94,612	91,988	95,208
<i>Metalworking</i>	46,369	31,549	28,850	30,092
<i>Manufacture of Food, Beverages & Tobacco</i>	11,707	11,570	13,084	13,706
<i>Manufacture of Petrochemical Products</i>	7,956	21,351	3,859	4,034
Water Supply; Sewerage, Waste Management & Remediation Activities	8,597	24,335	20,627	20,794
Wholesale & Retail Trade	32,349	27,605	23,517	24,713
<i>Wholesale Trade</i>	21,473	19,675	15,742	16,090
<i>Retail Trade</i>	10,876	7,930	7,775	8,623
Transportation & Storage	80,678	54,605	84,009	85,339
<i>Logistics & Transport</i>	43,572	42,557	47,255	48,203
Accommodation & Food Service Activities	35,705	19,206	19,510	22,086
<i>Accommodation</i>	8,256	4,892	5,137	5,889
<i>Food & Beverage Service Activities</i>	27,449	14,314	14,373	16,197
Information & Communications	1,302	767	1,100	1,236
Financial & Insurance Services	4,456	4,367	3,408	3,660
Real Estate Activities	12,864	10,831	23,095	23,476
Professional, Scientific & Technical Activities	10,005	8,232	10,535	11,281
Administrative & Support Service Activities	31,474	21,497	20,714	22,016
<i>Cleaning & Landscape Maintenance Activities</i>	8,758	13,230	11,800	12,449
<i>Security & Investigation Activities</i>	5,195	3,599	3,481	3,844
Community, Social & Personal Services	45,164	39,361	49,820	53,953
<i>Health & Social Services</i>	21,577	14,461	17,117	19,853
<i>Education</i>	9,279	6,226	10,585	11,192
<i>Other Services Activities</i>	8,816	8,373	18,472	18,966
<i>Arts, Entertainment & Recreation</i>	3,437	8,494	1,893	2,108

[N] – New Series. All work injuries with any instance of medical leave or light duties.

* Includes only work injuries with any instance of medical leave.

²⁴ For the purpose of this publication, MOM considers a fatal injury as equivalent to the loss of 6,000 man-days, similar to the U.S. National Institute of Occupational Safety and Health (NIOSH)'s table of scheduled charges.

ANNEX B

BUSINESS UNDER SURVEILLANCE

The Business under Surveillance (BUS) programme consists of two phases – Assessment and Surveillance.

The Assessment phase involves rigorous and methodical review on companies that are of concern to ascertain the effectiveness of their Risk Management programme as well as the strength of their WSH Management Systems.

Companies that fail the Assessment phase would be placed under the Surveillance phase. During the Surveillance phase, the Occupational Safety and Health Division (OSHD) of Ministry of Manpower (MOM) works closely with the senior management and WSH personnel of these BUS companies to carry out a gap analysis and to develop outcome-based action plans.

OSHD then conducts frequent inspections to verify the progress of the companies' implementation of their action plans and closely monitors the companies' WSH performance. BUS companies can only exit from the programme upon successful implementation of their Action Plan, achieved satisfactory audit outcomes, and have plans to build a strong WSH culture within the company.

ANNEX C

HYGIENE AND MEDICAL SURVEILLANCE

HYGIENE SURVEILLANCE

Measuring the exposure levels of specific workplace chemical hazards provide a good indication on whether the conditions in the work environment are within the Permissible Exposure Levels (PEL), as stipulated under the WSH (General Provisions) Regulations. Companies with chemical exposures exceeding 10% PEL are required to monitor the exposure levels at least annually, conducted by a competent person.

Under the WSH (Noise) Regulations, workplaces with 10 or more workers who are exposed to excessive noise are required to monitor their workers' noise exposure at least once every three years, or earlier when there are changes to the processes. The monitoring must be conducted by a competent person using calibrated equipment to ensure accuracy of results.

Industrial hygiene data from assessments conducted by MOM and results submitted by companies with in-plant monitoring are maintained within a National Database for Noise and Chemical Exposure. This enables MOM to proactively identify high-risk workplaces, evaluate trends in exposure levels and advise employers on control measures and appropriate monitoring programmes.

MEDICAL SURVEILLANCE

The Medical Surveillance Programme serves to monitor workers' exposure to specific hazards and to identify early and possibly reversible changes in health effects. The programme aims to prevent overt occupational diseases through early detection of cases with excessive occupational exposure to specific health hazards. It involves monitoring of workers' health and implementation of measures to minimise the risks. High-risk workplaces would be monitored more rigorously to ensure control measures are put in place.

This monitoring assesses the "internal dose" of the worker and the effects from exposure by determining:

- a) The concentrations of the chemicals or their metabolites in biological samples (measuring the absorption or body burden) indirectly via blood, urine, and/or end-exhaled air.
- b) The indicators of health effect related to the internal dose so as to identify early and reversible changes, such as degree of hearing loss, and effects on liver and kidney.

Central to the Medical Surveillance Programme is the WSH (Medical Examinations) Regulations which prescribe a list of 19 hazards requiring medical examinations which can only be conducted by Designated Workplace Doctors (DWDs) registered with MOM. In addition, Occupational Safety and Health Division (OSHD) of the MOM may also recommend the implementation of medical surveillance programmes for non-prescribed hazards if the health risk is significant and where biological indicators are available. Some of these hazards include toluene, trinitrotoluene, xylene, fluoride and hexane.

Based on the findings of the medical examinations, workers who are medically unfit or who are over-exposed to chemicals are suspended, either on a temporary or permanent basis. The objective is to ensure that all exposed workers remain healthy and fit for work while exposed to the hazards. Medical monitoring is conducted once every six months for lead and organophosphate, and annually for all other hazards.

ANNEX D

SOURCE OF DATA

Data on workplace and work-related traffic injuries, dangerous occurrences and occupational diseases were collated from incident reports made by employers, occupiers, medical practitioners and private insurers in fulfilment of their obligations under the Workplace Safety and Health Act and Workplace Safety and Health (Incident Reporting) Regulations.

Medical and Hygiene Surveillance data were collated from reports submitted to OSHD, MOM as well as industrial hygiene data from assessments conducted by OSHD, MOM. Business Under Surveillance information was obtained from OSHD, MOM.

Employment data used in the computation of workplace fatal, injury and occupational disease incidence rates and data on the average weekly hours worked used in the estimation of man-hours worked were extracted from records within the Ministry of Manpower.

ANNEX E

DATA COVERAGE

The types of workplace and work-related traffic injuries and occupational diseases covered in the reported statistics include the following:

- Workplace and work-related traffic injuries sustained by employees and resulting in any instance of medical leave or light duties;
 - Workplace and work-related traffic injuries sustained by employees and resulting in at least 24 hours of hospitalisation;
 - Workplace and work-related traffic incidents resulting in the death of employees and self-employed persons;
 - Workplace and work-related traffic incidents resulting in the injury of self-employed persons who have to be taken to the hospital for treatment; and
 - Occupational diseases listed in the Second Schedule of the Workplace Safety and Health Act and Work Injury Compensation Act.
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ANNEX F

CONCEPTS AND DEFINITIONS

Incident Type refers to the type of event which resulted in the injury of a victim. Where the event involves a chain of incidents, the incident type should be the one that triggered the chain of other incidents.

Incident Agent refers to the object or physical environment, which due to its hazardous nature/condition, leads to the occurrence of a particular type of incident. It is related to the incident, not injury.

Major Injuries refer to non-fatal injuries which are more severe in nature. Major injuries are defined using a combination of factors, including the nature of injury, part of the body injured, incident type and duration of medical leave. These include:

- amputation
 - blindness
 - deafness
 - paralysis
 - crushing, fractures and dislocations: head, back, chest, neck and hip
 - exposure to electric current
 - asphyxia/drowning
 - burns with more than 20 days of medical leave
 - concussion with more than 20 days of medical leave
 - mosquito borne diseases with more than 20 days of medical leave
 - virus outbreak with more than 20 days of medical leave
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