



Workplace Safety and Health Report 2017

National Statistics

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NOTATIONS

- : Nil or negligible
- n.a. : Not applicable/Not available
- * : Estimated rates. The employment data excludes self-employed persons.

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KEY FACTS

WORKPLACE FATAL INJURY RATE DROPPED TO 1.2 PER 100,000 EMPLOYED PERSONS; WORKPLACE MAJOR INJURY RATE REDUCED TO 16.9 AND WORKPLACE MINOR INJURY RATE DECREASED TO 351 PER 100,000 EMPLOYED PERSONS RESPECTIVELY IN 2017

The overall number of workplace injury¹ cases decreased to 12,498 cases, compared to 13,014 cases in 2016. The number of workplace fatal injury cases dropped to 42 cases in 2017 from 66 cases in 2016. 799 occupational disease cases were confirmed in 2017, an increase compared to 732 cases in 2016.

The number of workplace major injury cases decreased slightly in 2017 with 574 workers sustaining workplace major injuries compared to 594 in 2016. The number of workplace minor injury cases decreased in 2017 to 11,882 compared to 12,354 in 2016.

Table 1.1: Number of workplace injuries, dangerous occurrences and occupational diseases, 2016 and 2017

	2017	2016
Workplace Injuries	12,498	13,014
Fatal Injuries	42	66
Major Injuries	574	594
Minor Injuries	11,882	12,354
Dangerous Occurrences	35	45
Occupational Diseases (OD)	799	732

Table 1.2: Key safety and health indicators, 2016 and 2017

	2017	2016
Workplace Injury Rate²	369	382
Fatal Injury rate	1.2	1.9
Major Injury rate	16.9	17.4
Minor Injury rate	351	363
Accident Frequency Rate ³	1.6	1.6
Accident Severity Rate ⁴	69	86
Occupational Disease Incidence Rate⁵	23.6	21.5

Per 100,000 employed persons

¹ A **workplace injury** is any personal injury or death resulting from a workplace accident. Includes work-related traffic injuries. Please refer to Annexes D and E for the types of workplace injuries covered.

² Workplace Injury Rate = $\frac{\text{No. of Fatal and Non-Fatal Workplace Injuries}}{\text{No. of Employed Persons}} \times 100,000$

³ Accident Frequency Rate (AFR) = $\frac{\text{No. of Workplace Accidents Reported}}{\text{No. of Man-hours Worked}} \times 1,000,000$

⁴ Accident Severity Rate (ASR) = $\frac{\text{No. of Man Days Lost To Workplace Accidents}}{\text{No. of Man-hours Worked}} \times 1,000,000$

⁵ Occupational Disease Incidence Rate = $\frac{\text{No. of Occupational Disease Cases}}{\text{No. of Employed Persons}} \times 100,000$

In addition to reporting lagging indicators like workplace injury rates and occupational disease incidence rates, this report has included leading indicators from proactive activities. The proactive activities include 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.

Overview of the 2017 statistics on workplace safety and health are:

WORKPLACE INJURIES

- 42 workers were fatally injured, a rate of 1.2 per 100,000 employed persons.
- 574 workers sustained workplace major injuries, a rate of 16.9 per 100,000 employed persons.
- 11,882 workers sustained less severe injuries (i.e. minor injuries), a rate of 351 per 100,000 employed persons.
- 544,687 man-days were lost, a rate of 69 man-days lost per million man-hours worked (i.e. accident severity rate).
- 1.6 incidents occurred for every million man-hours worked (i.e. accident frequency rate).

DANGEROUS OCCURRENCES

- 35 dangerous occurrences (DO) were reported to MOM in 2017.

OCCUPATIONAL DISEASES

- 799 occupational disease (OD) cases were confirmed in 2017, with an incidence rate of 23.6 per 100,000 employed persons.
- Leading OD was work-related musculoskeletal disorders (WRMSD) with 337 cases, with inclusion of back injury cases due to ergonomic risks.
- Second most common OD was noise-induced deafness with 329 cases.

BUSINESS UNDER SURVEILLANCE

- 10 companies entered the surveillance phase under the Business under Surveillance (BUS) programme in 2017.

MEDICAL AND HYGIENE SURVEILLANCE

- 124,101 workers from 2,147 workplaces were monitored under the Medical Surveillance Programme.
 - Under the Hygiene Surveillance Programme, 83% of the workplaces had static noise levels greater than 85dBA.
-

OVERVIEW OF TRENDS

WORKPLACE INJURIES

For 2017, the overall number of reported⁶ injuries decreased by 4.0% compared to 2016 (Figure 1). Manufacturing sector had the highest overall injury rate since 2011, followed by Construction sector (Figure 2).

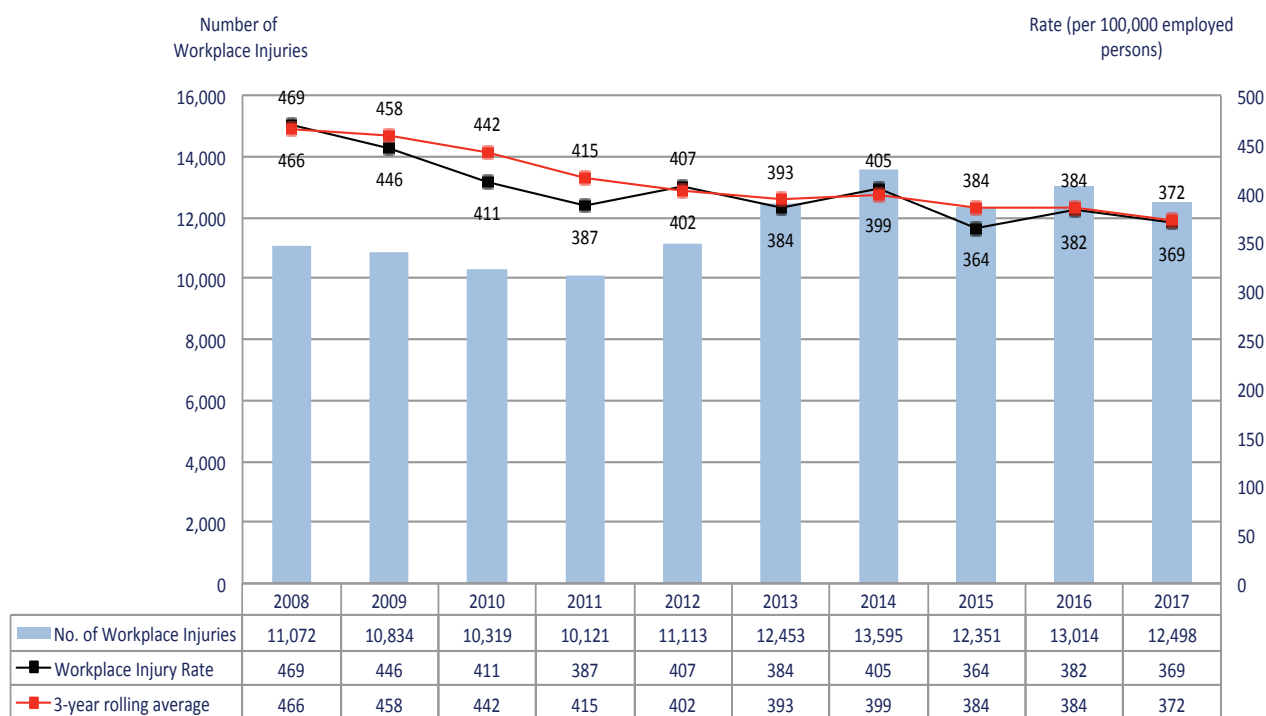


Figure 1: Workplace injury rate, 2008-2017

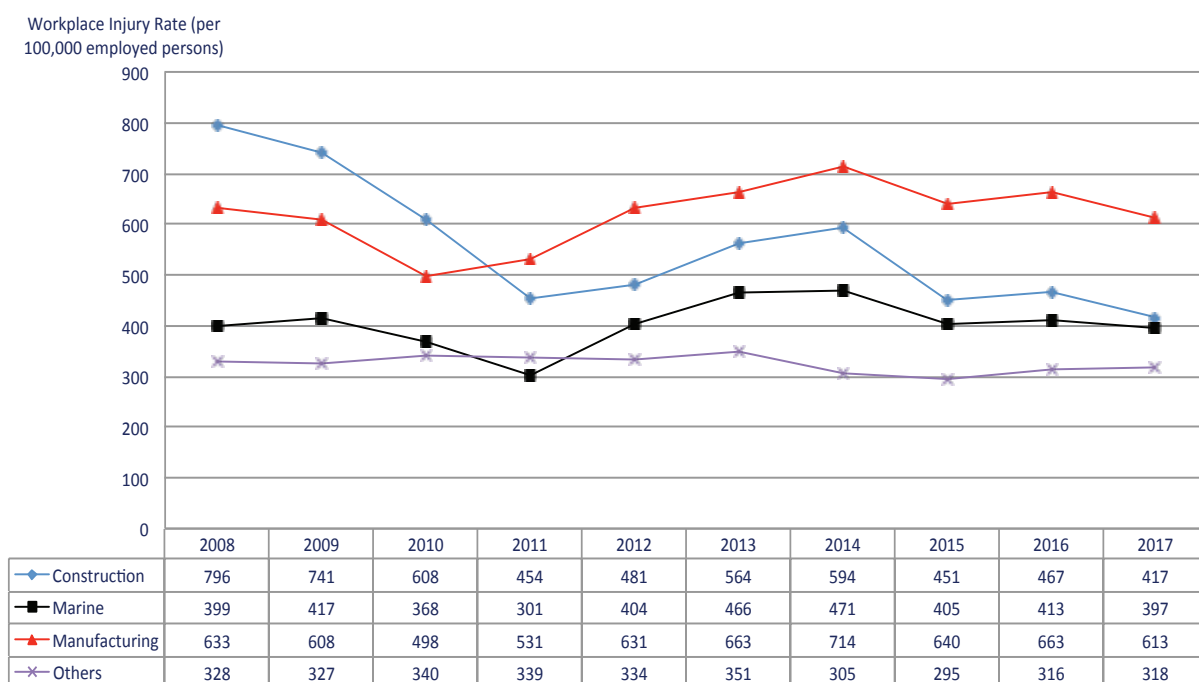


Figure 2: Workplace injury rate by industry, 2008-2017

⁶ Employer or Occupier has to report work incidents to the Ministry of Manpower under the WSH (Incident Reporting) Regulations.

WORKPLACE FATAL INJURIES

There were 42 workplace fatal injuries in 2017 compared 66 workplace fatal injuries in 2016 (Table 1.1). Workplace fatal injury rate decreased to 1.2 per 100,000 employed persons in 2017 (Figure 3). Overall, based on 3-year rolling average, the workplace fatal injury rate has been decreasing since 2008.

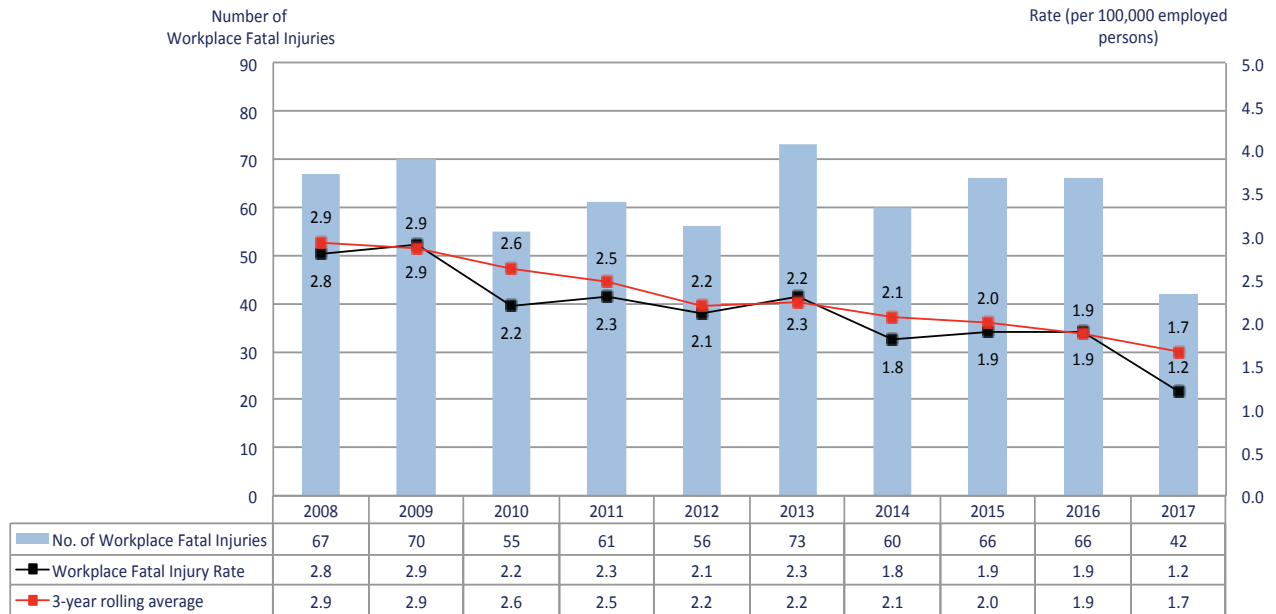


Figure 3: Workplace fatal injury rate, 2008-2017

Construction sector continued to be the top contributor with 29% of total workplace fatal injuries. The contribution from the Transportation & Storage sector remained the same as 17% in 2017, and it ties with Manufacturing sector as the second highest contributor (Figure 4). Contribution from Manufacturing sector has increased from 14% in 2016 to 17% in 2017.

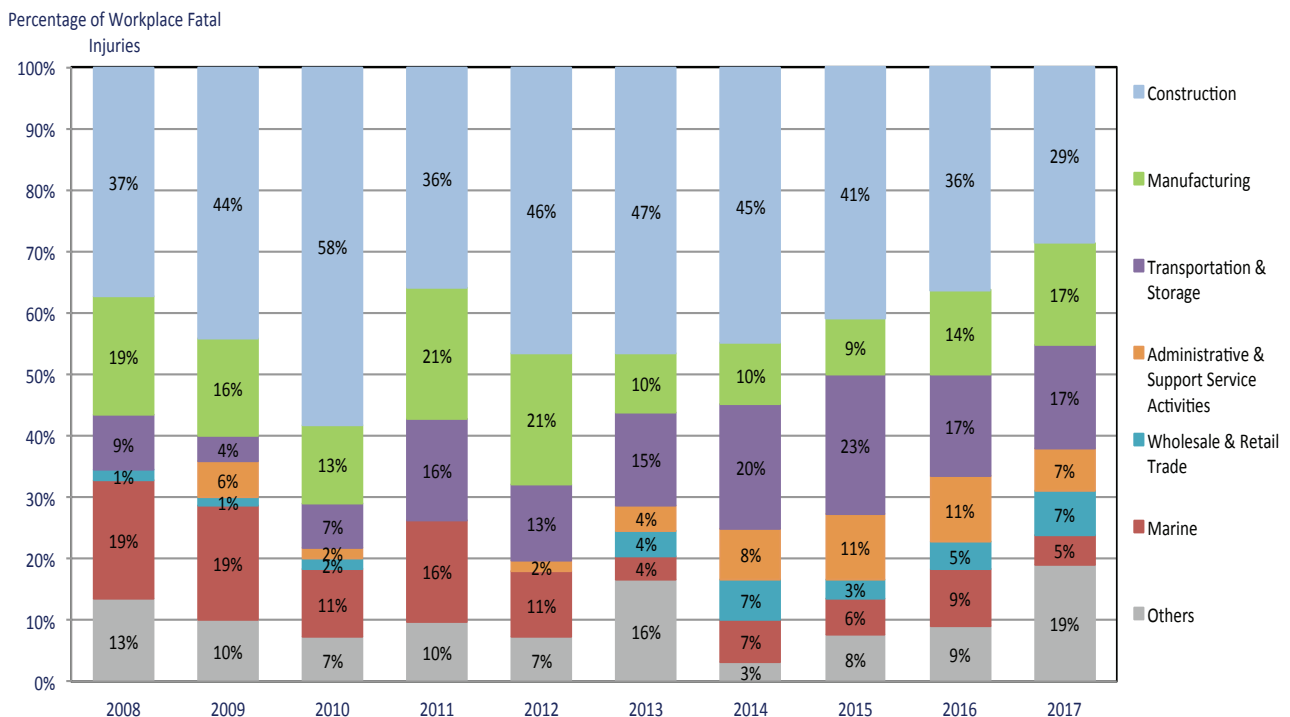
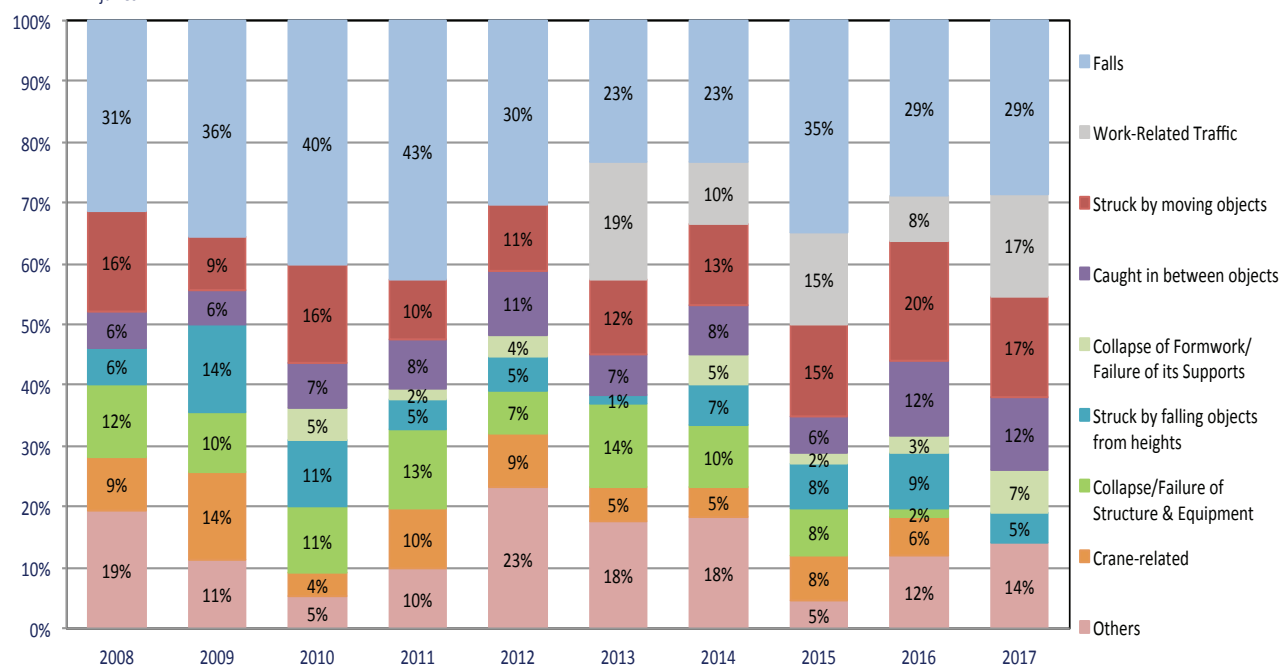


Figure 4: Proportion of workplace fatal injuries by industry, 2008-2017

Percentage of Workplace Fatal Injuries

**Figure 5: Proportion of workplace fatal injuries by incident type, 2008-2017****Note:**

Others included Drowning, Electrocution, Exposure to/contact with extreme temperatures, Fires & Explosion, Exposure to/contact with harmful substances, Physical Assault and Suffocation.

WORKPLACE FATAL INJURIES BY INCIDENT TYPES AND INCIDENT AGENTS

The top three incident types which accounted for 64% of all workplace fatal injuries in 2017 were (Table 1.5):

- Falls (Falls from Heights (FFH)⁷) (8 fatal injuries, 19%)
- Struck by Moving Objects (7 fatal injuries, 17%)
- Work-Related Traffic (7 fatal injuries, 17%)
- Caught in/ between Objects (5 fatal injuries, 12%)

⁷ Falls from heights (FFH) includes fall from roof, fall from mobile work platform, fall from scaffold, fall from ladder, fall from structure and fall into depths.

WORKPLACE FATAL INJURIES BY SECTOR

CONSTRUCTION

The workplace fatal injury rate in the Construction sector decreased from 4.9 per 100,000 employed persons in 2016 to 2.6 per 100,000 employed persons in 2017.

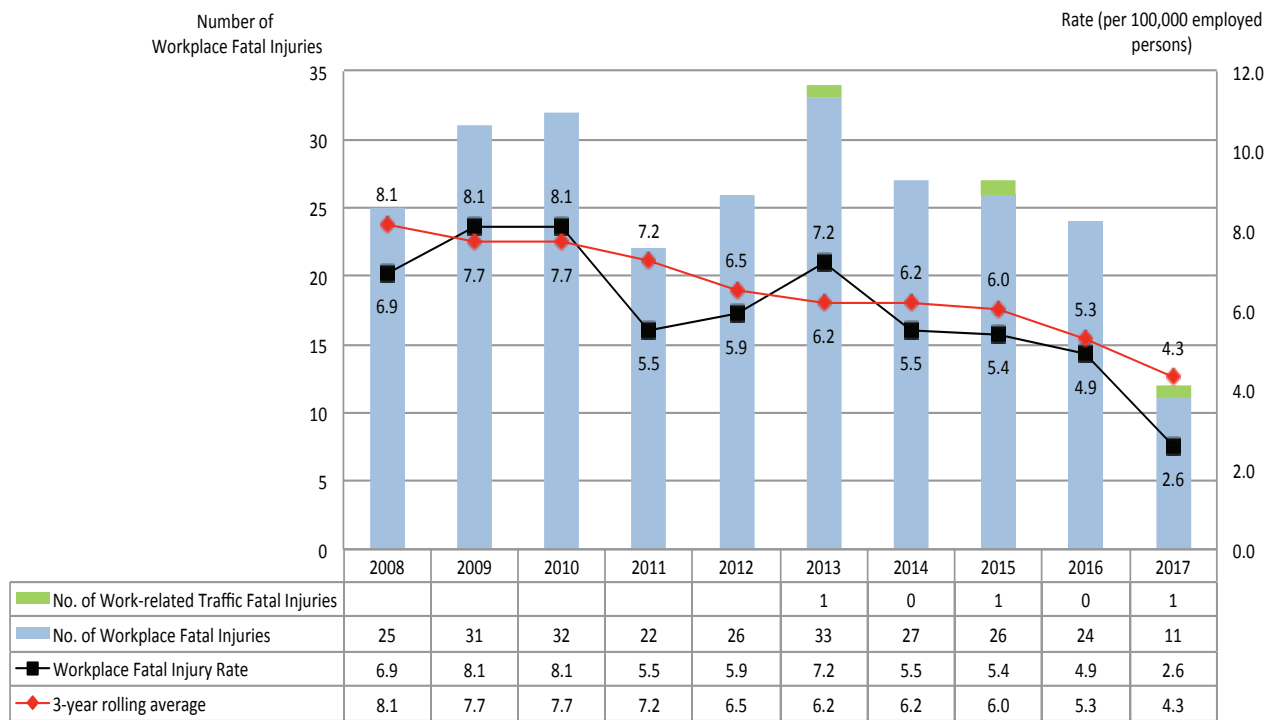


Figure 6: Workplace fatal injury rate for Construction sector, 2008-2017

MARINE

For the Marine⁸ sector, there were 2 workplace fatal injuries in 2017, down from 6 in 2016 (Table 1.3). The workplace fatal injury rate dropped from 6.7 per 100,000 employed persons in 2016 to 2.7 per 100,000 employed persons in 2017 (Table 1.4).

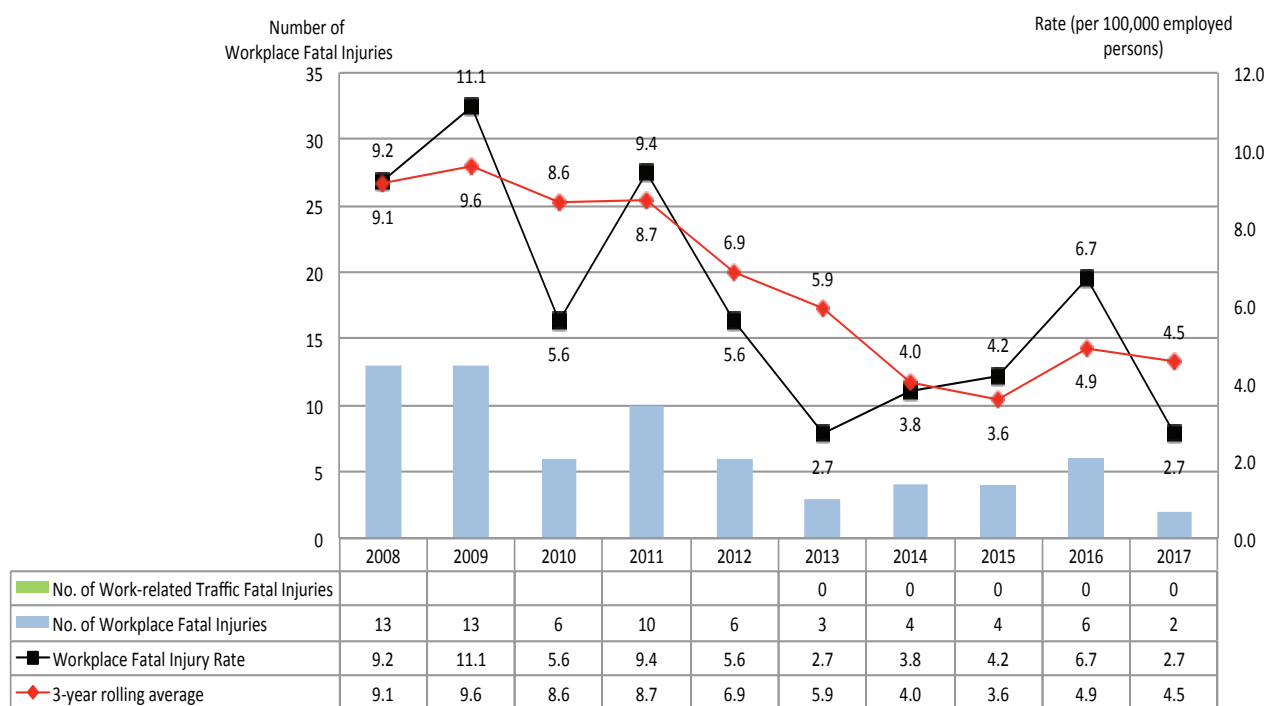


Figure 7: Workplace fatal injury rate for Marine sector, 2008-2017

⁸ The marine sector 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 7 workplace fatal injuries in 2017, down from 9 in 2016 (Table 1.3). The workplace fatal injury rate decreased to 1.7 per 100,000 employed persons in 2017 (Table 1.4).

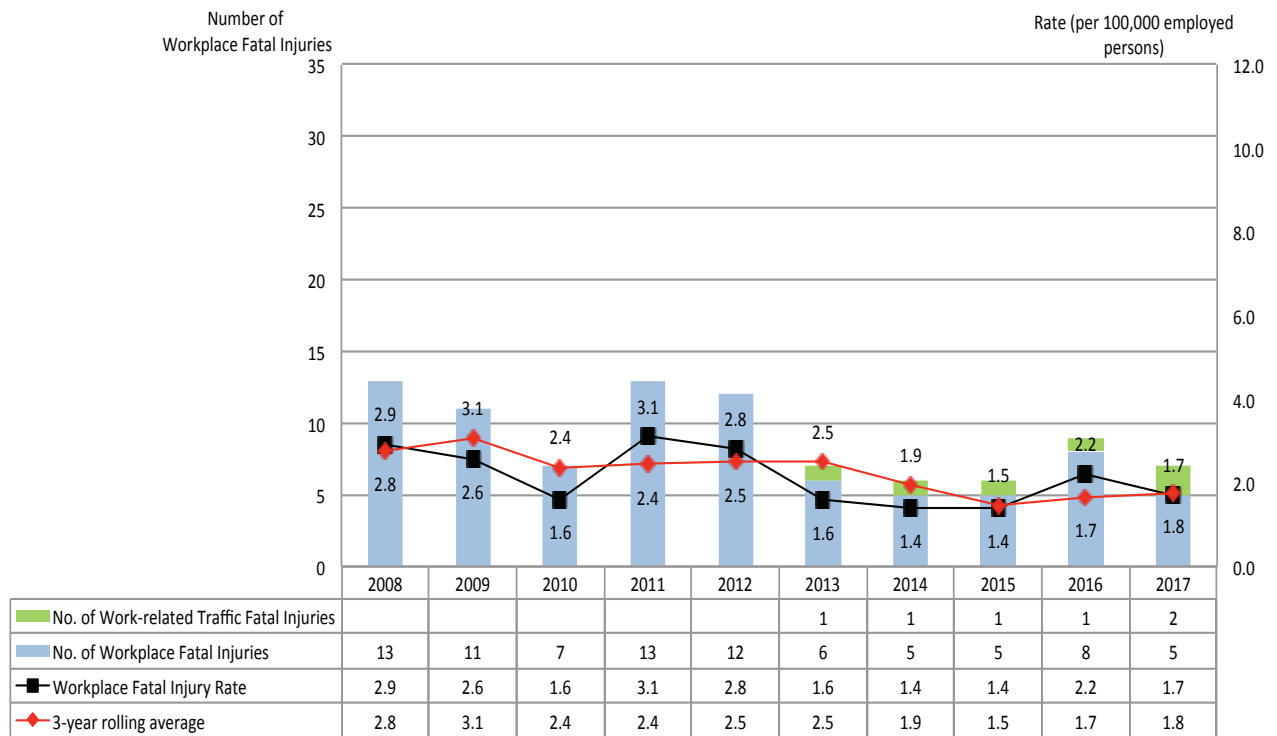


Figure 8: Workplace fatal injury rate for Manufacturing sector, 2008-2017

TRANSPORTATION & STORAGE

The number of workplace fatal injuries decreased from 11 cases in 2016 to 7 cases in 2017 (Table 1.3). The workplace fatal injury rate dropped from 4.6 per 100,000 employed persons in 2016 to 2.9 per 100,000 employed persons in 2017.

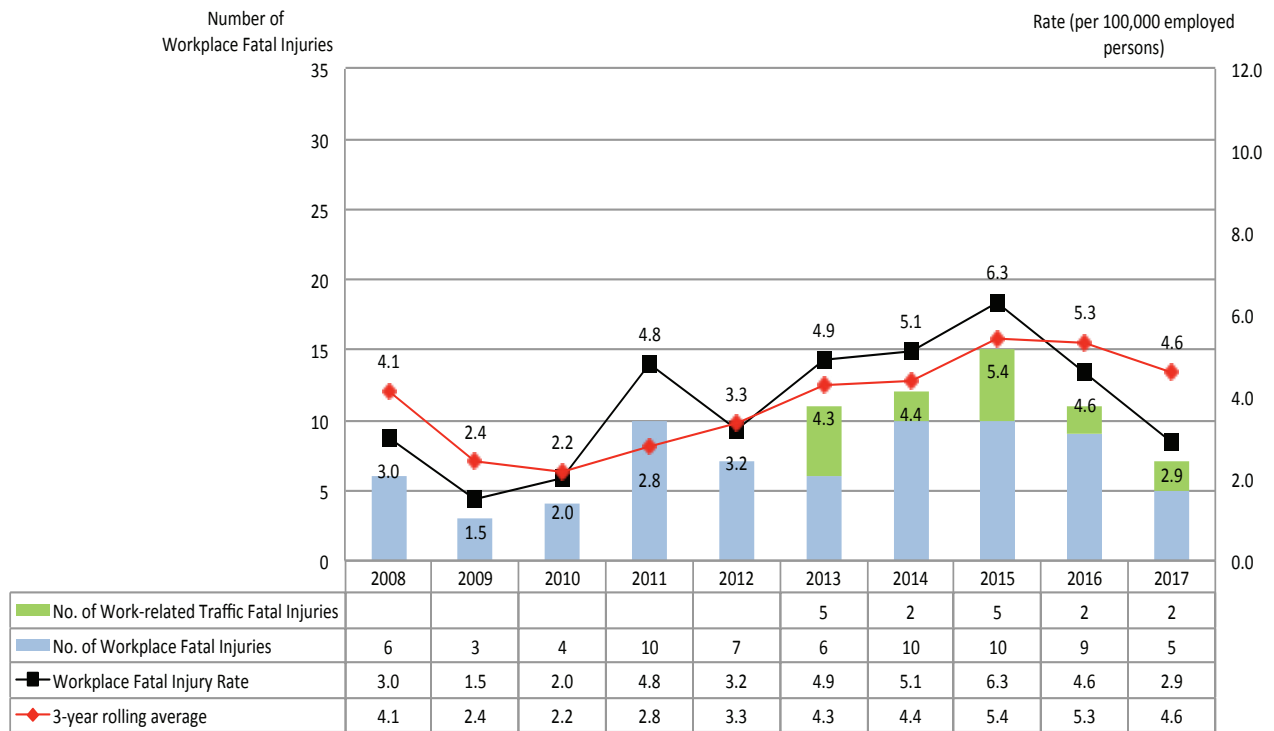


Figure 9: Workplace fatal injury rate for Transportation & Storage sector, 2008-2017

WORKPLACE MAJOR INJURIES

The number of workplace major injuries⁹ decreased from 594 cases (17.4 per 100,000 employed persons) in 2016 to 574 cases (16.9 per 100,000 employed persons) in 2017 (Figure 10).

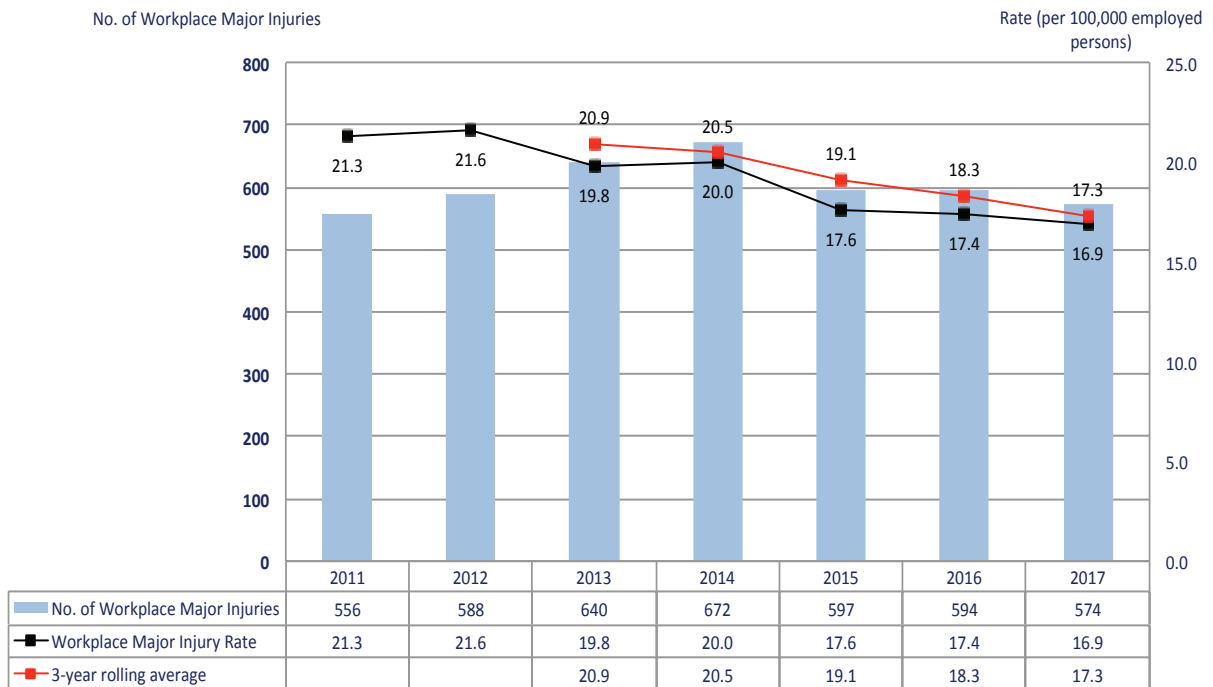


Figure 10: Workplace major injury rate, 2011-2017

WORKPLACE MAJOR INJURIES BY INJURY TYPES

Crushing, Fractures and Dislocations were the leading types of injury, accounting for 55% of all workplace major injuries.

This was followed by Amputations, with 125 workers suffering from complete loss or loss of use of any member/part of a member of the injured person's body in 2017. It decreased by 13% from 143 cases in 2016. 94% of the amputation cases involved the complete loss or partial loss of the use of hands (including fingers).

The number of Hypothermia/Burns cases with more than 20 MC days increased to 63 cases in 2017, compared to 57 cases in 2016 (Table 1.9).

WORKPLACE MAJOR INJURIES BY INCIDENT TYPES AND INCIDENT AGENTS

The top three incident types, accounting for 52% of workplace major injuries were (Table 1.10):

- Falls (Falls from Heights (FFH) (63 injuries, 11%), Slips, Trips & Falls¹⁰ (177 injuries, 31%))
- Caught in/between Objects (60 injuries, 10%)

⁹ Refer to Annex F for definition.

¹⁰ Slips, Trips and Falls includes Slips and Trips on same level/Fall from vehicle/stairs/steps/machines/other locations.

WORKPLACE MINOR INJURIES

Compared to 2016, there was a 3.8% decrease in the number of workplace minor injuries, from 12,354 (363 per 100,000 employed persons) in 2016 to 11,882 (351 per 100,000 employed persons) in 2017 (Figure 11).

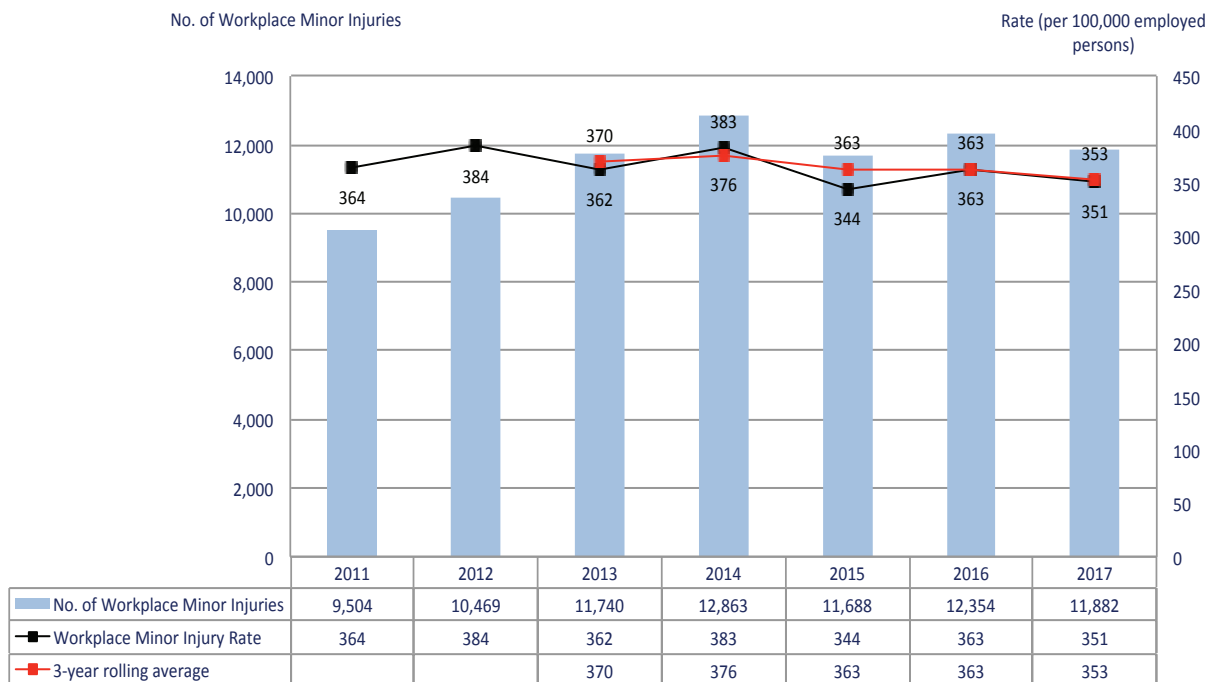


Figure 11: Workplace Minor injury rate, 2011-2017

WORKPLACE MINOR INJURIES BY INCIDENT TYPES AND INCIDENT AGENTS

The top three incident types that accounted for 57% of workplace minor injuries in 2017 were (Table 1.14):

- Falls (Slips, Trips and Falls (STF)) (3,323 injuries, 28%)
- Struck by Moving Objects (SBMO) (1,943 injuries, 16%)
- Cut/Stabbed by Objects (CSBO) (1,481 injuries, 12%)

WORKPLACE MINOR INJURIES BY INJURY TYPES

The top three types of injury that accounted for 77% of all workplace minor injuries were (Table 1.16):

- Cuts and Bruises (4,325 injuries, 36%)
- Crushing, Fractures and Dislocations (2,798 injuries, 24%)
- Sprains and Strains (1,974 injuries, 17%)

DANGEROUS OCCURRENCES

In 2017, there were 35 reported cases of dangerous occurrences (DO), a drop from 45 cases in 2016 (Figure 16). 66% (23) were due to Collapse/Failure of Structures & Equipment, of which 13 cases were incidents related to crane such as collapse, failure of wire ropes and safety devices. 34% (12) were from Fires and Explosion, a decrease from 18 cases in 2016 (Table 1.18).

DANGEROUS OCCURRENCES BY SECTOR

Construction sector was the top contributor for the DO cases, accounting for 46% of total DO cases reported in 2017 (Table 1.17). It decreased from 22 cases in 2016 to 16 cases in 2017. Manufacturing sector was the second top contributor with 10 cases in 2017, down from 11 cases in 2016.

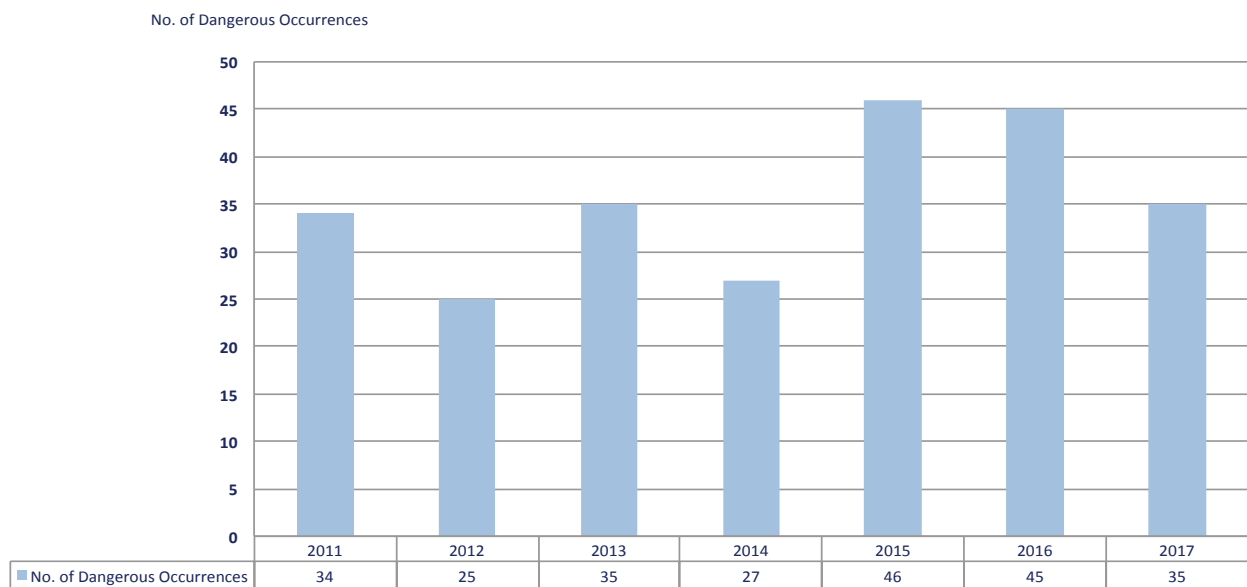


Figure 12: Number of dangerous occurrences, 2011-2017

ACCIDENT FREQUENCY RATE

The accident frequency rate (AFR), which measures how often work incidents occur, was 1.6 incidents per million man-hours worked in 2017.

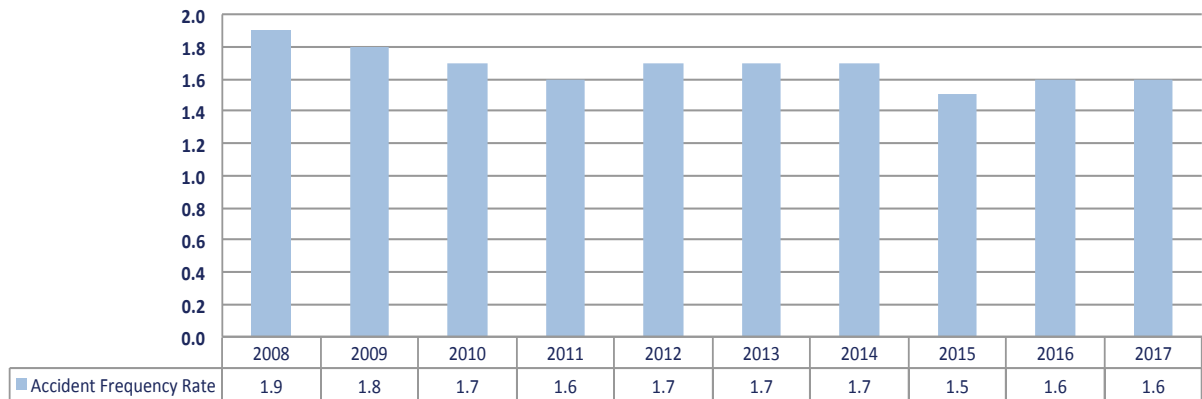


Figure 13: Accident frequency rate, 2008-2017

ACCIDENT SEVERITY RATE

A total of 544,687 man-days were lost from workplace injuries, a decrease of 22% from 2016. The accident severity rate (ASR) was 69 man-days lost for every million hours worked in 2017. Detailed industry breakdown of the AFR, ASR and man-days lost data can be found in Tables 1.27 and 1.28 in Annex A.

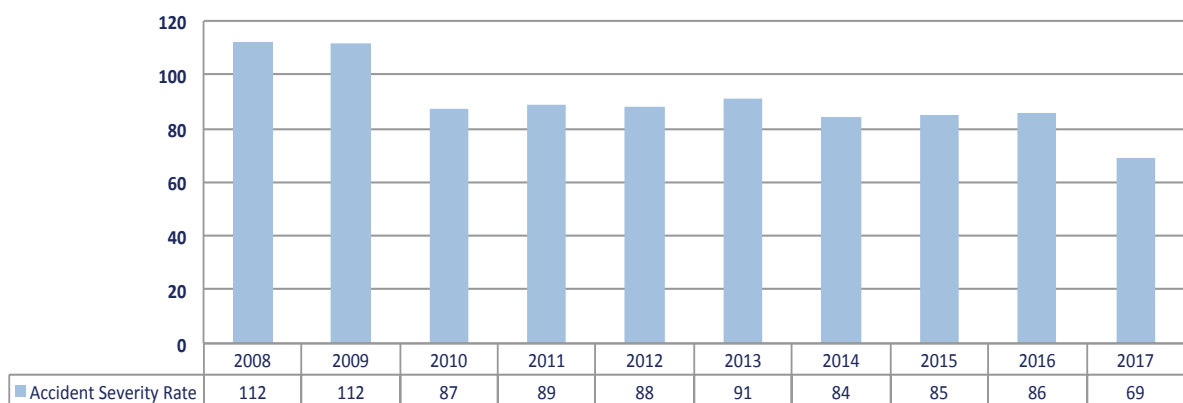


Figure 14: Accident severity rate, 2008-2017

OCCUPATIONAL DISEASES

For occupational diseases (OD)¹¹, the number of cases confirmed was 799 in 2017, up from 732 in 2016. For 2017, OD incidence was 23.6 confirmed cases per 100,000 employed persons, an increase compared to 21.5 in the previous year (Figure 15). The leading OD was Work-Related Musculoskeletal Disorders (WRMSD), followed closely by Noise-Induced Deafness (NID).



Figure 15: Occupational disease incidence rate, 2008-2017

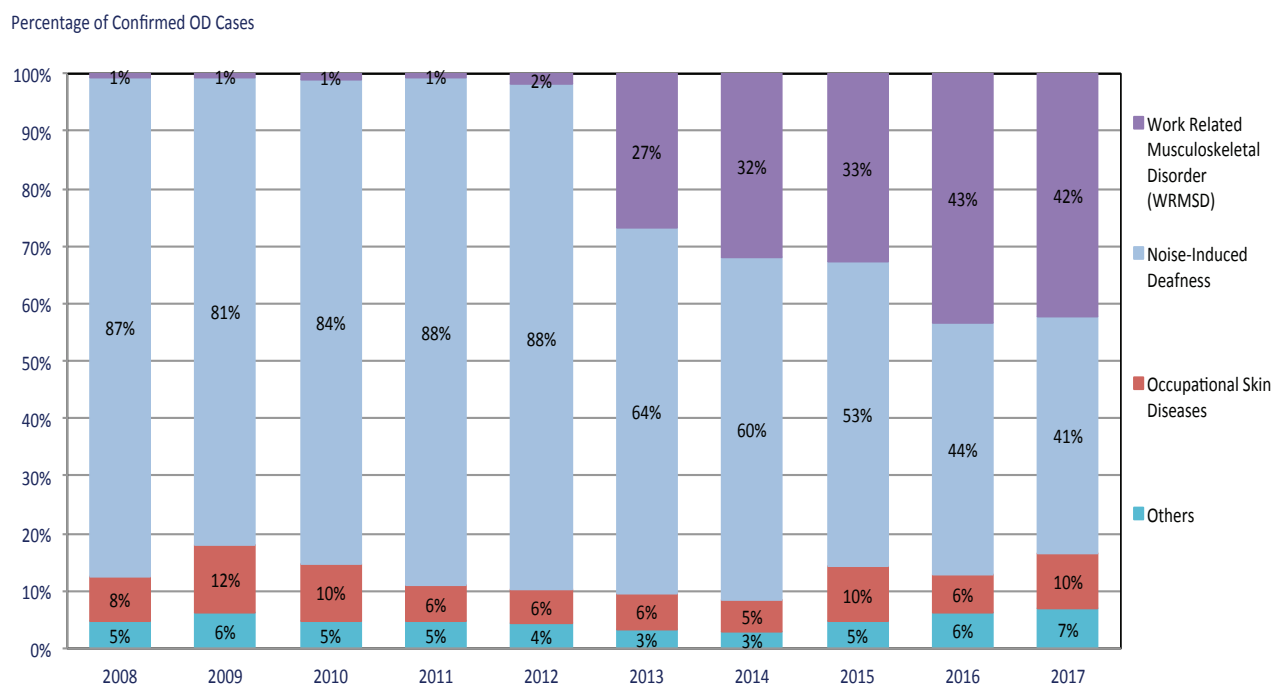


Figure 16: Proportion of occupational disease by type, 2008-2017

¹¹An occupational disease is a disease contracted as a result of exposure to risk factors arising from work.

NOISE-INDUCED DEAFNESS (NID)

There was a slight increase in the number of NID cases from 322 in 2016 to 329 in 2017. Manufacturing sector saw an increase in the number of cases from 185 in 2016 to 191 in 2017 (Table 1.22), continued to contribute the highest number of cases. 79 (41%) of the NID cases were from Metalworking whilst Manufacture of Other Transport Equipment saw a drop in NID cases from 66 in 2016 to 53 in 2017.

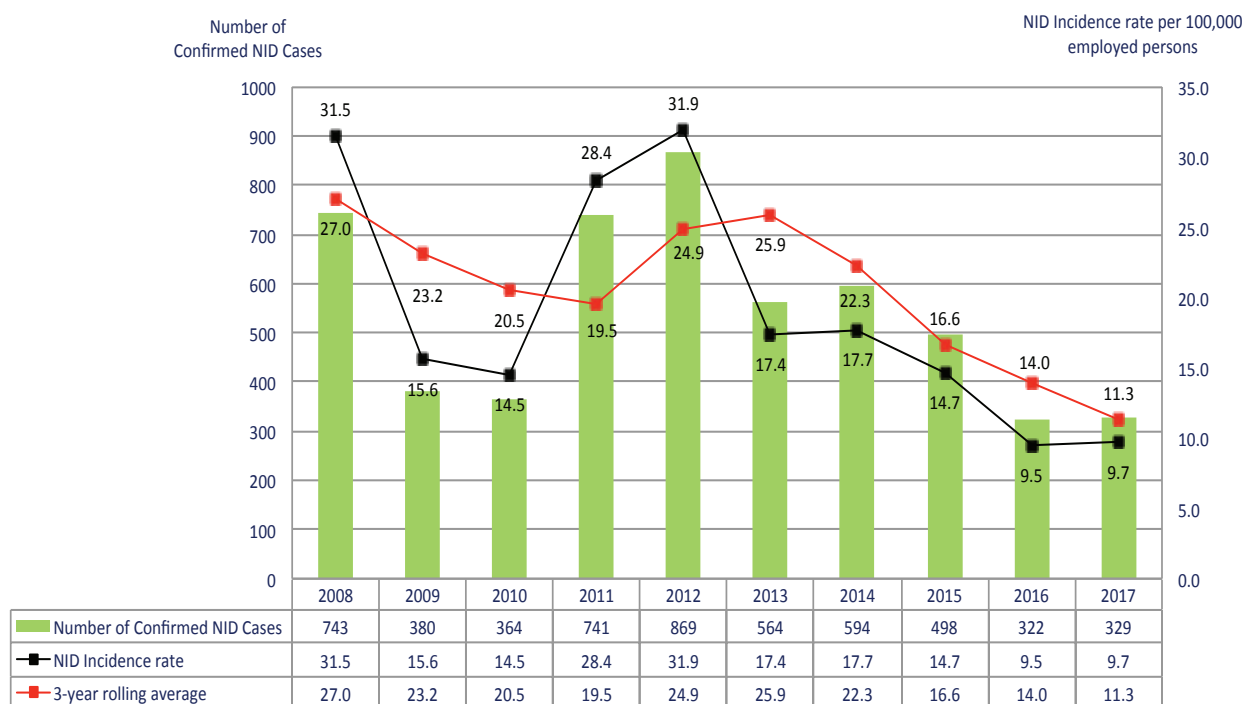


Figure 17: Noise-induced deafness incidence rate, 2008-2017

WORK-RELATED MUSCULOSKELETAL DISORDERS (WRMSD)

About 20% of the cases were from the Transportation & Storage sector (Table 1.24), followed by Manufacturing sector contributing 16% of the cases. There was a 38% increase in WRMSD cases for Construction sector in 2017.

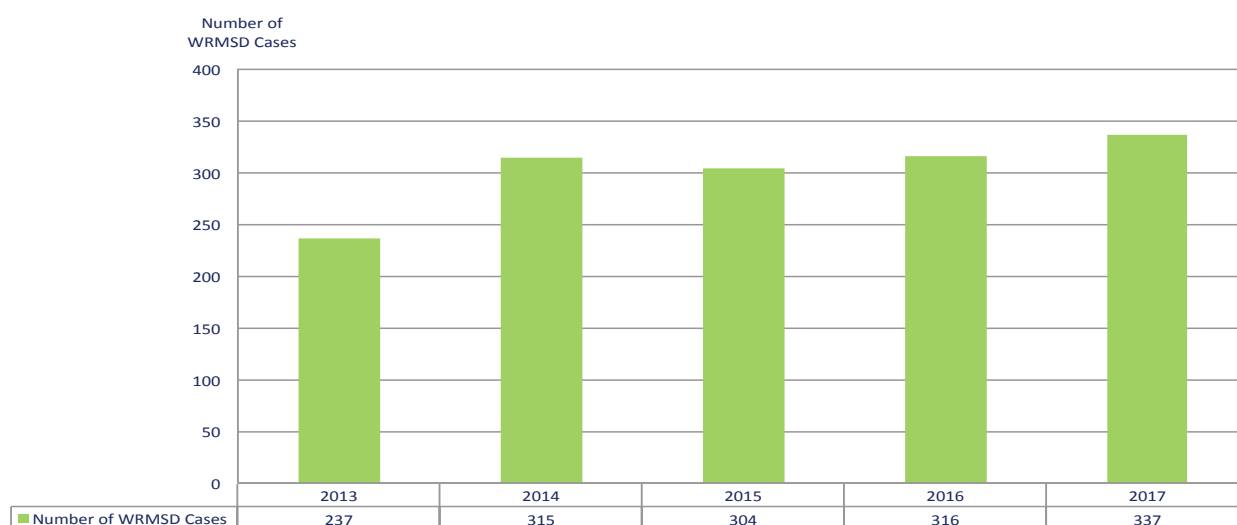


Figure 18: Number of work-related musculoskeletal disorders, 2013-2017

OCCUPATIONAL SKIN DISEASES (OSD)

78 cases of occupational skin diseases (OSD) were confirmed in 2017. This was an increase of 66%, from 47 cases in 2016 (Table 1.25). Manufacturing sector contributed to 60% of the OSD cases, and continued to be the top contributor.

OTHER OCCUPATIONAL DISEASES

There were 15 cases of compressed air illness (CAI) and 10 cases of barotrauma as compared to 2016 when there were 14 cases of CAI and 12 cases of barotrauma. The majority of the CAI and barotrauma cases were from tunnelling projects in the construction sector.

There were 6 cases of mesothelioma in 2017 from previous exposure to asbestos, a decrease from 8 cases in 2016.

2017 also saw 18 cases of chemical poisoning from carbon monoxide gas, 3 cases of occupational lung disease, 1 case of heat disorder and 1 case of excessive absorption of Trichloroethylene.

BUSINESS UNDER SURVEILLANCE

Proactive surveillance of high risk workplaces enables preventive measures to be taken early so as to prevent WSH injuries and ill health. The Business Under Surveillance (BUS¹²) programme focuses on improvement of WSH management systems.

BUSINESS UNDER SURVEILLANCE

Since the start of the programme in 2007, more than 300 companies have been placed under the programme. Companies on the BUS programme include companies with serious accidents; companies issued with Stop Work Orders (SWO) for poor WSH management or have accumulated a substantial number of demerit points. Companies exit the programme when their WSH standards have improved to a level whereby they can effectively manage their WSH risks.

In 2017, 10 companies entered the surveillance phase of BUS programme (Figure 19). All were from the construction industry. For the 23 companies which exited surveillance in 2017, the duration they were in the programme ranged from 5 to 34 months, with an average of 16 months.



Figure 19: Number of companies entering and exiting surveillance, 2012-2017

¹² Refer to Annex B and website <http://mom.gov.sg/workplace-safety-health/programmes/Pages/regulatory-programmes.aspx#bus> for information on BUS programme.

MEDICAL AND HYGIENE SURVEILLANCE

Hygiene¹³ and Medical¹⁴ 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 respectively.

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.

2017 saw a decrease in the number of workplaces under medical surveillance (2,147) as compared to 2016 (2,211). There was, however, an increase in the numbers of workers under surveillance, 124,101 in 2017 as compared to 120,999 in 2016.

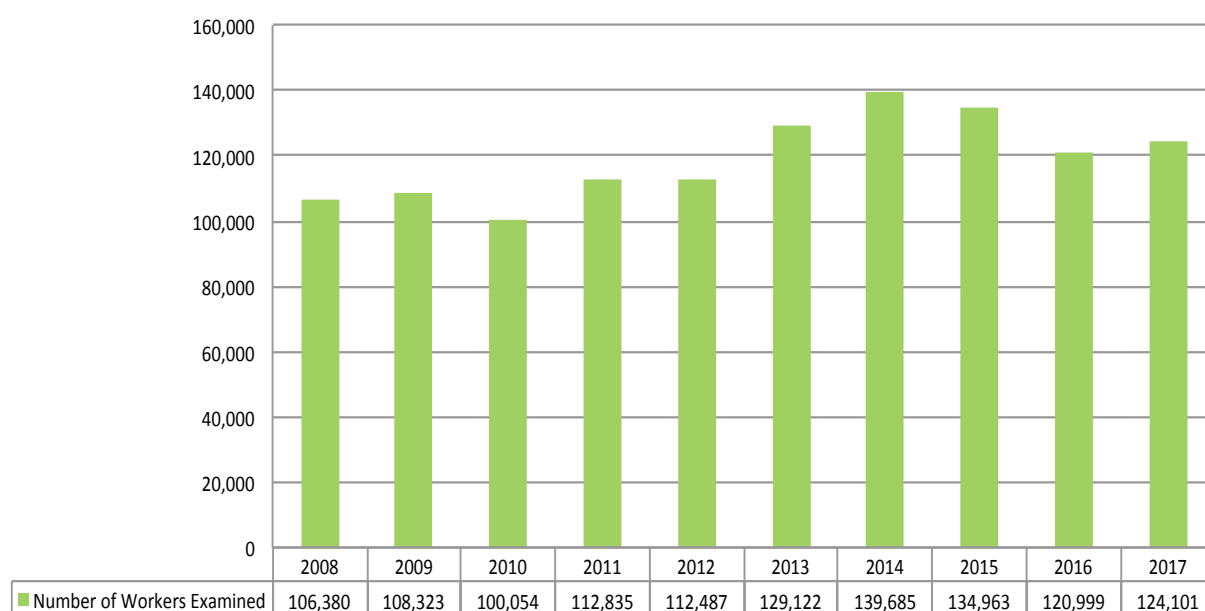


Figure 20: Number of workers under medical surveillance, 2008-2017

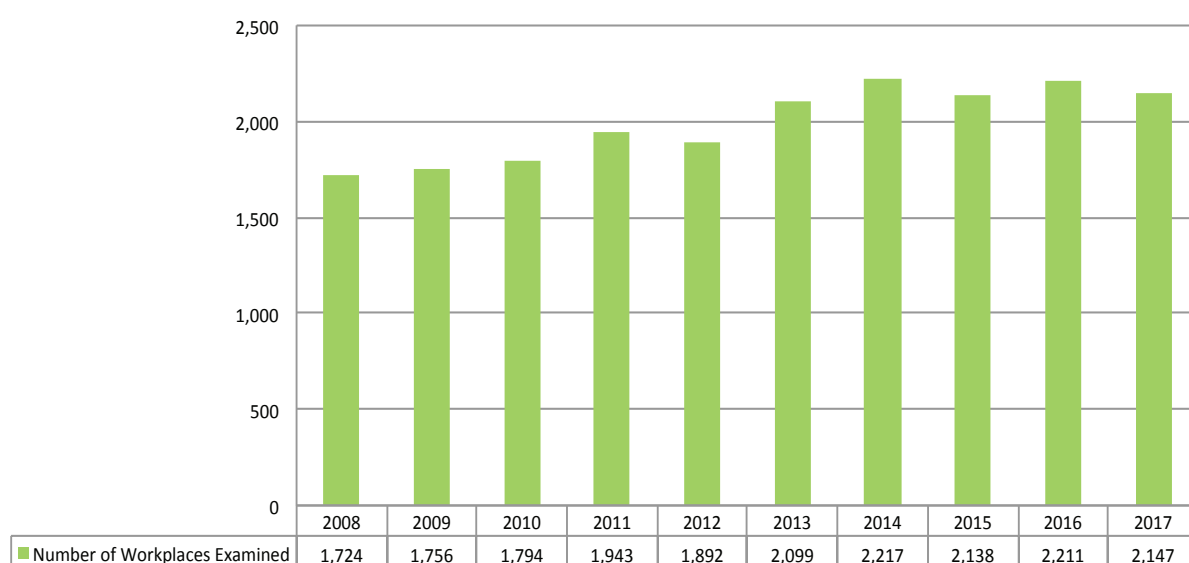


Figure 21: Number of workplaces under medical surveillance, 2008-2017

¹³ Hygiene Surveillance determines the exposure levels of persons to noise and airborne toxic substances in the workplace. Refer to Annex C for more information.

¹⁴ 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.

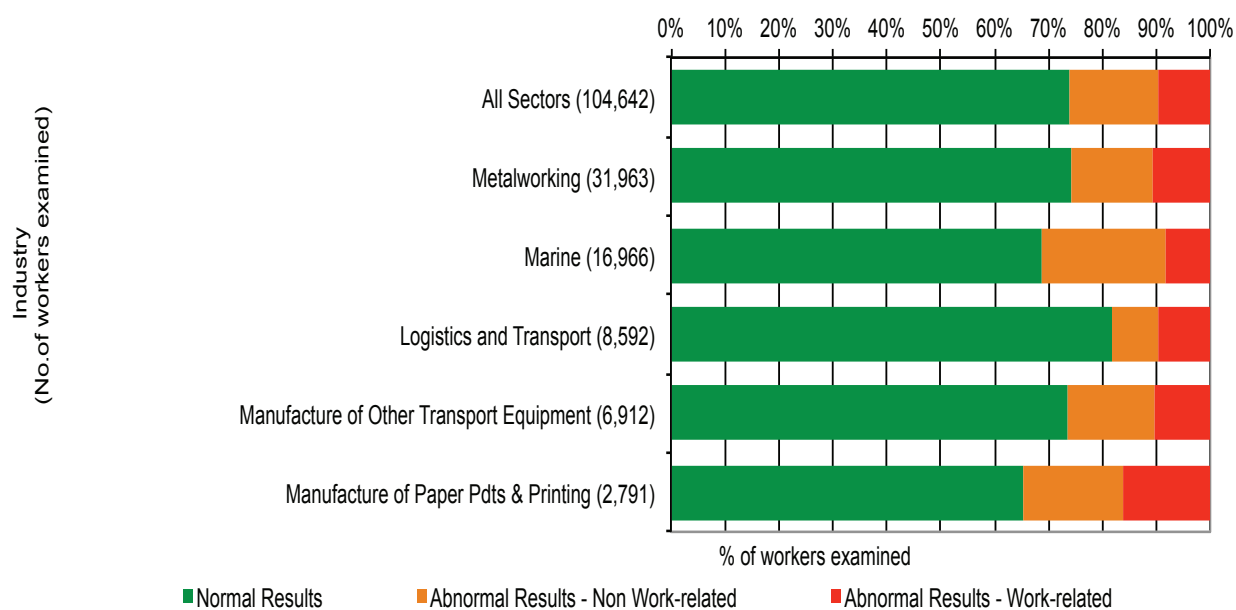


Figure 22: Results of medical monitoring¹⁵ for noise exposure for Top 5 industries, 2017

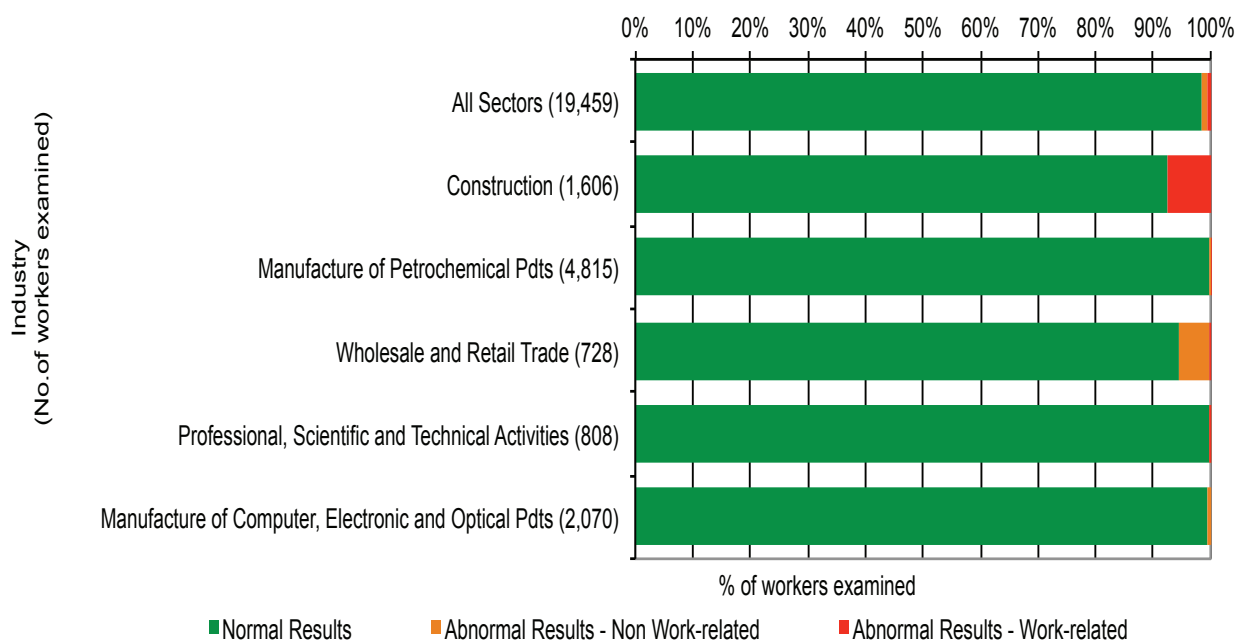


Figure 23: Results of medical monitoring for chemical exposure for Top 5 industries, 2017

¹⁵ Based on submissions received from Designated Workplace Doctors.

HYGIENE SURVEILLANCE

Workplaces where persons are likely to be exposed to excessive noise or toxic substances, are required to conduct regular hygiene monitoring to monitor their workers' exposure to noise and chemicals respectively.

NOISE EXPOSURE LEVELS

Based on the noise monitoring results submitted over the past 3 years, 83% of the workplaces had static noise levels greater than 85dBA. For workplaces with static noise levels greater than 85dBA, personal noise monitoring is conducted for workers involved in the noisy processes. 83% of the workplaces had workers who were exposed to excessive noise, i.e., above an equivalent sound pressure level of 85dBA over an 8-hour workday. Workplaces with excessive noise levels will need to implement additional control measures and protect persons at work from noise exposure. Majority of the workplaces under the noise monitoring programme were from the metalworking industry.

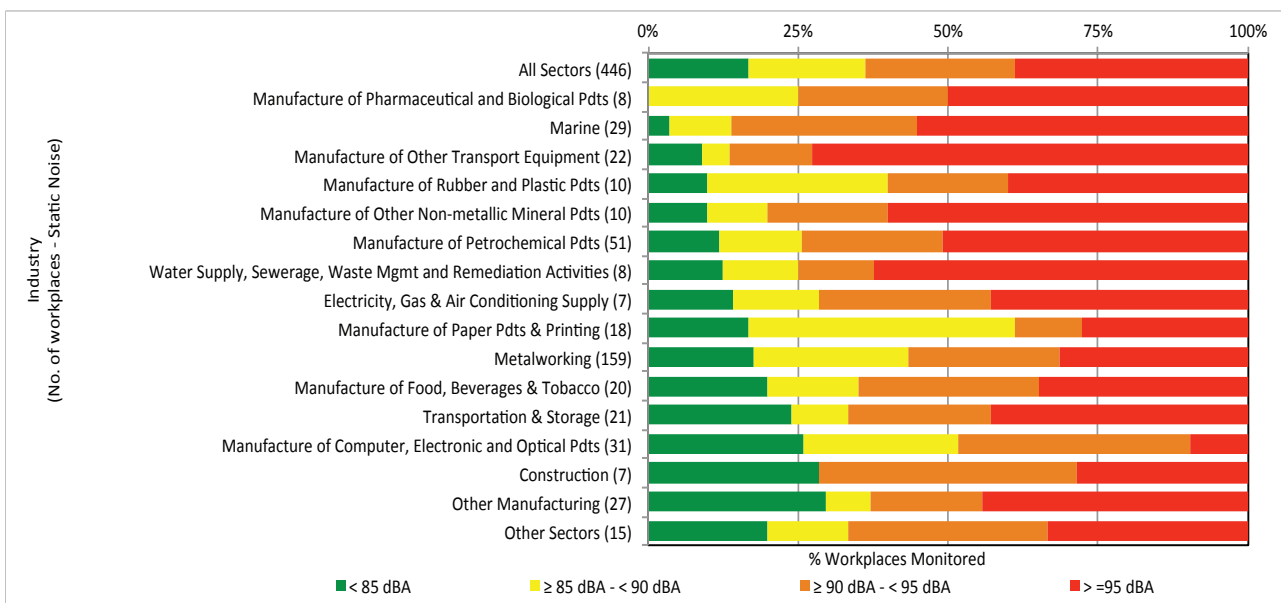


Figure 24: Static noise exposure by industry, 2015 - 2017

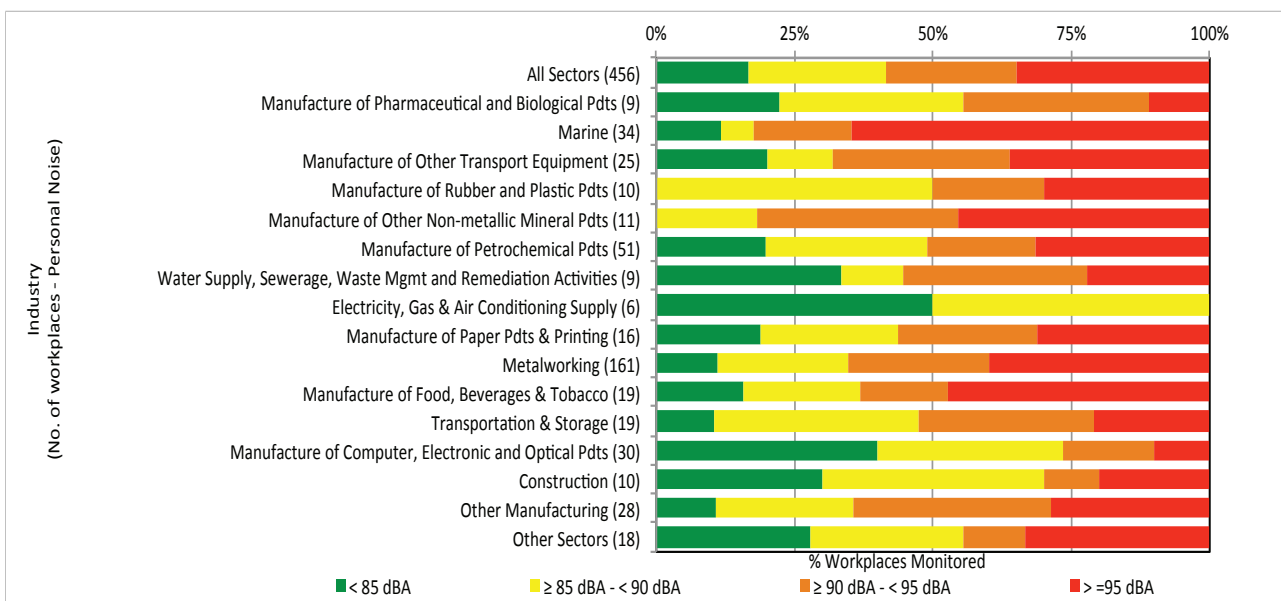


Figure 25: Personal noise exposure by industry, 2015 - 2017

CHEMICAL EXPOSURE LEVELS

A total of 1,337 chemical monitoring results were received in 2017, submitted by 171 workplaces, of which 16% of the results were from the manufacture of petrochemical products industry. There were a few workplaces with levels higher than PEL¹⁶ which required implementation of additional engineering and other control measures.

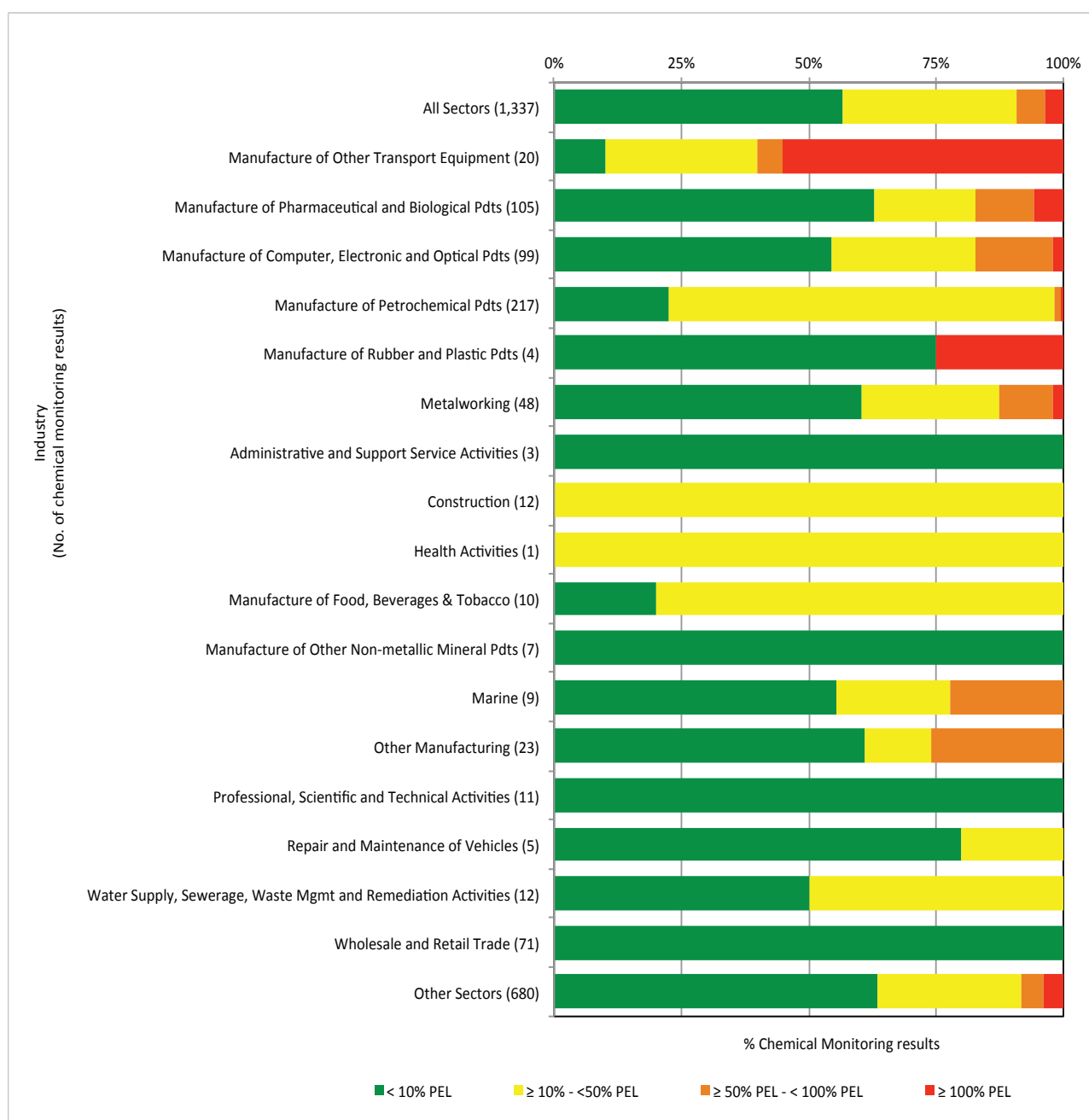


Figure 26: Chemical exposures by industry, 2017

¹⁶ Permissible Exposure Levels (PELs) refer to the maximum time weighted average concentration of a toxic substance to which any person may be exposed..

ANNEX A

STATISTICAL TABLES

Table 1.3: Number of workplace fatal injuries by industry, 2016 and 2017

Industry	2017	2016
All Sectors	42	66
Construction	12	24
Marine	2	6
Manufacturing	7	9
<i>Manufacture of Food Products</i>	2	2
<i>Manufacture of Computer, Electronic and Optical Products</i>	1	0
<i>Manufacture of Furniture</i>	1	0
<i>Manufacture of Rubber and Plastic Products</i>	1	0
<i>Manufacture of Wood Products</i>	1	1
<i>Metalworking</i>	1	5
<i>Manufacture of Other Non-metallic Mineral Products</i>	0	1
Fishing, Operation of Fish Hatcheries and Fish Farms	1	0
Water Supply, Sewerage & Waste Management and Remediation Activities	2	2
Wholesale & Retail Trade	3	3
<i>Wholesale Trade</i>	3	0
<i>Retail Trade</i>	0	3
Transportation & Storage	7	11
<i>Logistics & Transport¹⁷</i>	6	6
Food & Beverage Service Activities	1	0
Real Estate Services	1	0
Scientific Research and Development	1	0
Security & Investigation Activities	1	2
Cleaning & Landscape Maintenance Activities	2	5
Other Amusement and Recreation Activities	1	1
Activities of Religious Organisations	0	1
Repair of Personal and Household Goods	0	1
Repair & Maintenance of Vehicles	0	1
Activities not Adequately Defined	1	0

¹⁷ The logistics & transport sector includes the following activities:

- Warehousing and Storage
- Supporting services to land transport (exclude car management services, taxi booking services, towing services)
- Supporting services to water transport (exclude marine surveying services, salvaging distressed vessels & cargo)
- Supporting services to air transport
- Freight land transport (With effect from 2016. As such, workplace injury rates are not strictly comparable with the previous years.)

Table 1.4: Workplace fatal injury rates by industry, 2016 and 2017

Per 100,000 employed persons

Industry	2017	2016
All Sectors	1.2	1.9
Construction	2.6	4.9
Marine	2.7	6.7
Manufacturing	1.7	2.2
<i>Manufacture of Food Products</i>	4.4	4.6
<i>Manufacture of Computer, Electronic and Optical Products</i>	1.1	0.0
<i>Manufacture of Furniture</i>	8.8	0.0
<i>Manufacture of Rubber and Plastic Products</i>	8.5	0.0
<i>Manufacture of Wood Products</i>	24.4	25.6
<i>Metalworking</i>	0.9	4.5
<i>Manufacture of Other Non-metallic Mineral Products</i>	0.0	22.2
Fishing, Operation of Fish Hatcheries and Fish Farms	n.a.	n.a.
Water Supply, Sewerage & Waste Management and Remediation Activities	12.2	12.0
Wholesale & Retail Trade	0.6	0.6
<i>Wholesale Trade</i>	0.9	0.0
<i>Retail Trade</i>	0.0	1.8
Transportation & Storage	2.9	4.6
<i>Logistics & Transport</i>	5.9	6.0
Food & Beverage Service Activities	0.5	0.0
Real Estate Services	1.1	0.0
Scientific Research and Development	n.a.	n.a.
Security & Investigation Activities	2.1	4.5
Cleaning & Landscape Maintenance Activities	3.0	8.4
Other Amusement and Recreation Activities	n.a.	n.a.
Activities of Religious Organisations	n.a.	n.a.
Repair of Personal and Household Goods	n.a.	n.a.
Repair & Maintenance of Vehicles*	n.a.	n.a.
Activities not Adequately Defined	n.a.	n.a.

Table 1.5: Number of workplace fatal injuries by incident type and incident agent, 2016 and 2017

Incident Type	Incident Agent	2017	2016
Total Workplace Fatal Injuries		42	66
Falls	Total	12	19
<i>Falls from Heights</i>	Total	8	13
	Physical Workplace - Structures	4	5
	Lifting Equipment - Mobile Work Platform	1	0
	Means of Access - Ladders	1	2
	Physical Workplace - Formwork	1	0
	Physical Workplace - Roofs	1	4
	Means of Access - Scaffold	0	1
	Vehicles - Forklifts	0	1
<i>Slips, Trips & Falls</i>	Total	4	6
	Vehicles - Lorry, Truck	2	0
	Means of Access - Stairs or Steps	1	2
	Physical Workplace - Floor/Level Surfaces	1	3
	Means of Access - Others	0	1
Struck by Moving Objects	Total	7	13
	Vehicles - Car, Forklift, Lorry, Prime Mover, Train, Truck, Van	5	12
	Lifting Equipment - Cranes	1	0
	Other Incident Agents	1	0
	Pressurised Equipment - Pressurised Piping/Accessories	0	1
Work-related Traffic	Total	7	5
	Large Goods Vehicles (LGVs) - Lorry, Prime Mover	5	2
	E-bike	1	1
	Van	1	0
	Motorcycle	0	2
Caught in/ between Objects	Total	5	8
	Vehicles - Excavator, Prime Mover, Taxi, Truck	2	5
	Industrial Machines	1	3
	Lifting Equipment - Lifts & Hoists	1	0
	Physical Workplace - Structures	1	0
Collapse of Formwork/ Failure of its Supports	Total	3	2
	Physical Workplace - Formwork	3	2
Fires & Explosion	Total	2	0
	Explosives/ Flammable Substances	1	0
	Other Incident Agents	1	0

(continued) Table 1.5: Number of workplace fatal injuries by incident type and incident agent, 2016 and 2017

Incident Type	Incident Agent	2017	2016
Total Workplace Fatal Injuries		42	66
Struck by Falling Objects From Heights	Total	2	6
	Vehicles - Forklift	1	0
	Wooden Items	1	1
	Metal Items (excluding knives/needles)	0	4
	Industrial Machines	0	1
Drowning	Total	1	2
Electrocution	Total	1	2
	Electrical Equipment	1	1
	Pressurised Equipment - Pressurised Piping/Accessories	0	1
Exposure to/ contact with Extreme Temperatures	Total	1	1
	Pressurised Equipment - Boilers	1	0
	Other Incident Agents	0	1
Exposure to/ contact with Hazardous Substances	Total	1	0
	Corrosives	1	0
Collapse/Failure of Structure & Equipment	Total	0	1
	Vehicles - Excavator, Prime Mover	0	1
Crane-related	Total	0	4
	Lifting Appliances/ Gears	0	2
	Lifting Equipment - Cranes	0	1
	Other Lifting Equipment	0	1
Exposure to/ contact with Biological Substances	Total	0	1
	Animals, Plants and insects	0	1
Strike Against Objects	Total	0	1
	Vehicles - Forklifts	0	1
Other Incident Type	Total	0	1
	Other Incident Agents	0	1

Table 1.6: Number of workplace fatal injuries by industry and incident type, 2017

Industry	All	Construct- ion	Marine	Manufac- turing	Fishing, Operations of Fish Hatcheries and Fish Farms	Water Supply, Sewerage & Waste Manage- ment and Remedi- ation Activities	Wholesale & Retail Trade	Transport- ation & Storage
Total	42	12	2	7	1	2	3	7
Falls	12	4	0	2	0	0	2	2
<i>Falls from Heights</i>	8	4	0	2	0	0	1	1
<i>Slips, Trips & Falls</i>	4	0	0	0	0	0	1	1
Struck by Moving Objects	7	1	2	1	0	0	0	0
Work-related Traffic	7	1	0	2	0	1	0	2
Caught in/between Objects	5	1	0	0	0	1	0	2
Collapse of Formwork/ Failure of its Supports	3	3	0	0	0	0	0	0
Fires & Explosion	2	0	0	0	0	0	1	0
Struck by Falling Objects From Heights	2	1	0	0	0	0	0	1
Drowning	1	0	0	0	1	0	0	0
Electrocution	1	1	0	0	0	0	0	0
Exposure to/ contact with Extreme Temperature	1	0	0	1	0	0	0	0
Exposure to/ contact with Hazardous Substances	1	0	0	1	0	0	0	0

(continued) Table 1.6: Number of workplace fatal injuries by industry and incident type, 2017

Industry	Logistics & Transport	Food & Beverage Service Activities	Real Estate Services	Scientific Research and Development	Security & Investigation Activities	Cleaning & Landscape Maintenance Activities	Other Amusement & Recreation Activities	Activities not Adequately Defined
Total	6	1	1	1	1	2	1	1
Falls	2	0	0	1	0	0	1	0
<i>Falls from Heights</i>	1	0	0	0	0	0	0	0
<i>Slips, Trips & Falls</i>	1	0	0	1	0	0	1	0
Struck by Moving Objects	0	0	0	0	1	2	0	0
Work-related Traffic	1	1	0	0	0	0	0	0
Caught in/between Objects	2	0	0	0	0	0	0	1
Collapse of Formwork/ Failure of its Supports	0	0	0	0	0	0	0	0
Fires & Explosion	0	0	1	0	0	0	0	0
Struck by Falling Objects From Heights	1	0	0	0	0	0	0	0
Drowning	0	0	0	0	0	0	0	0
Electrocution	0	0	0	0	0	0	0	0
Exposure to/ contact with Extreme Temperature	0	0	0	0	0	0	0	0
Exposure to/ contact with Hazardous Substances	0	0	0	0	0	0	0	0

Note:

Logistics & Transport is a sub sector of Transportation & Storage.

Table 1.7: Number of workplace major injuries by industry, 2016 and 2017

Industry	2017	2016
All Sectors	574	594
Construction	110	153
Marine	22	33
Manufacturing	124	125
<i>Metalworking</i>	46	48
<i>Manufacture of Food, Beverages & Tobacco</i>	32	24
<i>Manufacture of Other Non-Metallic Mineral Products</i>	8	10
<i>Manufacture of Petrochemical</i>	8	8
Water Supply, Sewerage & Waste Management and Remediation Activities	9	9
Wholesale & Retail Trade	35	33
<i>Wholesale Trade</i>	22	22
<i>Retail Trade</i>	13	11
Transportation & Storage	60	43
<i>Logistics & Transport</i>	42	30
Accommodation & Food Service Activities	41	39
<i>Accommodation</i>	6	9
<i>Food & Beverage Service Activities</i>	35	30
Financial & Insurance Activities ¹⁸	4	6
Real Estate Activities	7	12
Professional, Scientific & Technical Activities	8	9
Administrative & Support Service Activities	21	25
Community, Social & Personal Services	33	34
<i>Education</i>	7	8
<i>Health Activities</i>	7	6
<i>Other Personal Service Activities</i>	7	1
<i>Repair & Maintenance of Vehicles</i>	5	7
<i>Activities of Membership Organisations</i>	2	1

¹⁸ Financial & Insurance Activities include banks, finance companies and activities of holding companies.

Table 1.8: Workplace major injury rates by industry, 2016 and 2017

Per 100,000 employed persons

Industry	2017	2016
All Sectors	16.9	17.4
Construction	24.2	30.9
Marine	29.6	37.0
Manufacturing	29.9	30.2
<i>Metalworking</i>	42.6	43.0
<i>Manufacture of Food, Beverages & Tobacco</i>	66.3	52.5
<i>Manufacture of Other Non-Metallic Mineral Products</i>	186.0	222.2
<i>Manufacture of Petrochemical</i>	15.9	14.9
Water Supply, Sewerage & Waste Management and Remediation Activities	54.9	54.2
Wholesale & Retail Trade	7.2	6.8
<i>Wholesale Trade</i>	6.8	6.8
<i>Retail Trade</i>	8.0	6.8
Transportation & Storage	24.4	17.9
<i>Logistics & Transport</i>	41.5	30.0
Accommodation & Food Service Activities	16.5	16.0
<i>Accommodation</i>	17.3	26.0
<i>Food & Beverage Service Activities</i>	16.3	14.4
Financial & Insurance Activities ¹⁸	1.9	3.0
Real Estate Activities	7.6	13.3
Professional, Scientific & Technical Activities	3.4	3.6
Administrative & Support Service Activities	9.1	11.5
Community, Social & Personal Services	4.1	4.3
<i>Education</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Health Activities*</i>	6.7	6.1
<i>Other Personal Service Activities</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Repair & Maintenance of Vehicles*</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Activities of Membership Organisation</i>	<i>n.a.</i>	<i>n.a.</i>

Table 1.9: Types of workplace major injury, 2016 and 2017

Workplace Major Injury Types	2017	2016
Total	574	594
Crushing, Fractures and Dislocations	317	329
Amputations	125	143
Hypothermia/Burns, with more than 20 MC days	63	57
Multiple Injuries	33	34
Concussion, with more than 20 MC days	19	10
Exposure to/ contact with Electric Current	14	17
Blindness	2	2
Paralysis	1	1
Asphyxia/Drowning	0	1

Table 1.10: Number of workplace major injuries by key incident type and key incident agent, 2016 and 2017

Incident Type	Incident Agent	2017	2016
Total Workplace Major Injuries		574	594
Falls	Total	240	246
<i>Slips, Trips & Falls</i>	Total	177	173
	Physical Workplace - Floor/Level Surfaces	75	74
	Vehicles	28	36
	Means of Access - Stairs or Steps	18	17
<i>Falls from Heights</i>	Total	63	73
	Means of Access - Ladders	39	32
	Physical Workplace - Structures	9	8
	Physical Workplace - Roof	4	1
Caught in/ between Objects	Total	60	68
	Industrial Machines	21	21
	Metal Items (excluding knives/needles)	8	9
	Vehicles	7	12
Struck by Moving Objects	Total	49	73
	Vehicles	15	20
	Lifting Equipment Including Cranes	9	8
	Industrial Hand Tools	7	12
Struck by Falling Objects	Total	44	33
	Metal Items (excluding knives/needles)	13	10
	Goods/Cargo	8	4
	Industrial Machines	4	0
Exposure to/ contact with Extreme Temperatures	Total	41	30
	Hot scalding liquid/Steam	32	23
	Industrial Machines	4	1
	Pressurised Equipment	2	2
Cut/Stabbed by Objects	Total	40	45
	Industrial Machines	27	31
	Industrial Hand Tools	11	9
	Knives and Needles	2	5
Exposure to/ contact with Electric current	Total	20	25
	Electrical Installation	12	19
	Industrial Machines	3	4
	Furniture and Fittings	1	0
	Industrial Hand Tools	1	0
Work-related Traffic	Total	19	18

Table 1.11: Top 3 incident types for workplace major injuries by industry, 2017

Industry	Top 3 Incident Types		
	1 st	2 nd	3 rd
All Sectors	STF	FFH	CIBO
Construction	FFH	SBFO	CIBO, STF
Marine	STF	CIBO	FFH
Manufacturing	STF	CIBO	CSBO
<i>Metalworking</i>	<i>CIBO</i>	<i>STF</i>	<i>CSBO, SBFO</i>
<i>Manufacture of Food, Beverages & Tobacco</i>	<i>STF</i>	<i>CIBO, CSBO</i>	<i>ETET</i>
<i>Manufacture of Other Non-Metallic Mineral Products</i>	<i>STF</i>	<i>CSBO</i>	<i>SBFO, WRT</i>
<i>Manufacture of Petrochemical</i>	<i>ETHS</i>	<i>ETET</i>	<i>CSBO, SBFO</i>
Water Supply, Sewerage & Waste Management and Remediation Activities	SBMO	STF, WRT	CSBO, SBFO
Wholesale & Retail Trade	STF	ETET, FFH	CSBO, SBFO, SBMO
<i>Wholesale Trade</i>	<i>STF</i>	<i>ETET</i>	<i>SBMO</i>
<i>Retail Trade</i>	<i>FFH</i>	<i>CSBO, SBFO, STF</i>	<i>ETET, FE, SAO, WRT</i>
Transportation & Storage	STF	SBMO	FFH
<i>Logistics & Transport</i>	<i>STF</i>	<i>SBMO</i>	<i>FFH</i>
Accommodation & Food Service Activities	STF	ETET	FFH
<i>Accommodation</i>	<i>STF</i>	<i>ETET, FFH, SBMO</i>	-
<i>Food & Beverage Service Activities</i>	<i>ETET, STF</i>	<i>FFH</i>	<i>CSBO</i>
Financial & Insurance Activities	OTH, SBFO, SBMO, STF	-	-
Real Estate Activities	STF	ETEC, ETET	-
Professional, Scientific & Technical Activities	ETET, STF	ETEC, ETHS, FFH, SBMO	-
Administrative & Support Service Activities	STF	WRT	SBMO
Community, Social & Personal Services	STF	FFH	ETET, OTH, SBMO
<i>Education</i>	<i>STF</i>	<i>OTH, FFH</i>	-
<i>Health Activities</i>	<i>STF</i>	<i>ETEC, ETET</i>	-
<i>Other Personal Service Activities</i>	<i>CSBO, ETET, OESM, OTH, SBFO, SBMO, STF</i>	-	-
<i>Repair & Maintenance of Vehicles</i>	<i>STF</i>	<i>FFH, PA, SBMO</i>	-
<i>Activities of Membership Organisations</i>	<i>STF</i>	-	-

Legend:

CIBO Caught In/Between Objects
 CSBO Cut/Stabbed by Objects
 ETEC Exposure to/ Contact with Electric Current
 ETET Exposure to/ Contact with Extreme Temperature
 ETHS Exposure to/ Contact with Hazardous Substances

FE Fires & Explosion
 FFH Falls (Falls from Heights)
 OESM Over-exertion and Strenuous Movements
 OTH Other Incident Types
 PA Physical Assault
 SAO Strike Against Objects
 SBFO Struck by Falling Objects

SBMO Struck by Moving Objects¹⁹
 STF Falls (Slips, Trips and Falls)
 WRT Work-related Traffic

¹⁹ This includes flying fragments but excludes falling objects.

Table 1.12: Number of workplace minor injuries by industry, 2016 and 2017

Industry	2017	2016
All Sectors	11,882	12,354
Construction	1,774	2,132
Marine	271	329
Manufacturing	2,413	2,605
<i>Metalworking</i>	995	1,115
<i>Manufacture of Food, Beverages & Tobacco</i>	432	439
<i>Manufacture of Computer, Electronic and Optical Products</i>	183	150
Water Supply, Sewerage & Waste Management and Remediation Activities	118	110
Wholesale & Retail Trade	580	608
<i>Wholesale Trade</i>	308	335
<i>Retail Trade</i>	272	273
Transportation & Storage	1,025	1,090
<i>Logistics & Transport</i>	690	723
Accommodation & Food Service Activities	1,118	1,072
<i>Accommodation</i>	271	252
<i>Food & Beverage Service Activities</i>	847	820
Information & Communications ²⁰	58	45
Financial & Insurance Activities	139	145
Real Estate Activities	404	345
Professional, Scientific & Technical Activities	372	393
<i>Legal, Accounting & Management Activities</i>	157	164
<i>Architectural & Engineering Activities</i>	152	173
Administrative & Support Service Activities	490	415
<i>Office Administrative, Office Support & Other Business Support Activities</i>	195	160
<i>Cleaning & Landscape Maintenance Activities</i>	131	115
<i>Security and Investigation Activities</i>	131	105
Community, Social & Personal Services	1,252	1,229
<i>Health Activities</i>	427	401
<i>Education</i>	237	221
<i>Other Personal Service Activities</i>	145	163
<i>Arts, Entertainment and Recreation</i>	140	135
<i>Repair & Maintenance of Vehicles</i>	112	118

²⁰ Information and Communication includes publishing activities, motion picture, video and television programme production, sound recording & music publishing activities, radio & television broadcasting activities, telecommunications.

Table 1.13: Workplace minor injury rates by industry, 2016 and 2017

Per 100,000 employed persons

Industry	2017	2016
All Sectors	351	363
Construction	390	431
Marine	364	369
Manufacturing	582	630
<i>Metalworking</i>	922	999
<i>Manufacture of Food, Beverages & Tobacco</i>	894	961
<i>Manufacture of Computer, Electronic and Optical Products</i>	203	179
Water Supply, Sewerage & Waste Management and Remediation Activities	720	663
Wholesale & Retail Trade	120	125
<i>Wholesale Trade</i>	96	103
<i>Retail Trade</i>	168	168
Transportation & Storage	417	453
<i>Logistics & Transport</i>	682	723
Accommodation & Food Service Activities	449	441
<i>Accommodation</i>	781	728
<i>Food & Beverage Service Activities</i>	395	393
Information & Communications	44	35
Financial & Insurance Activities	66	71
Real Estate Activities	438	382
Professional, Scientific & Technical Activities	156	158
<i>Legal, Accounting & Management Activities</i>	130	125
<i>Architectural & Engineering Activities</i>	258	284
Administrative & Support Service Activities	213	191
<i>Office Administrative, Office Support & Other Business Support Activities</i>	n.a.	n.a.
<i>Cleaning & Landscape Maintenance Activities</i>	199	193
<i>Security and Investigation Activities</i>	281	239
Community, Social & Personal Services	155	156
<i>Health Activities*</i>	411	408
<i>Education</i>	n.a.	n.a.
<i>Other Personal Service Activities</i>	n.a.	n.a.
<i>Arts, Entertainment and Recreation</i>	250	243
<i>Repair & Maintenance of Vehicles*</i>	n.a.	n.a.

Table 1.14: Number of workplace minor injuries by key incident type and key incident agent, 2016 and 2017

Incident Type	Incident Agent	2017	2016
Total Workplace Minor Injuries		11,882	12,354
Falls	Total	3,885	3,906
<i>Slips, Trips & Falls</i>	Total	3,323	3,315
	Physical Workplace - Floor/Level Surfaces	1,509	1,483
	Means of Access - Stairs or Steps	475	526
	Vehicles	298	328
<i>Falls from Heights</i>	Total	562	591
	Means of Access - Ladders	386	380
	Means of Access - Scaffold	61	63
	Physical Workplace - Structures	32	46
Struck by Moving Objects	Total	1,943	2,031
	Industrial Hand Tools	379	442
	Vehicles	348	361
	Metal Items (excluding knives/needles)	310	323
Cut/Stabbed by Objects	Total	1,481	1,525
	Knives and Needles	535	507
	Industrial Machines	297	365
	Industrial Hand Tools	274	303
Struck by Falling Objects	Total	1,004	1,150
	Metal Items (excluding knives/needles)	272	330
	Furniture and Fittings	142	140
	Goods/Cargo	129	169
Caught in/ between Objects	Total	921	1,044
	Industrial Machines	271	309
	Metal Items (excluding knives/needles)	140	202
	Vehicles	131	124
Over-exertion/ Strenuous Movements	Total	767	786
	Human Factors	287	300
	Goods/Cargo	193	204
	Furniture and Fittings	49	52
Strike against Objects	Total	655	674
	Furniture & Fittings	185	153
	Metal Items (excluding knives/needles)	138	195
	Industrial Machines	78	54
Exposure to Extreme Temperatures	Total	313	339
	Hot scalding liquid/steam	239	258
	Industrial Machines	25	27
	Vehicles	14	11
Work-related Traffic	Total	257	251

Table 1.15: Top 3 incident types for workplace minor injuries by industry, 2017

Industry	Top 3 Incident Types		
	1 st	2 nd	3 rd
All Sectors	STF	SBMO	CSBO
Construction	SBMO	STF	FFH
Marine	SBMO	STF	CIBO
Manufacturing	SBMO	STF	CSBO
<i>Metalworking</i>	<i>SBMO</i>	<i>STF</i>	<i>CIBO</i>
<i>Manufacture of Food, Beverages & Tobacco</i>	<i>CSBO</i>	<i>STF</i>	<i>SBMO</i>
<i>Manufacture of Computer, Electronic and Optical Products</i>	<i>STF</i>	<i>SBMO</i>	<i>CIBO, CSBO</i>
Water Supply, Sewerage & Waste Management and Remediation Activities	STF	SBMO	SBFO
Wholesale & Retail Trade	STF	CSBO	SBMO
<i>Wholesale Trade</i>	<i>STF</i>	<i>SBMO</i>	<i>CSBO</i>
<i>Retail Trade</i>	<i>STF</i>	<i>CSBO</i>	<i>OESM</i>
Transportation & Storage	STF	SBMO	OESM
<i>Logistics & Transport</i>	<i>STF</i>	<i>SBMO</i>	<i>SBFO</i>
Accommodation & Food Service Activities	CSBO	STF	ETET
<i>Accommodation</i>	<i>STF</i>	<i>CSBO</i>	<i>SBFO</i>
<i>Food & Beverage Service Activities</i>	<i>CSBO</i>	<i>STF</i>	<i>ETET</i>
Information & Communications	STF	SBFO	OESM
Financial & Insurance Activities	STF	CSBO	OESM
Real Estate Activities	STF	CSBO	SBMO
Professional, Scientific & Technical Activities	STF	SBMO	CSBO
<i>Legal, Accounting & Management Activities</i>	<i>STF</i>	<i>SBMO</i>	<i>OESM</i>
<i>Architectural & Engineering Activities</i>	<i>STF</i>	<i>SBMO</i>	<i>CIBO</i>
Administrative & Support Service Activities	STF	SBMO	CSBO
<i>Office Administrative, Office Support & Other Business Support Activities</i>	<i>STF</i>	<i>CSBO</i>	<i>SBMO</i>
<i>Cleaning & Landscape Maintenance Activities</i>	<i>STF</i>	<i>SBMO</i>	<i>CSBO</i>
<i>Security and Investigation Activities</i>	<i>STF</i>	<i>WRT</i>	<i>SBMO</i>
Community, Social & Personal Services	STF	OESM	SBMO
<i>Health Activities</i>	<i>STF</i>	<i>OESM</i>	<i>SBMO</i>
<i>Education</i>	<i>STF</i>	<i>OESM, SBMO</i>	<i>SBFO</i>
<i>Other Personal Service Activities</i>	<i>STF</i>	<i>CSBO</i>	<i>CIBO</i>
<i>Arts, Entertainment and Recreation</i>	<i>STF</i>	<i>SBMO</i>	<i>CSBO, OTH</i>
<i>Repair & Maintenance of Vehicles</i>	<i>STF</i>	<i>SBMO</i>	<i>SBFO</i>

Legend:

CIBO Caught In/Between Objects

CSBO Cut/Stabbed by Objects

ETET Exposure to Extreme Temperature

FFH Falls from Heights

OESM Over-exertion and Strenuous Movements

OTH Other Incident Types

SBFO Struck by Falling Objects

SBMO Struck by Moving Objects²¹

STF Falls (Slips, Trips and Falls)

WRT Work-related Traffic

²¹ This includes flying fragments but excludes falling objects.

Table 1.16: Types of workplace minor injury, 2016 and 2017

Workplace Minor Injury Types	2017	2016
Total	11,882	12,354
Cuts and Bruises	4,325	4,674
Crushing, Fractures and Dislocations	2,798	2,932
Sprains & Strains	1,974	2,071
Burns	369	402
Multiple Injuries	295	257
Puncture Wound	198	203
Bites and Stings	74	73
Concussion	64	75
Others	1,785	1,667

Table 1.17: Dangerous occurrences by industry, 2016 and 2017

Industry	2017	2016
All Sectors	35	45
Construction	16	22
Marine	0	3
Manufacturing	10	11
<i>Manufacture of Petrochemical Products</i>	7	2
<i>Manufacture of Computer, Electronic and Optical Products</i>	1	1
<i>Manufacture of Food, Beverages & Tobacco</i>	1	1
<i>Manufacture of Textile and Wearing Apparel</i>	1	0
<i>Manufacture of Other Transport Equipment</i>	0	1
<i>Manufacture of Wood Products</i>	0	1
<i>Metalworking</i>	0	5
Water Supply, Sewerage & Waste Management and Remediation Activities	0	1
Wholesale & Retail Trade	2	1
Transportation & Storage	3	2
<i>Logistics & Transport</i>	3	1
Accommodation & Food Service Activities	1	1
Real Estate Services	1	0
Professional, Scientific & Technical Activities	0	1
Office Administrative, Office Support & Other Business Support Activities	0	1
Education	0	2
Activities of Membership Organisations	1	0
Repair & Maintenance of Vehicles	1	0

Table 1.18: Types of dangerous Occurrences, 2016 and 2017

Incident Type	Incident Agent	2017	2016
Total Dangerous Occurrences		35	45
Collapse/Failure of Structure & Equipment	Total	23	27
	Lifting Equipment - Cranes	13	19
	Physical Workplace - Formwork	5	1
	Lifting Equipment - Mobile Work Platform	2	3
	Lifting Equipment - Piling Machines	2	0
	Pressurised Equipment	1	0
	Lifting Equipment - Others	0	2
	Vehicles - Excavator	0	2
Fires & Explosion	Total	12	18
	Explosives/ Flammable Substances	4	3
	Pressurised Equipment	2	2
	Dust, Gas, Liquid and Chemicals	1	4
	Electrical Installation	1	3
	Vehicles	1	0
	Industrial Machines	0	3
	Other Incident Agents	3	3

Table 1.19: Number of confirmed occupational disease cases by industry, 2016 and 2017

Industry	2017	2016
All Sectors	799	732
Construction	123	93
Marine	49	53
Manufacturing	294	260
<i>Metalworking</i>	104	112
<i>Manufacture of Other Transport Equipment</i>	57	76
<i>Other Manufacturing Industries</i>	46	11
Water Supply, Sewerage & Waste Management and Remediation Activities	1	3
Wholesale & Retail Trade	27	31
Transportation & Storage	85	80
<i>Logistics & Transport</i>	39	29
Accommodation & Food Service Activities	46	47
<i>Accommodation</i>	28	8
<i>Food & Beverage Service Activities</i>	18	39
Information & Communications	1	2
Financial & Insurance Activities	11	2
Real Estate Activities	13	9
Professional, Scientific & Technical Activities	19	22
<i>Architectural & Engineering Activities</i>	9	11
Administrative & Support Service Activities	11	9
Community, Social & Personal Services	71	87
<i>Health Activities</i>	37	50
<i>Other Personal Service Activities</i>	12	16
<i>Education</i>	8	10

Table 1.20: Occupational disease incidence rates by industry, 2016 and 2017

Per 100,000 employed persons

Industry	2017	2016
All Sectors	23.6	21.5
Construction	27.0	18.8
Marine	65.9	59.4
Manufacturing	70.9	62.9
<i>Metalworking</i>	96.4	100.4
<i>Manufacture of Other Transport Equipment</i>	235.5	324.8
<i>Other Manufacturing Industries</i>	194.9	49.3
Water Supply, Sewerage & Waste Management and Remediation Activities	6.1	18.1
Wholesale & Retail Trade	5.6	6.4
Transportation & Storage	34.6	33.2
<i>Logistics & Transport</i>	38.5	29.0
Accommodation & Food Service Activities	18.5	19.3
<i>Accommodation</i>	80.7	23.1
<i>Food & Beverage Service Activities</i>	8.4	18.7
Information & Communications	0.8	1.6
Financial & Insurance Activities	5.2	1.0
Real Estate Activities	14.1	10.0
Professional, Scientific & Technical Activities	8.0	8.8
<i>Architectural & Engineering Activities</i>	15.3	18.0
Administrative & Support Service Activities	4.8	4.1
Community, Social & Personal Services	8.8	11.0
<i>Health Activities*</i>	35.6	50.9
<i>Other Personal Service Activities</i>	n.a.	n.a.
<i>Education</i>	n.a.	n.a.

Table 1.21: Number of confirmed occupational diseases by type, 2016 and 2017

	2017	2016
Total	799	732
Work-related Musculoskeletal Disorders	337	316
<i>Back injuries due to ergonomic risks</i>	314	293
<i>Tendinitis</i>	12	7
<i>Lateral Epicondylitis (Tennis Elbow)</i>	4	1
<i>Nerve Disorder such as Carpal Tunnel Syndrome, Cubital Tunnel Syndrome</i>	3	4
<i>Musculoskeletal Disorder of the Back</i>	1	1
<i>Tenosynovitis</i>	1	2
<i>Trigger Finger/Thumb</i>	1	1
<i>Medial Epicondylitis (Golfer's Elbow)</i>	0	1
<i>Neck Sprain</i>	0	1
<i>Others</i>	1	5
Noise Induced Deafness	329	322
<i>NID (E) - Early</i>	303	301
<i>NID (A) - Advanced</i>	26	21
Occupational Skin Disease	78	47
<i>Eczema</i>	77	43
<i>Others</i>	1	4
Chemical Poisoning	18	0
<i>Carbon Monoxide Gas</i>	18	0
Compressed Air Illness	15	14
<i>CAI Type 1</i>	13	13
<i>CAI Type 2</i>	2	1
Barotrauma	10	12
<i>Aural</i>	8	11
<i>Sinus</i>	2	1
Cancers	6	8
<i>Mesothelioma²²</i>	6	8
Occupational Lung Disease	3	7
<i>Tuberculosis (pulmonary)</i>	2	4
<i>Silicosis</i>	1	0
<i>Asbestosis</i>	0	1
<i>Occupational Asthma</i>	0	2
Excessive Absorption of Chemicals	1	2
<i>Trichloroethylene (TCE)</i>	1	0
<i>Cobalt</i>	0	2
Heat Disorder	1	2
Infectious Disease	0	2
Others	1	0

²²Mesothelioma is a cancer involving the lining of the internal organs.

Table 1.22: Number of confirmed NID cases by industry, 2016 and 2017

Industry	2017	2016
All Sectors	329	322
Construction	60	42
Marine	44	44
Manufacturing	191	185
<i>Metalworking</i>	79	89
<i>Manufacture of Other Transport Equipment</i>	53	66
<i>Manufacture of Paper, Rubber, Plastic Products and Printing</i>	20	3
Water Supply, Sewerage & Waste Management and Remediation Activities	0	2
Wholesale & Retail Trade	4	7
Transportation & Storage	14	9
<i>Logistics & Transport</i>	10	4
Financial & Insurance Activities	4	0
Professional, Scientific & Technical Activities	4	4
<i>Architectural & Engineering Activities</i>	4	4
Administrative & Support Service Activities	1	2
Community, Social & Personal Services	3	5
<i>Repair and Maintenance of Vehicles</i>	3	2
<i>Education</i>	0	1
<i>Health Activities</i>	0	2

Table 1.23: NID incidence rates by industry, 2016 and 2017

Per 100,000 employed persons

Industry	2017	2016
All Sectors	9.7	9.5
Construction	13.2	8.5
Marine	59.1	49.3
Manufacturing	46.1	44.8
<i>Metalworking</i>	73.2	79.7
<i>Manufacture of Other Transport Equipment</i>	219.0	282.1
<i>Manufacture of Paper, Rubber, Plastic Products and Printing</i>	64.3	9.1
Water Supply, Sewerage & Waste Management and Remediation Activities	0.0	12.0
Wholesale & Retail Trade	0.8	1.4
Transportation & Storage	5.7	3.7
<i>Logistics & Transport</i>	9.9	4.0
Financial & Insurance Activities	1.9	0.0
Professional, Scientific & Technical Activities	1.7	1.6
<i>Architectural & Engineering Activities</i>	6.8	6.6
Administrative & Support Service Activities	0.4	0.9
Community, Social & Personal Services	0.4	0.6
<i>Repair and Maintenance of Vehicles*</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Education</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Health Activities*</i>	0.0	2.0

Table 1.24: Number of confirmed WRMSD cases by industry, 2016 and 2017

Industry	2017	2016
All Sectors	337	316
Construction	33	24
Marine	2	3
Manufacturing	53	50
<i>Metalworking</i>	17	14
<i>Manufacture of Food, Beverages & Tobacco</i>	10	10
<i>Manufacture of Computer, Electronic and Optical Products</i>	9	5
Wholesale & Retail Trade	18	24
<i>Wholesale Trade</i>	8	15
<i>Retail Trade</i>	10	9
Transportation & Storage	68	70
<i>Air Transport</i>	36	32
<i>Logistics & Transport</i>	26	24
Accommodation & Food Service Activities	25	25
<i>Accommodation</i>	9	8
<i>Food & Beverage Service Activities</i>	16	17
Information & Communications	1	2
Financial & Insurance Activities	7	2
Real Estate Services	12	8
Professional, Scientific & Technical Activities	11	14
Administrative & Support Service Activities	8	4
Community, Social & Personal Services	56	63
<i>Health Activities</i>	29	32
<i>Other Personal Service Activities</i>	9	14
<i>Education</i>	8	9

Table 1.25: Number of confirmed OSD cases by industry, 2016 and 2017

Industry	2017	2016
1 All Sectors	78	47
Construction	5	0
Marine	2	1
Manufacturing	47	20
<i>Other Manufacturing Industries</i>	33	4
<i>Metalworking</i>	7	6
<i>Manufacture of Other Transport Equipment</i>	3	6
Wholesale & Retail Trade	5	0
Accommodation & Food Service Activities	3	6
Real Estate Services	1	1
Professional, Scientific & Technical Activities	2	3
Administrative & Support Service Activities	1	2
Community, Social & Personal Services	12	13
<i>Health Activities</i>	8	10
<i>Other Personal Service Activities</i>	3	2
<i>Repair & Maintenance of Vehicles</i>	1	0

Table 1.26: Top Causative Agents of Occupational Skin Diseases, 2017

Causative Agents	No. of Cases
Wetwork and Occlusion	42
Solvents	6
Coolant	3
Detergent	3
Friction	3
Latex	3

Table 1.27: Accident Frequency Rate (AFR) and Accident Severity Rate (ASR) in selected sectors, 2016 and 2017

Per million man-hours worked

Industry	AFR		ASR	
	2017	2016	2017	2016
All Sectors	1.6	1.6	69	86
Construction	1.6	1.7	104	159
Marine	1.5	1.5	95	190
Manufacturing	2.5	2.6	104	115
<i>Metalworking</i>	3.7	4.0	112	199
<i>Manufacture of Food, Beverages & Tobacco</i>	4.0	4.2	201	203
<i>Manufacture of Computer, Electronic and Optical Products</i>	0.9	0.8	46	14
Water Supply, Sewerage & Waste Management and Remediation Activities	n.a.	n.a.	n.a.	n.a.
Wholesale & Retail Trade	0.6	0.6	30	29
<i>Wholesale Trade</i>	0.5	0.5	36	11
<i>Retail Trade</i>	0.8	0.8	17	67
Transportation & Storage	1.9	2.0	126	162
<i>Logistics & Transport</i>	3.0	3.1	239	216
Accommodation & Food Services	2.1	2.1	43	32
<i>Accommodation</i>	3.3	3.1	56	48
<i>Food & Beverage Service Activities</i>	1.9	1.9	41	29
Information & Communications	0.2	0.2	5	3
Financial & Insurance Activities	0.3	0.3	6	6
Real Estate Activities	1.9	1.7	58	32
Professional, Scientific & Technical Activities	0.7	0.7	24	16
<i>Legal, Accounting & Management Activities</i>	0.6	0.6	11	14
<i>Architectural & Engineering Activities</i>	1.1	1.2	20	28
Administrative & Support Service Activities	0.9	0.8	55	97
<i>Security and Investigation Activities</i>	1.1	0.9	70	122
<i>Cleaning & Landscape Maintenance Activities</i>	0.9	0.9	112	234
Community, Social & Personal Services	0.7	0.7	17	27
<i>Health Activities*</i>	1.9	1.9	38	30
<i>Education</i>	n.a.	n.a.	n.a.	n.a.

Table 1.28: Number of man-days lost to workplace incidents²³ in selected sectors, 2016 and 2017

Industry	2017	2016
All Sectors	544,687	697,139
Construction	125,122	212,968
Marine	18,574	46,162
Manufacturing	107,375	119,343
<i>Metalworking</i>	31,284	57,650
<i>Manufacture of Food, Beverages & Tobacco</i>	23,347	22,479
<i>Manufacture of Computer, Electronic and Optical Products</i>	10,231	2,805
Water Supply, Sewerage & Waste Management and Remediation Activities	14,839	15,139
Wholesale & Retail Trade	31,966	31,786
<i>Wholesale Trade</i>	25,919	8,001
<i>Retail Trade</i>	6,047	23,785
Transportation & Storage	73,603	93,277
<i>Logistics & Transport</i>	59,043	53,120
Accommodation & Food Services	23,198	16,862
<i>Accommodation</i>	4,629	4,012
<i>Food & Beverage Service Activities</i>	18,569	12,850
Information & Communications	1,287	710
Financial & Insurance Activities	2,878	2,566
Real Estate Activities	12,488	6,676
Professional, Scientific & Technical Activities	12,705	8,803
<i>Legal, Accounting & Management Activities</i>	2,798	3,845
<i>Architectural & Engineering Activities</i>	2,823	4,201
Administrative & Support Service Activities	30,990	51,120
<i>Security and Investigation Activities</i>	8,789	14,225
<i>Cleaning & Landscape Maintenance Activities</i>	17,008	32,147
Community, Social & Personal Services	30,452	46,231
<i>Health Activities</i>	8,446	6,575
<i>Education</i>	5,136	4,670

²³ According to the U.S National Institute of Occupational Safety and Health (NIOSH)'s table of scheduled charges, a fatal injury is equivalent to the loss of 6,000 man-days. The Ministry of Manpower adopts a similar coding schedule.

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 then 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 Ministry of Manpower (MOM), as well as results submitted by companies with in-plant monitoring, is 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, 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, 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 and medical practitioners 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 by companies 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 of 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 more than three days of medical leave, regardless of whether these were consecutive days;
- 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.

ANNEX F

CONCEPTS & 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 and abdomen, neck, hip and pelvis
 - exposure to electric current
 - asphyxia/drowning
 - hypothermia
 - burns with more than 20 days of medical leave
 - concussion with more than 20 days of medical leave
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