



Workplace Safety and Health Report 2016

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 REMAINED AT 1.9 PER 100,000 EMPLOYED PERSONS; WORKPLACE MAJOR INJURY RATE REDUCED TO 17.4 AND WORKPLACE MINOR INJURY RATE INCREASED TO 363 PER 100,000 EMPLOYED PERSONS RESPECTIVELY IN 2016

The overall number of workplace injury¹ cases increased to 13,014 cases, compared to 12,351 cases in 2015. The number of workplace fatal injury cases remained the same at 66 cases in 2016. 732 occupational disease cases were confirmed in 2016, a decrease compared to 935 cases in 2015.

The number of workplace major injury cases decreased slightly in 2016 with 594 workers sustaining workplace major injuries compared to 597 in 2015. The number of workplace minor injury cases increased in 2016 to 12,354 compared to 11,688 in 2015.

Table 1.1: Number of workplace injuries, dangerous occurrences and occupational diseases, 2015 and 2016

	2016	2015
Workplace Injuries	13,014	12,351
Fatal Injuries	66	66
Major Injuries	594	597
Minor Injuries	12,354	11,688
Dangerous Occurrences	45	46
Occupational Diseases (OD)	732	935

Table 1.2: Key safety and health indicators, 2015 and 2016

	2016	2015
Workplace Injury Rate²	382	364
Fatal Injury rate	1.9	1.9
Major Injury rate	17.4	17.6
Minor Injury rate	363	344
Accident Frequency Rate ³	1.6	1.5
Accident Severity Rate ⁴	86	85
Occupational Disease Incidence Rate⁵	21.5	27.5

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 2016 statistics on workplace safety and health are:

WORKPLACE INJURIES

- 66 workers were fatally injured, a rate of 1.9 per 100,000 employed persons.
- 594 workers sustained workplace major injuries, a rate of 17.4 per 100,000 employed persons.
- 12,354 workers sustained less severe injuries (i.e. minor injuries), a rate of 363 per 100,000 employed persons.
- 697,139 man-days were lost, a rate of 86 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).
- Among the major injury cases, amputations cases increased to 143 cases, from 117 cases in 2015.
- Fatal and major injury cases involving struck by moving vehicles increased to 12 and 20 cases, from 10 and 14 cases respectively in 2015.

DANGEROUS OCCURRENCES

- 45 dangerous occurrences (DO) were reported to MOM in 2016.

OCCUPATIONAL DISEASES

- 732 occupational disease (OD) cases were confirmed in 2016, an incidence rate of 21.5 per 100,000 employed persons.
- Leading OD was noise-induced deafness with 322 cases.
- Second most common OD was work-related musculoskeletal disorders (WRMSD) with 316 cases, with inclusion of back injury cases due to ergonomic risks.

BUSINESS UNDER SURVEILLANCE

- 28 companies entered the surveillance phase under the Business under Surveillance (BUS) programme in 2016.

MEDICAL AND HYGIENE SURVEILLANCE

- 120,999 workers from 2,211 workplaces were monitored under the Medical Surveillance Programme.
- Under the Hygiene Surveillance Programme, 81% of the workplaces had static noise levels greater than 85dBA. 82% of the workplaces had workers who were exposed to excessive noise. A total of 3,832 chemical exposure results were received.

OVERVIEW OF TRENDS

WORKPLACE INJURIES

For 2016, the overall number of reported⁶ injuries increased by 5.4% compared to 2015 (Figure 1). Manufacturing sector had the highest overall injury rate since 2011, followed by Construction sector (Figure 2).

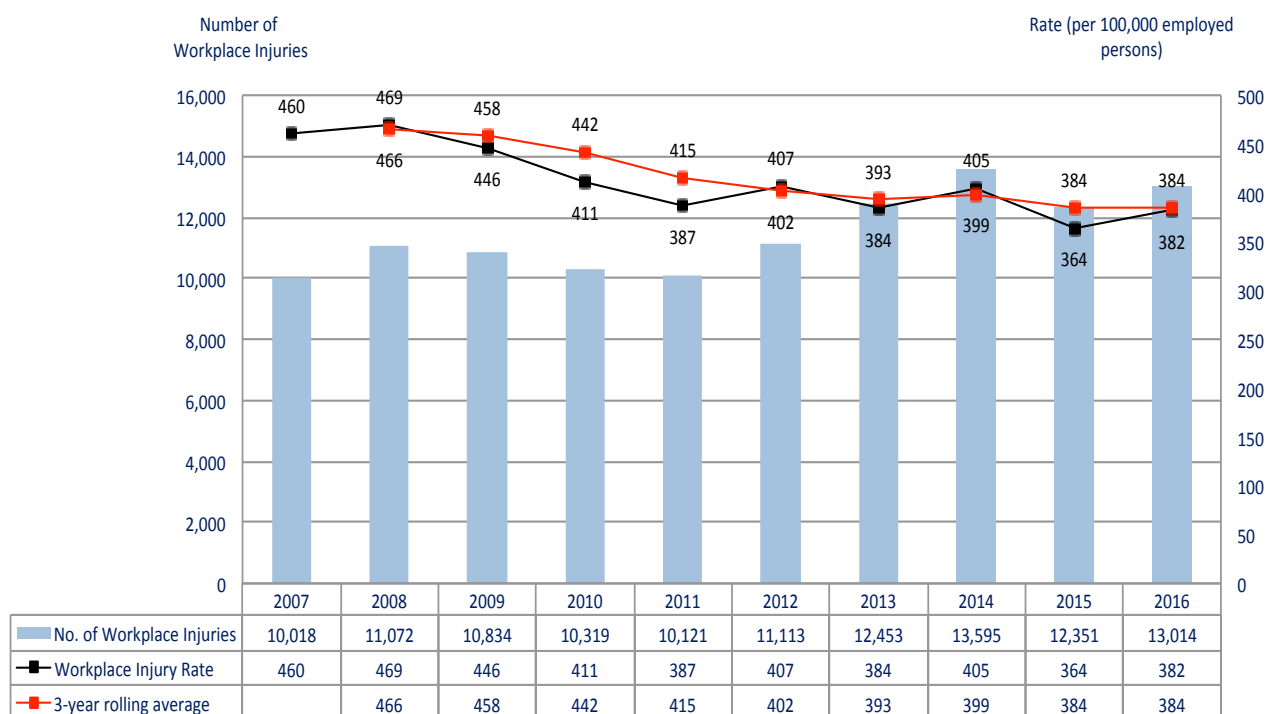


Figure 1: Workplace injury rate, 2007-2016

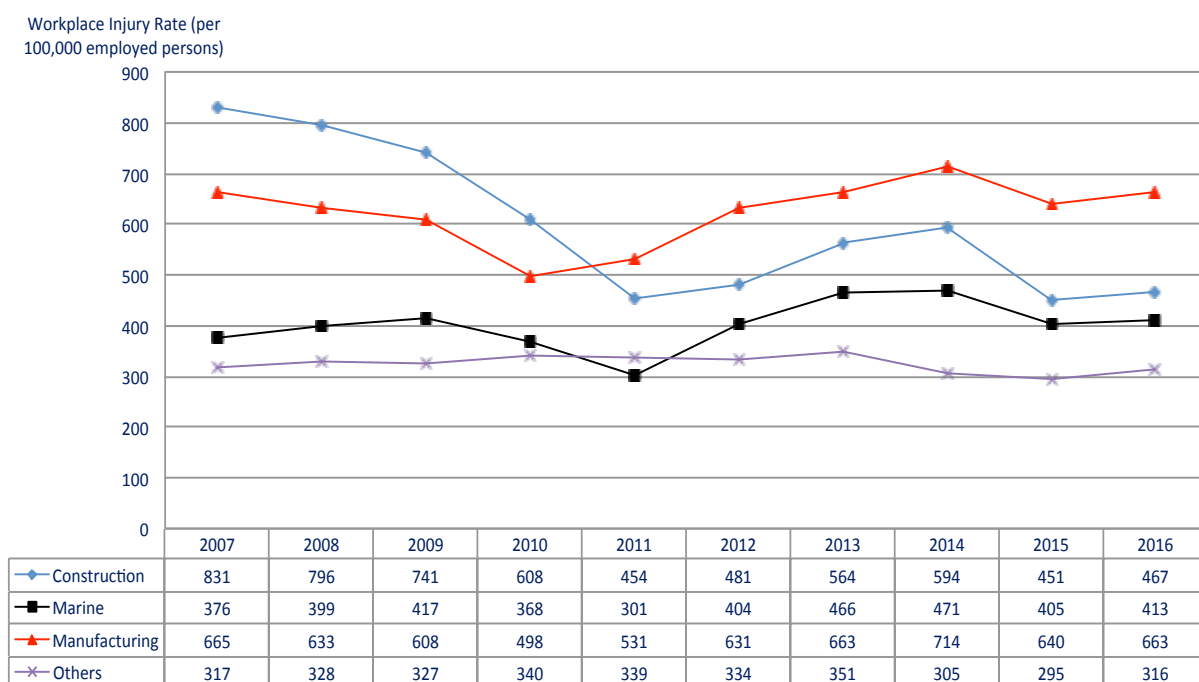


Figure 2: Workplace injury rate by industry, 2007-2016

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 66 workplace fatal injuries in 2016 similar to 2015 (Table 1.1). Workplace fatal injury rate remained at 1.9 per 100,000 employed persons in 2016 (Figure 3). Overall, based on 3-year rolling average, the workplace fatal injury rate has been decreasing since 2008.

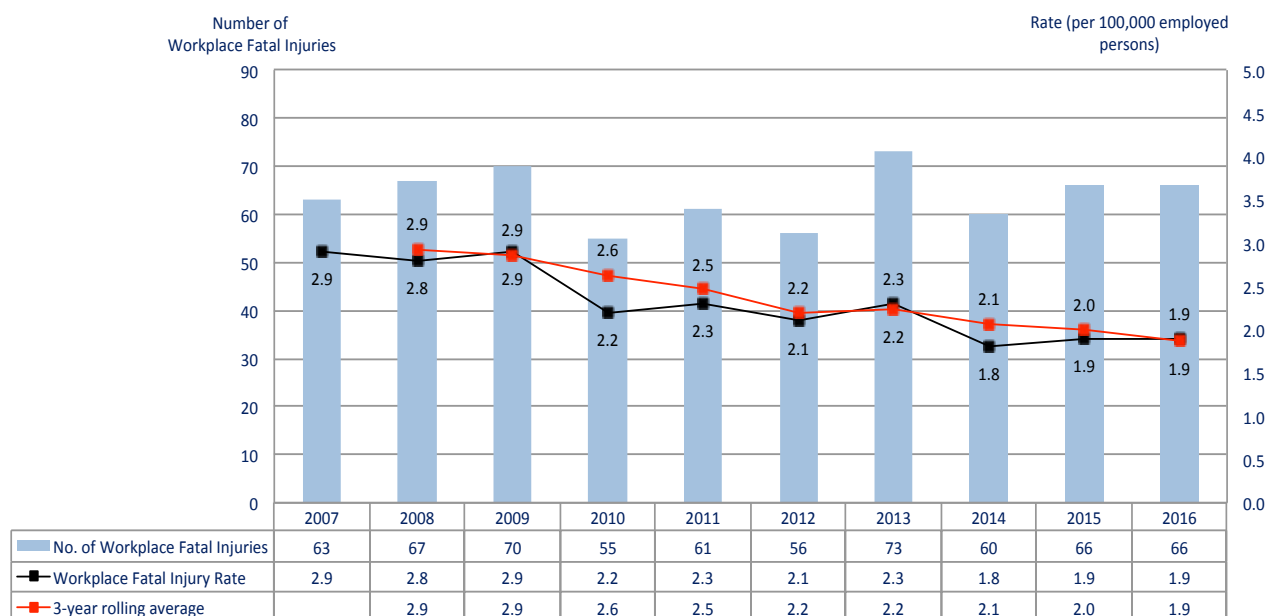


Figure 3: Workplace fatal injury rate, 2007-2016

Construction sector continued to be the top contributor with 36% of total workplace fatal injuries. The contribution from the Transportation & Storage sector has dropped, from 23% in 2015 to 17% in 2016, and it remained the second highest contributor (Figure 4). Contribution from Manufacturing sector has increased from 9% in 2015 to 14% in 2016.

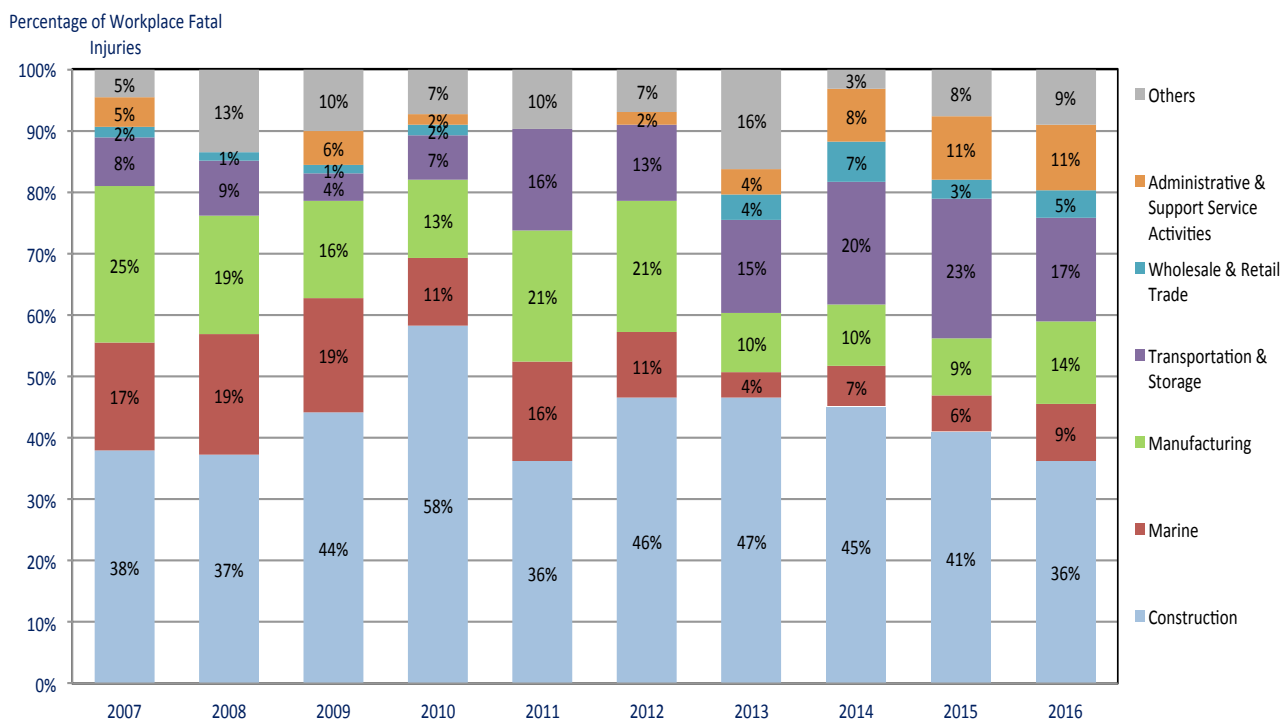
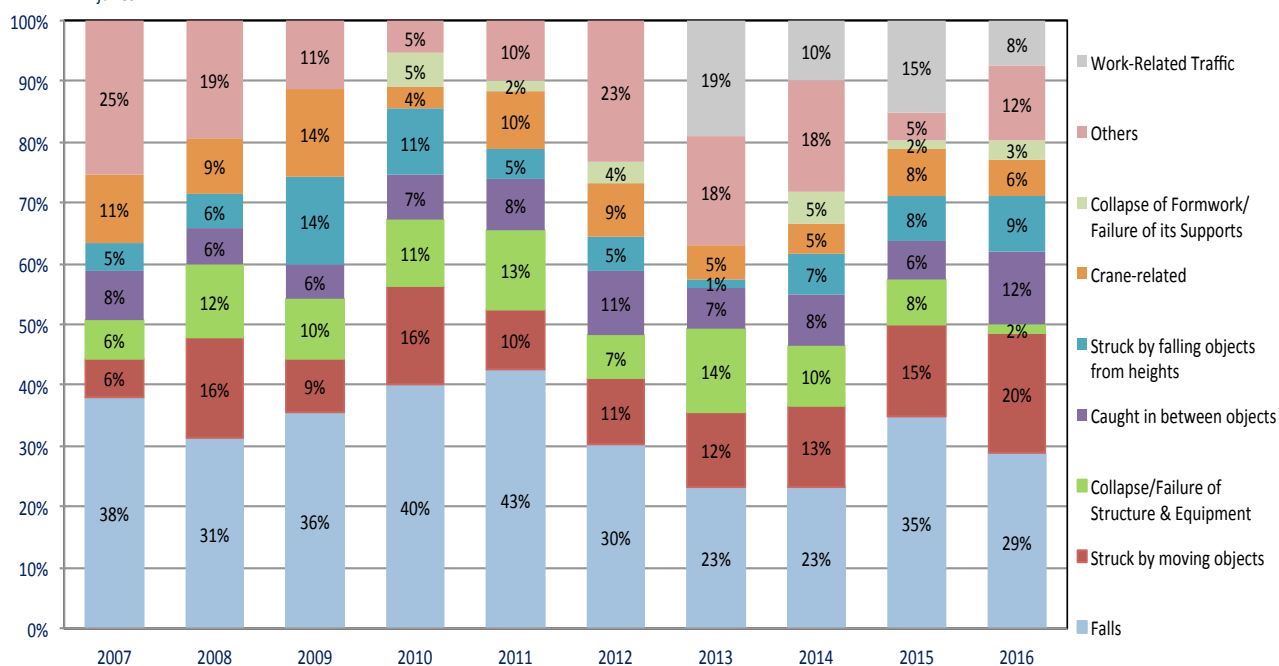


Figure 4: Proportion of workplace fatal injuries by industry, 2007-2016

Percentage of Workplace Fatal Injuries

**Figure 5: Proportion of workplace fatal injuries by incident type, 2007-2016****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 70% of all workplace fatal injuries in 2016 were (Table 1.5):

- Falls (Falls from Heights (FFH)¹⁰ (13 fatal injuries, 20%), Slips, Trips & Falls¹¹ (6 fatal injuries, 9%))
- Struck by Moving Objects (13 fatal injuries, 20%)
- Caught in/between Objects (8 fatal injuries, 12%)
- Struck by Falling Objects (6 fatal injuries, 9%)

STRUCK BY MOVING OBJECTS INVOLVING VEHICLES

Cases of Struck by Moving Objects involving vehicles have been increasing since 2012 (Figure 6). Construction sector was the top contributor with 6 cases (50%), followed by Transportation & Storage sector with 3 cases (25%) (Figure 7). Top incident vehicle type was Truck with 5 cases (Figure 8).

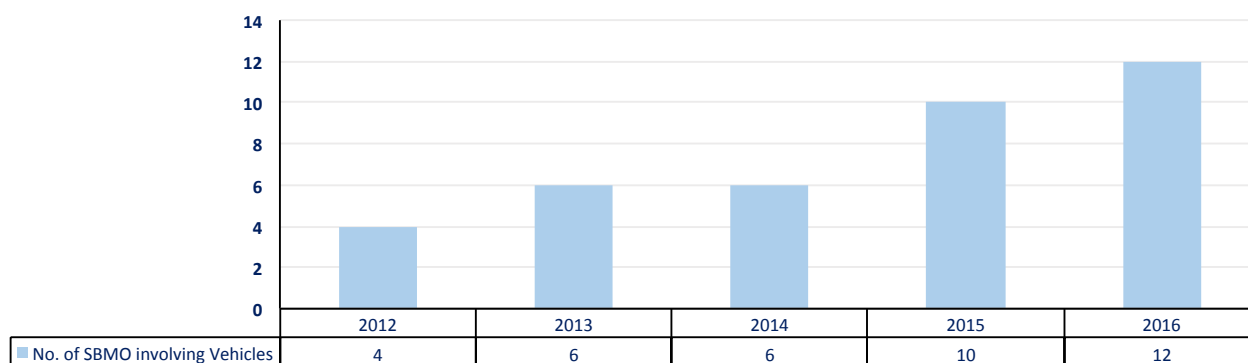


Figure 6: Struck by moving objects involving vehicles, 2012-2016

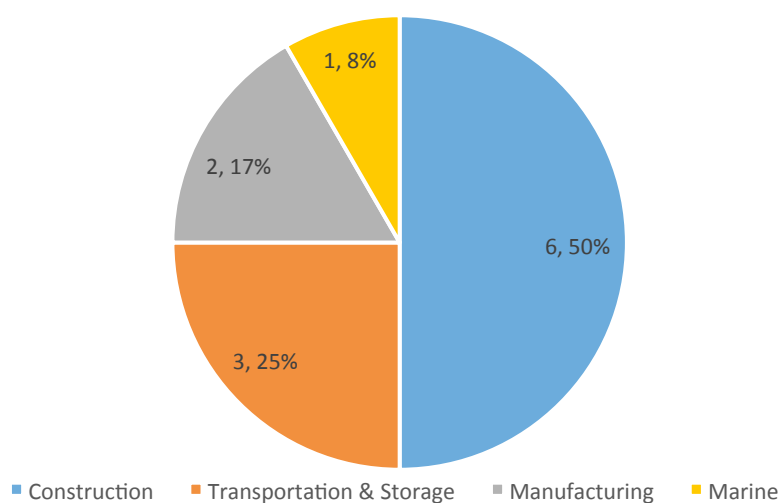


Figure 7: Struck by moving objects involving vehicles by industry, 2016

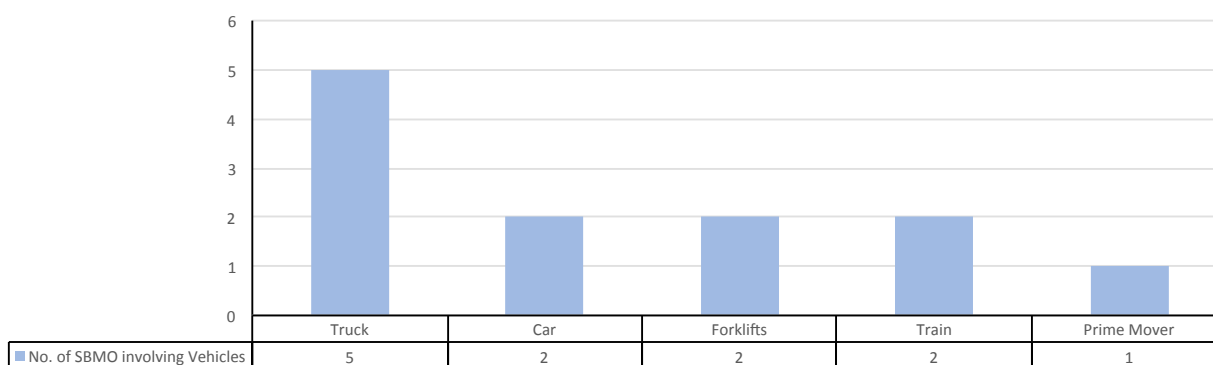


Figure 8: Struck by moving objects involving vehicles by vehicle type, 2016

WORKPLACE FATAL INJURIES BY SECTOR

CONSTRUCTION

The workplace fatal injury rate in the Construction sector fell from 5.4 per 100,000 employed persons in 2015 to 4.9 per 100,000 employed persons in 2016. It was the lowest since 2007.

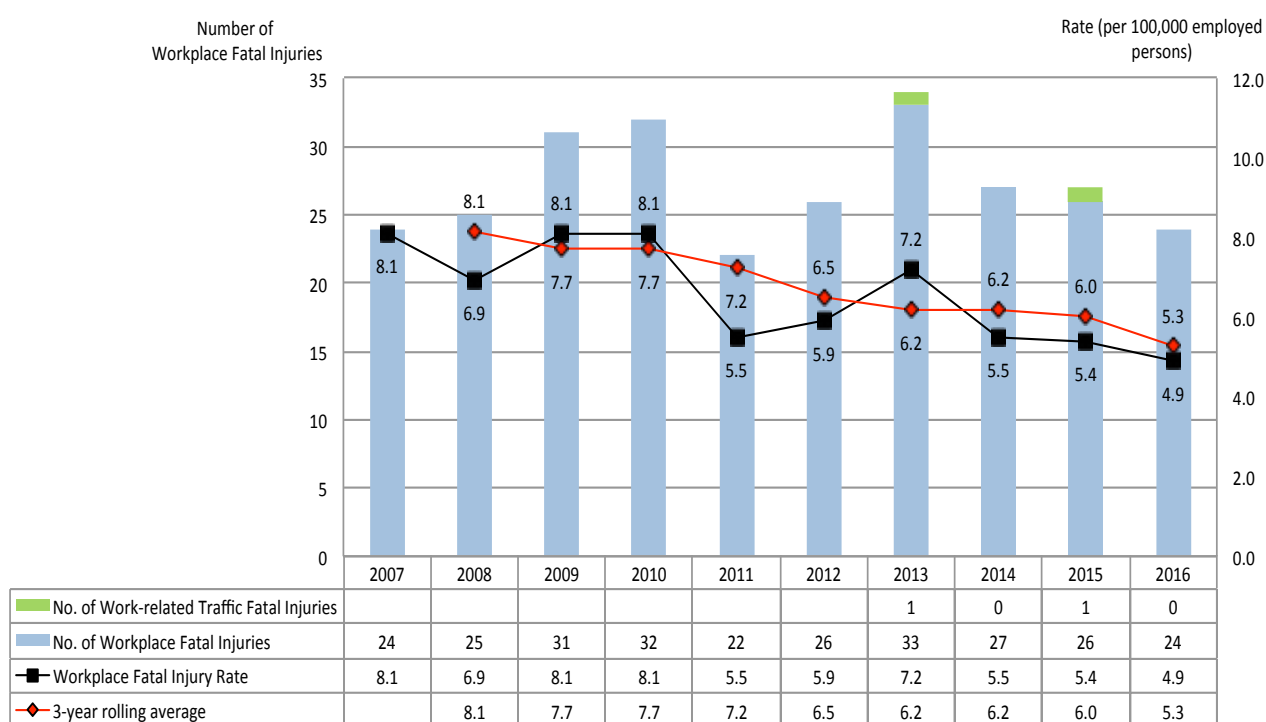


Figure 9: Workplace fatal injury rate for Construction sector, 2007-2016

MARINE

For the Marine⁷ sector, there were 6 workplace fatal injuries in 2016, up from 4 in 2015 (Table 1.3). The workplace fatal injury rate rose from 4.2 per 100,000 employed persons in 2015 to 6.7 per 100,000 employed persons in 2016 (Table 1.4).

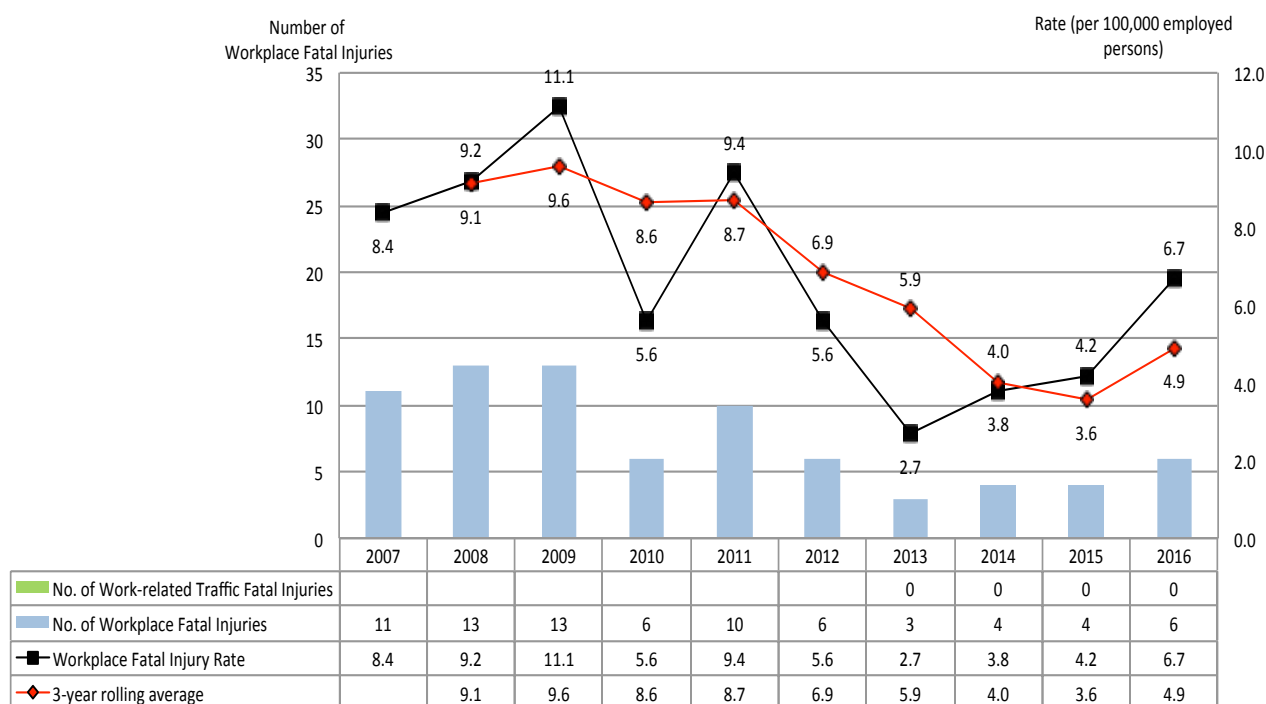


Figure 10: Workplace fatal injury rate for Marine sector, 2007-2016

⁷ 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 9 workplace fatal injuries in 2016 up from 6 in 2015 (Table 1.3). The workplace fatal injury rate increased to 2.2 per 100,000 employed persons in 2016 (Table 1.4).

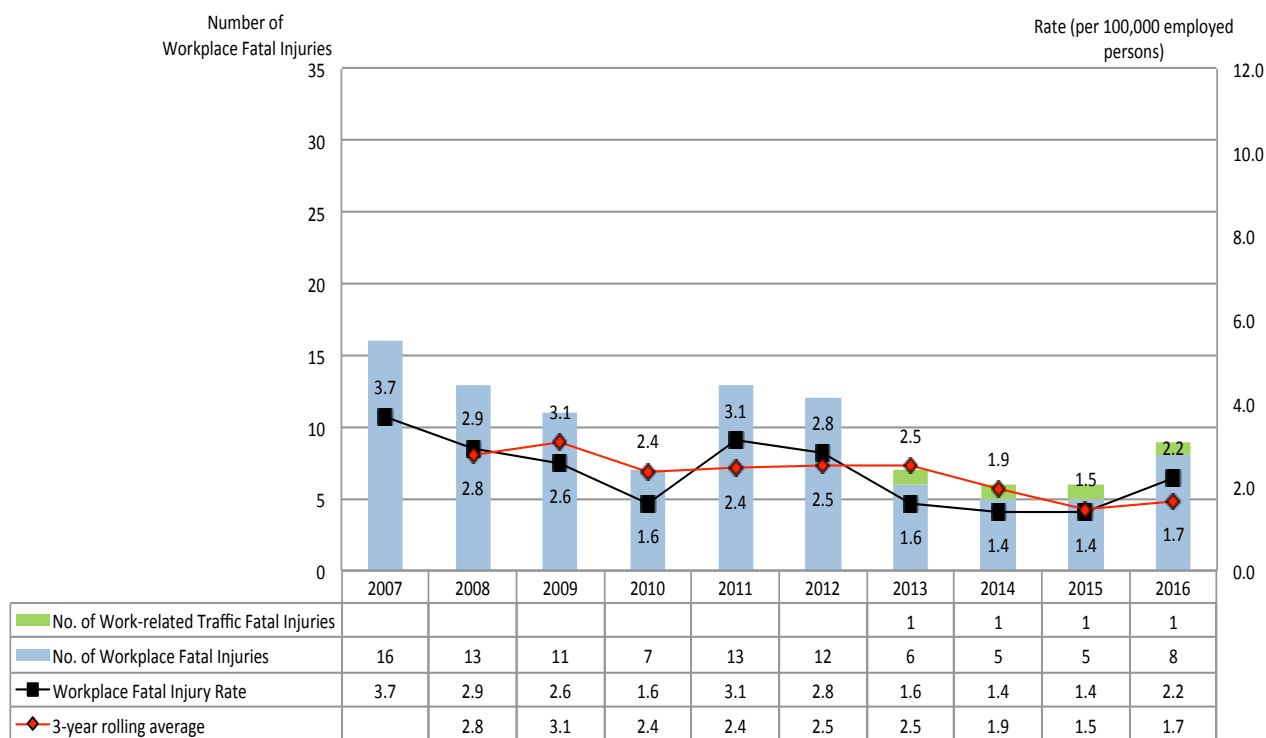


Figure 11: Workplace fatal injury rate for Manufacturing sector, 2007-2016

TRANSPORTATION & STORAGE

The number of workplace fatal injuries decreased from 15 cases in 2015 to 11 cases in 2016 (Table 1.3). The workplace fatal injury rate dropped from 6.3 per 100,000 employed persons in 2015 to 4.6 per 100,000 employed persons in 2016.

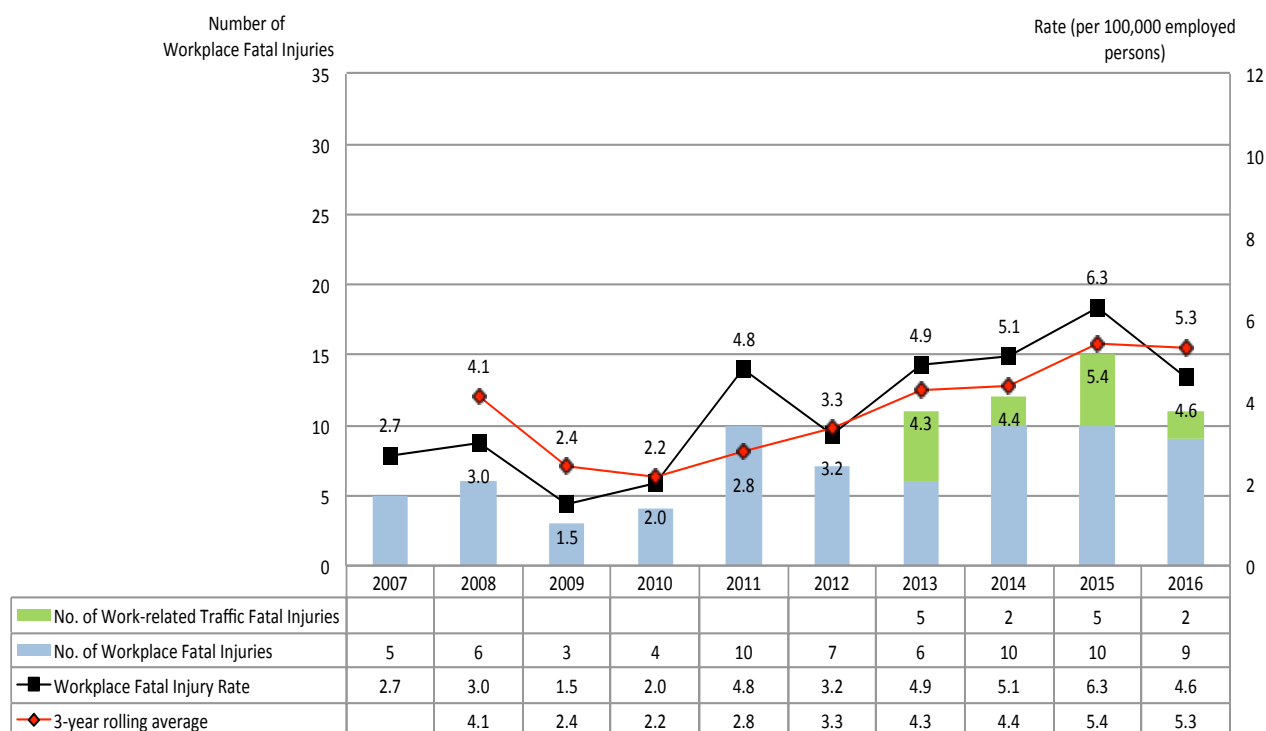


Figure 12: Workplace fatal injury rate for Transportation & Storage sector, 2007-2016

WORKPLACE MAJOR INJURIES

The number of workplace major injuries⁸ decreased slightly from 597 cases (17.6 per 100,000 employed persons) in 2015 to 594 cases (17.4 per 100,000 employed persons) in 2016 (Figure 13).

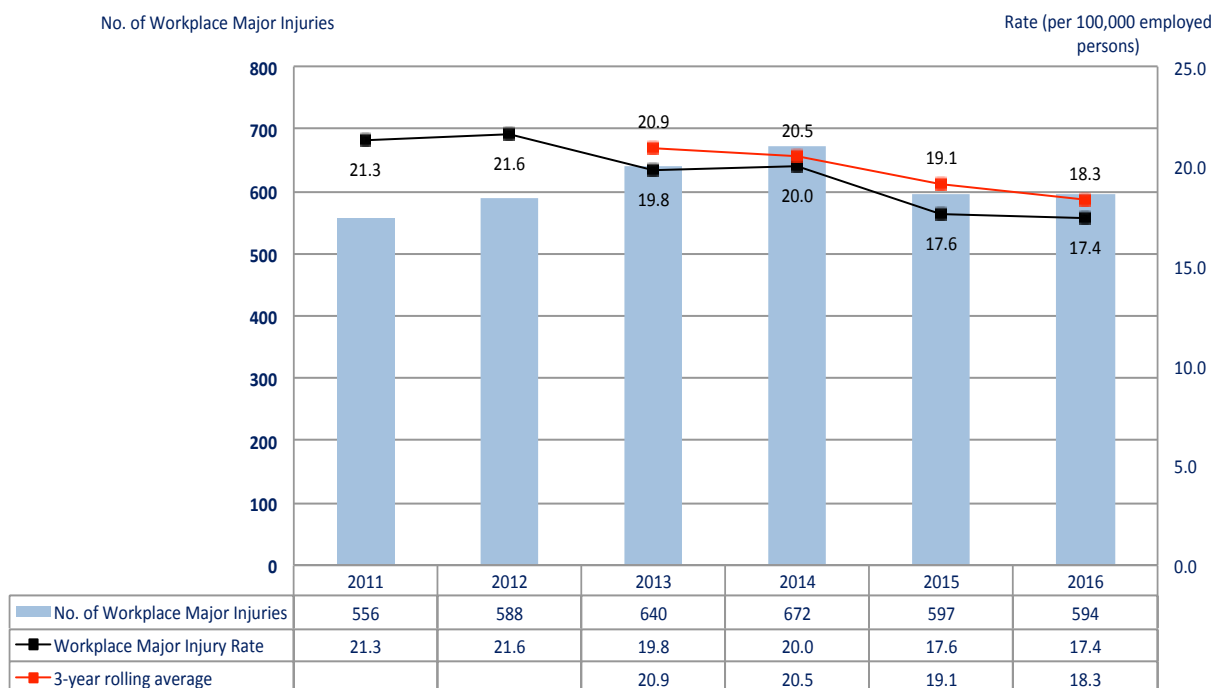


Figure 13: Workplace major injury rate, 2011-2016

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 143 workers suffering from complete loss or loss of use of any member/part of a member of the injured person's body in 2016. It increased by 22% from 117 cases in 2015 (Figure 14). Top contributing sector was Manufacturing sector with 54 cases (38%), and among the Manufacturing subsector, Metalworking contributed the most (18 cases). Construction sector was the second highest contributor with 46 cases (32%). The top incident agent for amputation cases was Industrial Machines with 56 cases (39%), followed by Industrial Hand Tools with 20 cases (14%).

The number of Hypothermia/Burns cases with more than 20 MC days decreased from 73 cases in 2015 to 57 cases in 2016 (Table 1.9).

⁸ Refer to Annex F for definition.

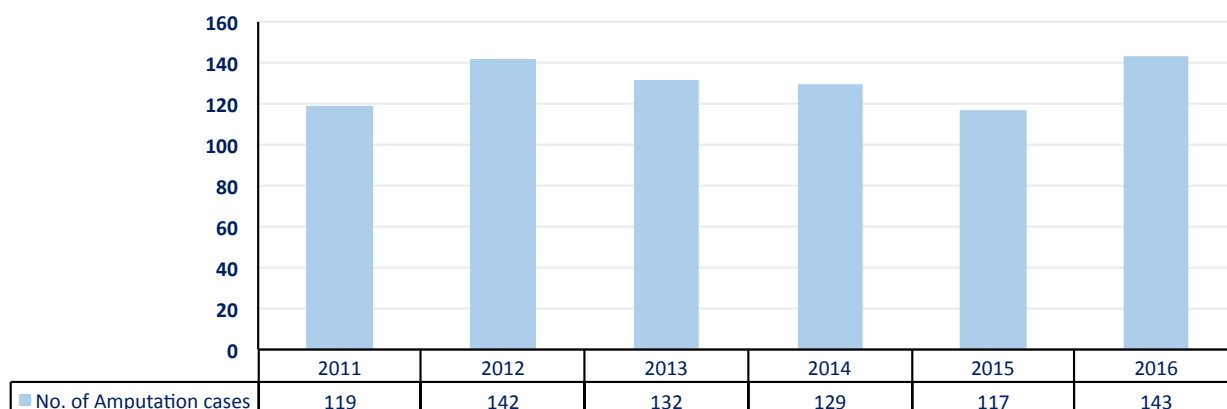


Figure 14: Number of amputation cases, 2011-2016

WORKPLACE MAJOR INJURIES BY INCIDENT TYPES AND INCIDENT AGENTS

The top three incident types, accounting for 65% of workplace major injuries were (Table 1.10):

- Falls (Falls from Heights (FFH) (73 injuries, 12%), Slips, Trips and Falls (173 injuries, 29%))
- Struck by Moving Objects (73 injuries, 12%)
- Caught in/between Objects (68 injuries, 11%)

Struck by Moving Objects increased from 55 cases in 2015 to 73 cases in 2016. Struck by moving vehicles was the top incident agent, increased from 14 cases in 2015 to 20 cases in 2016.

WORKPLACE MINOR INJURIES

Compared to 2015, there was a 5.7% increase in the number of workplace minor injuries, from 11,688 (344 per 100,000 employed persons) in 2015 to 12,354 (363 per 100,000 employed persons) in 2016 (Figure 15).

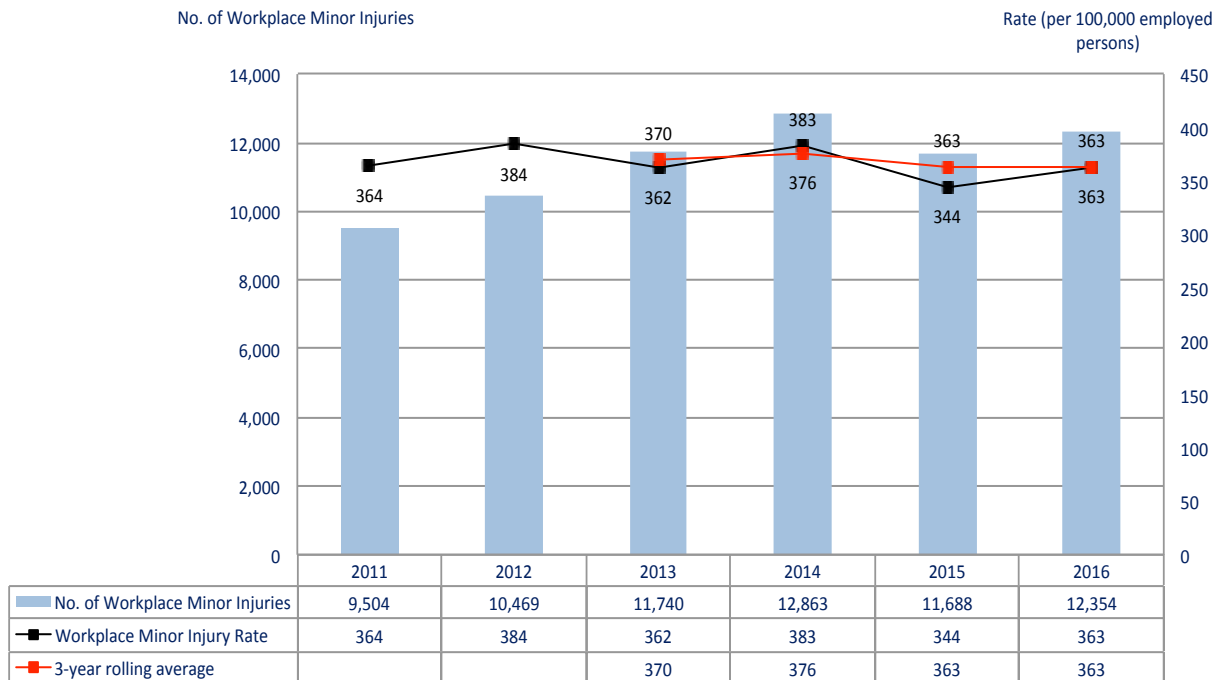


Figure 15: Workplace Minor injury rate, 2011-2016

WORKPLACE MINOR INJURIES BY INCIDENT TYPES AND INCIDENT AGENTS

The top three incident types that accounted for 56% of workplace minor injuries in 2016 were (Table 1.14):

- Falls (Slips, Trips and Falls (STF)) (3,315 injuries, 27%)
- Struck by Moving Objects (SBMO) (2,031 injuries, 16%)
- Cut/Stabbed by Objects (CSBO) (1,525 injuries, 12%)

WORKPLACE MINOR INJURIES BY INJURY TYPES

The top three types of injury that accounted for 78% of all workplace minor injuries were (Table 1.16):

- Cuts and Bruises (4,674 injuries, 38%)
- Crushing, Fractures and Dislocations (2,932 injuries, 24%)
- Sprains and Strains (2,071 injuries, 17%)

DANGEROUS OCCURRENCES

45 cases of dangerous occurrences (DO) were reported to MOM in 2016, a slight drop from 46 cases in 2015 (Figure 16). 60% were due to Collapse/Failure of Structures & Equipment, of which 19 cases were incidents related to crane such as collapse, failure of wire ropes and safety devices. The second highest DO was Fires and Explosion which contributed 40% of the total DOs confirmed. It has increased by 20% from 15 cases in 2015 to 18 cases in 2016 (Table 1.18).

DANGEROUS OCCURRENCES BY SECTOR

Construction sector was the top contributor for the DO cases, accounting for 49% of total DO cases reported in 2016 (Table 1.17). It decreased from 23 cases in 2015 to 22 cases in 2016. Manufacturing sector was the second top contributor with 11 cases in 2016, down from 12 cases in 2015.

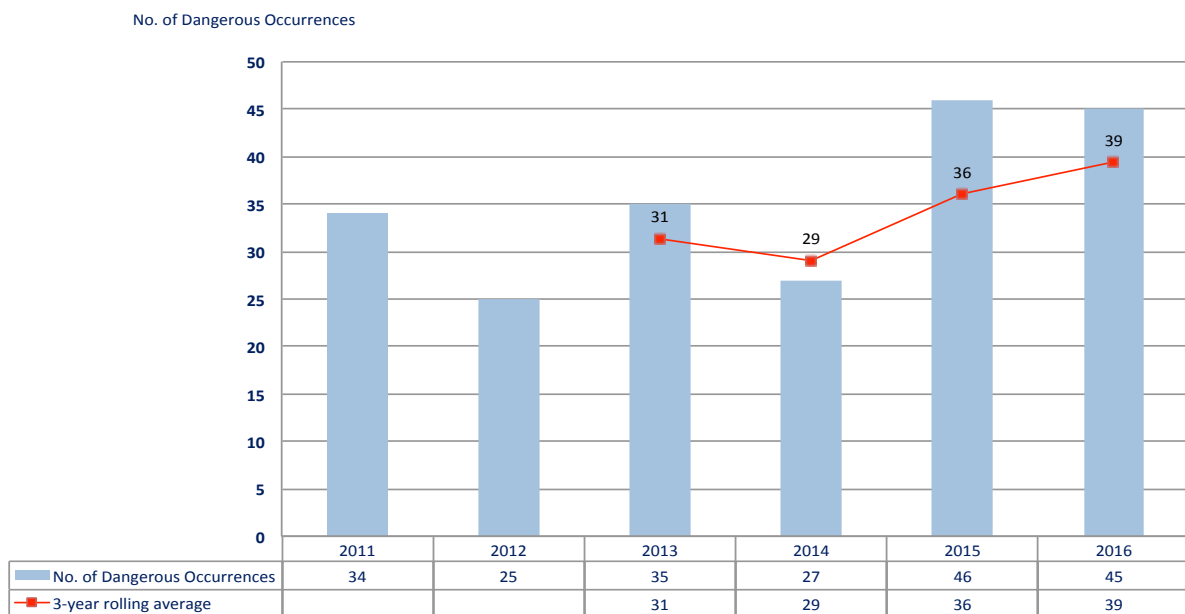


Figure 16: Number of dangerous occurrences, 2011-2016

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 2016.

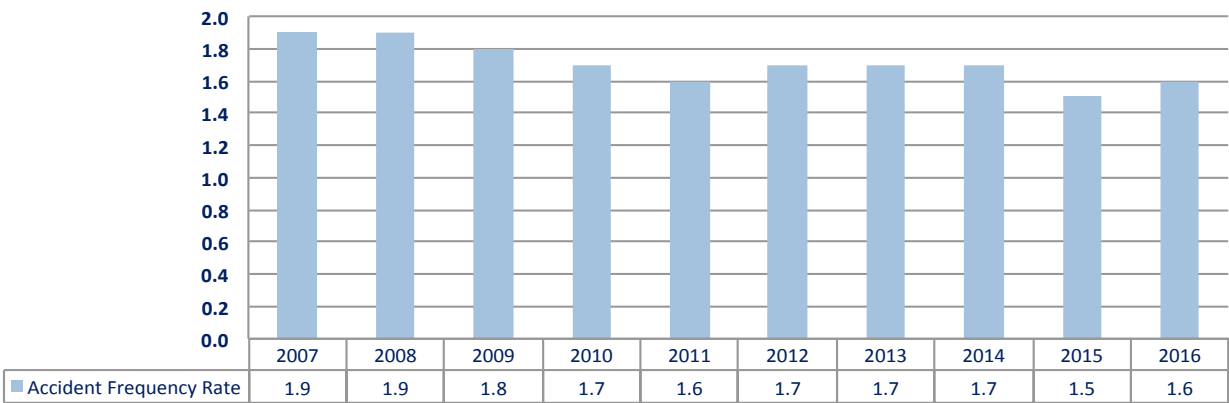


Figure 17: Accident frequency rate, 2007-2016

ACCIDENT SEVERITY RATE

A total of 679,139 man-days were lost from workplace injuries, an increase of 1.7% from 2015. The accident severity rate (ASR) was 86 man-days lost for every million hours worked in 2016. 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.

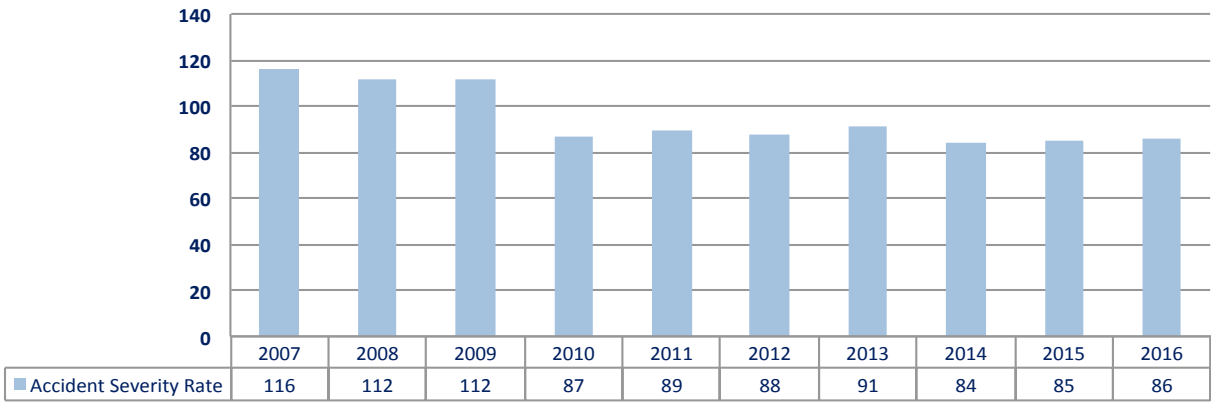


Figure 18: Accident severity rate, 2007-2016

OCCUPATIONAL DISEASES

For occupational diseases (OD)⁹, the number of cases confirmed was 732 in 2016, down from 935 in 2015. For 2016, OD incidence was 21.5 confirmed cases per 100,000 employed persons, a decrease compared to 27.5 in the previous year (Figure 19). The leading OD was Noise-Induced Deafness (NID), followed closely by Work-Related Musculoskeletal Disorders (WRMSD).



Figure 19: Occupational disease incidence rate, 2007-2016

Percentage of Confirmed OD Cases

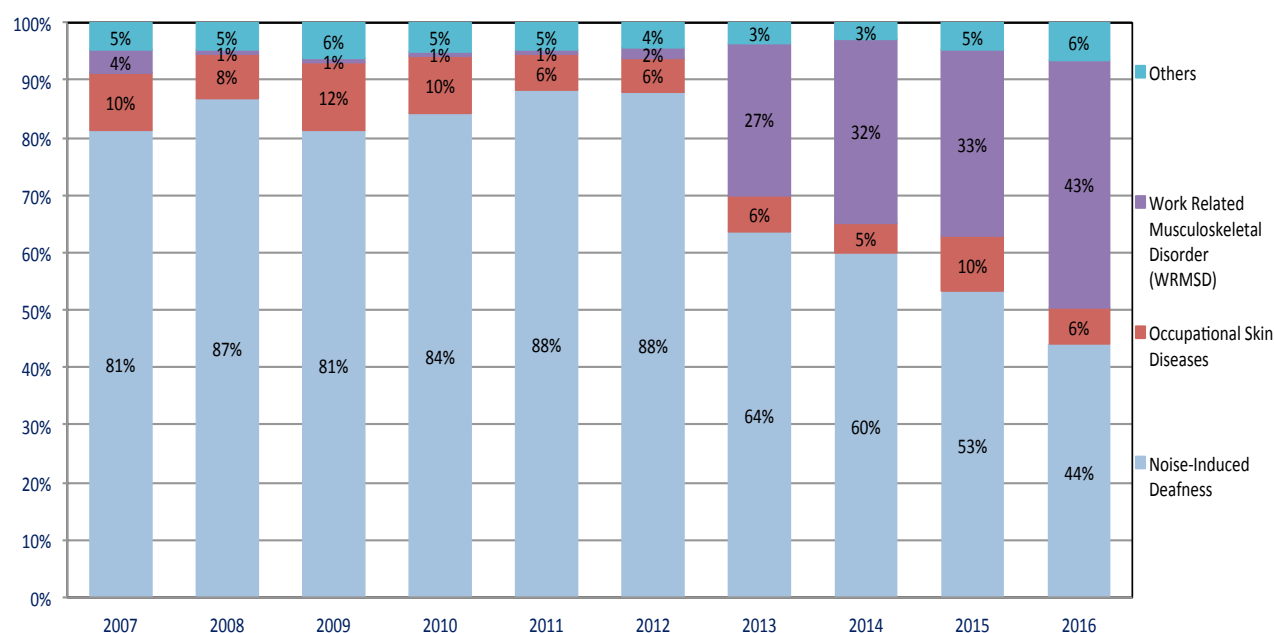


Figure 20: Proportion of occupational disease by type, 2007-2016

⁹ An occupational disease is a disease contracted as a result of exposure to risk factors arising from work.

NOISE-INDUCED DEAFNESS (NID)

There was a decrease in the number of NID cases from 498 in 2015 to 322 in 2016, due mainly to the drop in the number of cases from the Marine and Manufacturing sectors. Although the Manufacturing sector saw a decrease in the number of cases from 229 in 2015 to 185 in 2016 (Table 1.22), it continued to contribute the highest number of cases. 89 (28%) of the NID cases were from Metalworking whilst Manufacture of Other Transport Equipment saw an increase in NID cases from 18 in 2015 to 66 in 2016.

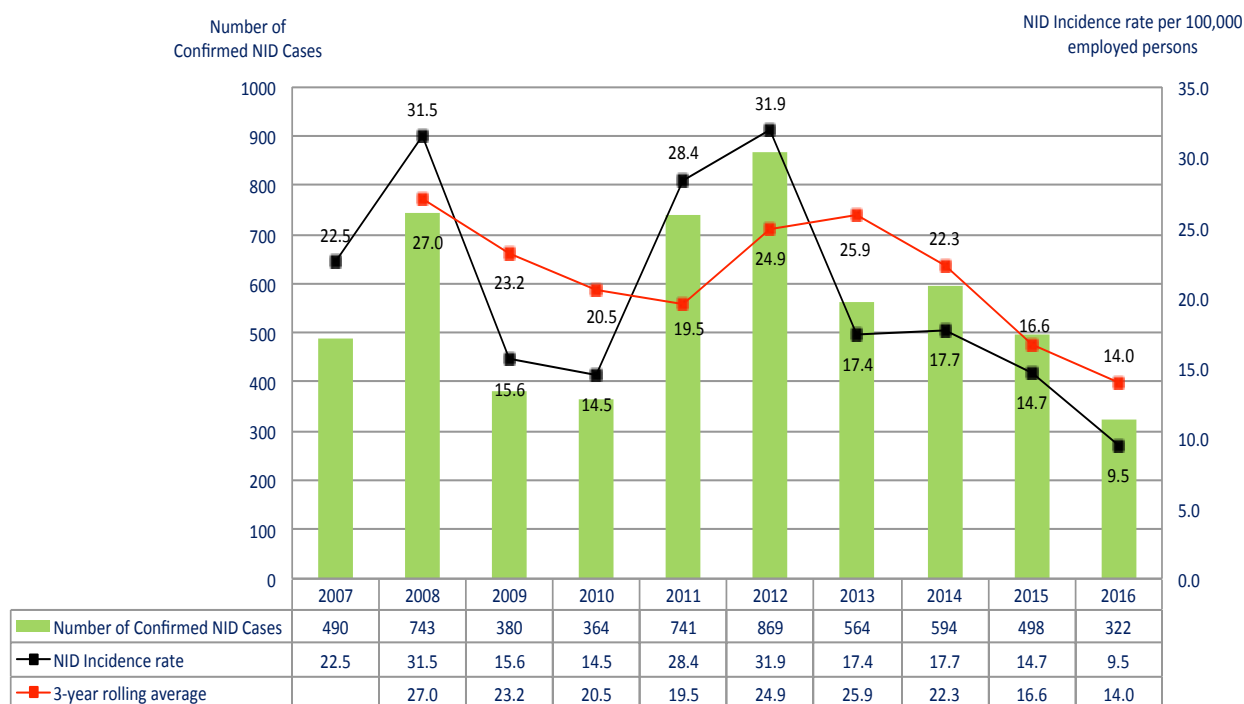


Figure 21: Noise-induced deafness incidence rate, 2007-2016

WORK-RELATED MUSCULOSKELETAL DISORDERS (WRMSD)

About 22% of the cases were from the Transportation & Storage sector (Table 1.24), followed by Manufacturing sector contributing 16% of the cases. There was a 23% increase in WRMSD cases for Health Activities sector in 2016.

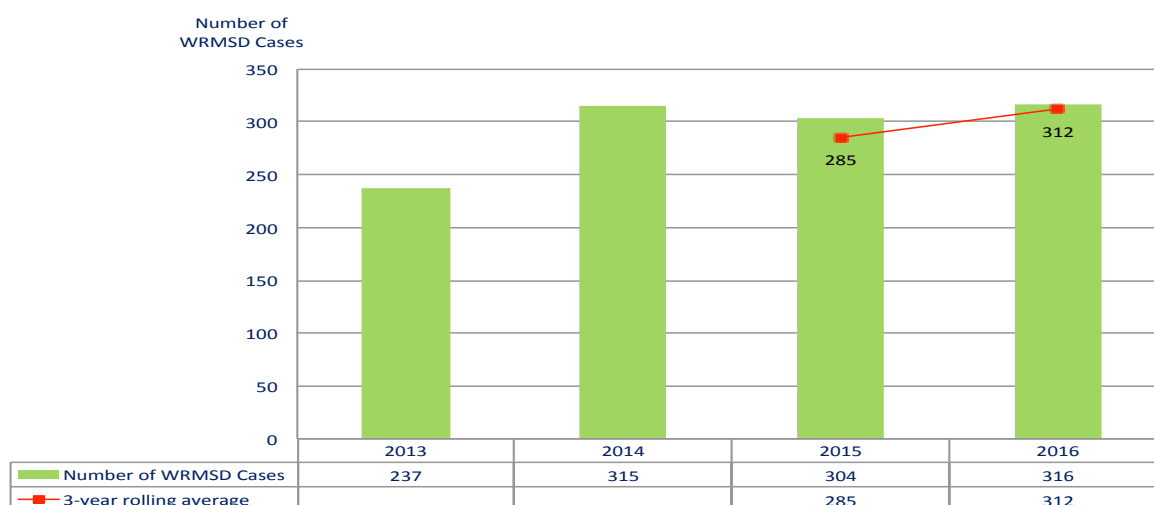


Figure 22: Number of work-related musculoskeletal disorders, 2013-2016

OCCUPATIONAL SKIN DISEASES (OSD)

47 cases of occupational skin diseases (OSD) were confirmed in 2016. This was a decrease of 47%, from 89 cases in 2015 (Table 1.25). There was no cases from the Construction sector in 2016.

OTHER OCCUPATIONAL DISEASES

There were 14 cases of compressed air illness (CAI) and 12 cases of barotrauma as compared to 2015 when there were 18 cases of CAI and 7 cases of barotrauma. The majority of the CAI and barotrauma cases were from tunnelling projects in the construction sector.

There were 8 cases of mesothelioma in 2016 from previous exposure to asbestos, an increase from 7 cases in 2015.

2016 also saw 7 cases of occupational lung disease, 2 cases of heat disorders and 2 cases of excessive absorption of cobalt. In addition, there were 2 cases of infectious diseases of which 1 was a case of melioidosis suffered by a construction worker and the other a case of Chicken Pox infection in a healthcare worker.

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 (BUS¹⁰) 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 2016, 28 companies entered the surveillance phase of BUS programme (Figure 23). All were from the construction industry. For the 12 companies which exited surveillance in 2016, the duration they were in the programme ranged from 5 to 26 months, with an average of 16 months.

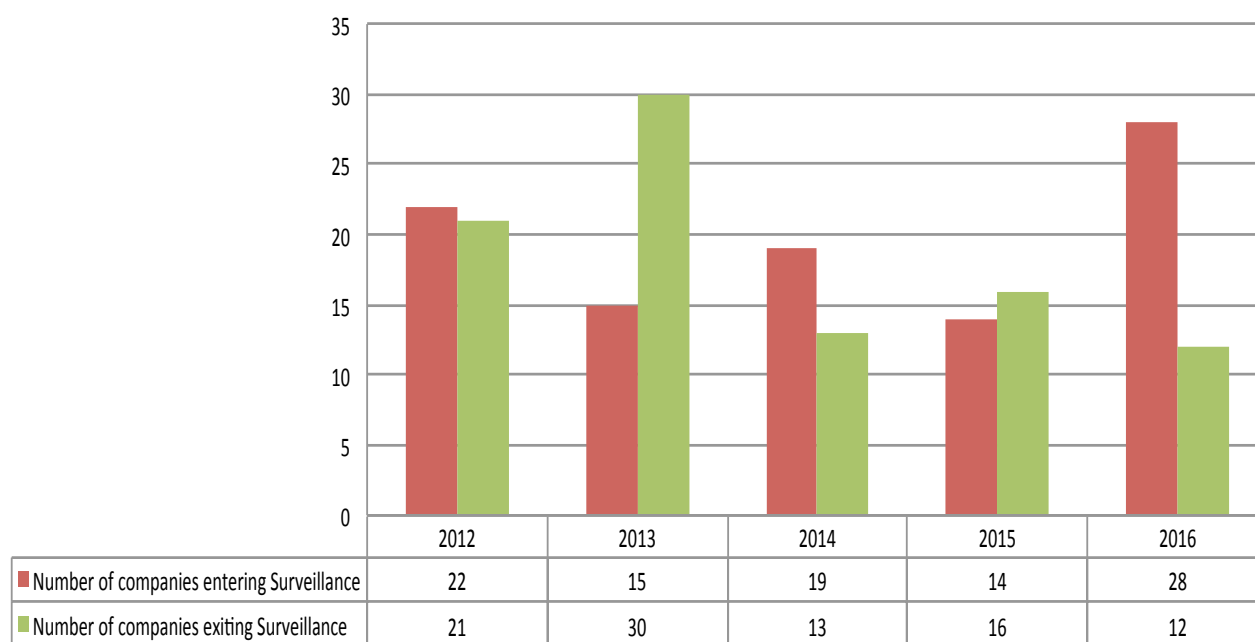


Figure 23: Number of companies entering and exiting surveillance, 2012-2016

¹⁰ 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

Hygiene¹¹ and Medical¹² surveillance programmes monitor workers' exposure and health effects from exposure to selected list of hazards under the Workplace Safety and Health (General Provisions) 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.

2016 saw an increase in the number of workplaces under medical surveillance (2,211) as compared to 2015 (2,138). There was, however, a decrease in the numbers of workers under surveillance, 120,999 in 2016 as compared to 134,963 in 2015.

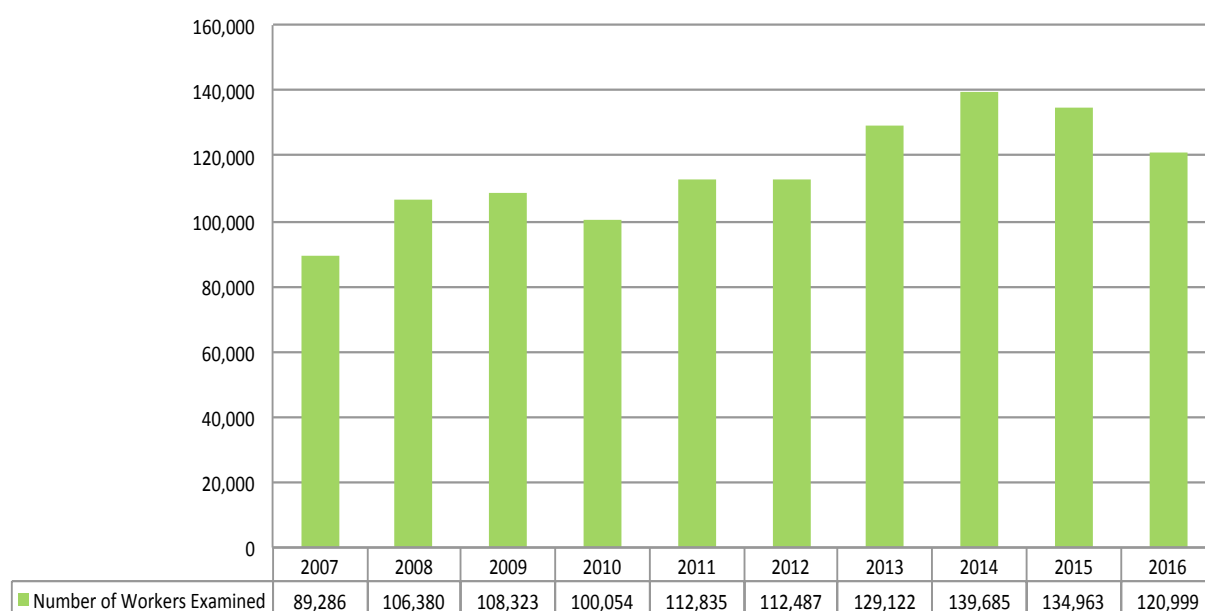


Figure 24: Number of workers under medical surveillance, 2007-2016

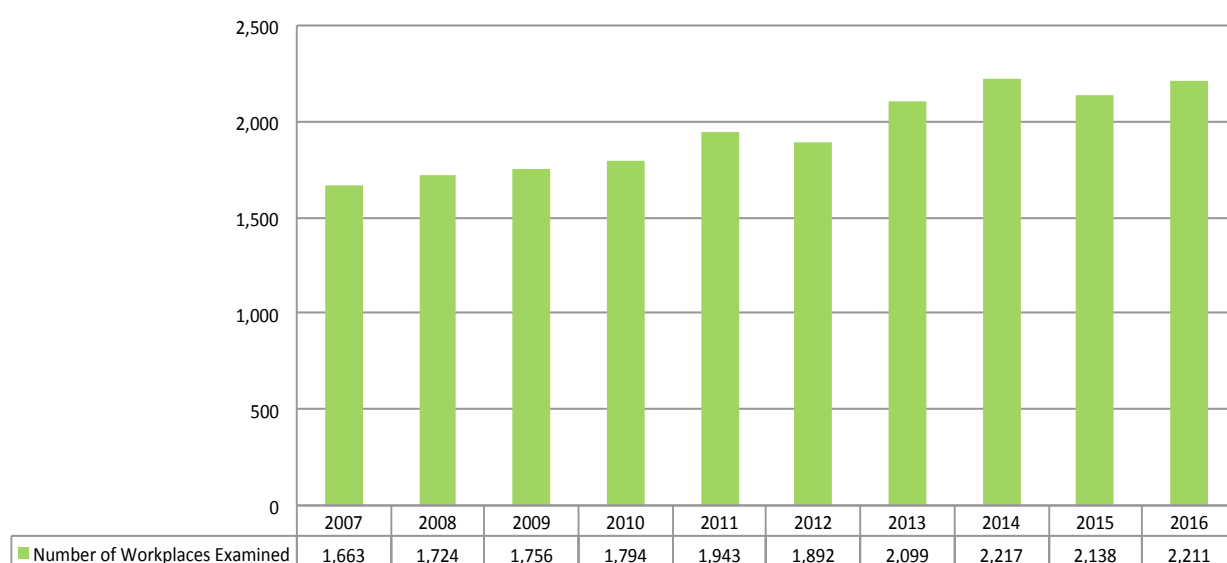


Figure 25: Number of workplaces under medical surveillance, 2007-2016

¹¹ Hygiene Surveillance determines the exposure levels of persons to airborne substances and compliance with the Permissible Exposure Levels (PELs). Refer to Annex C for more information.

¹² Medical Surveillance is the clinical examination (may include conduct of hearing tests, laboratory tests, etc) of workers who are exposed to specific hazards for early detection and prevention of potential ill health. Examinations are conducted by registered Designated Workplace Doctors (DWDs). Refer to Annex C for more information.

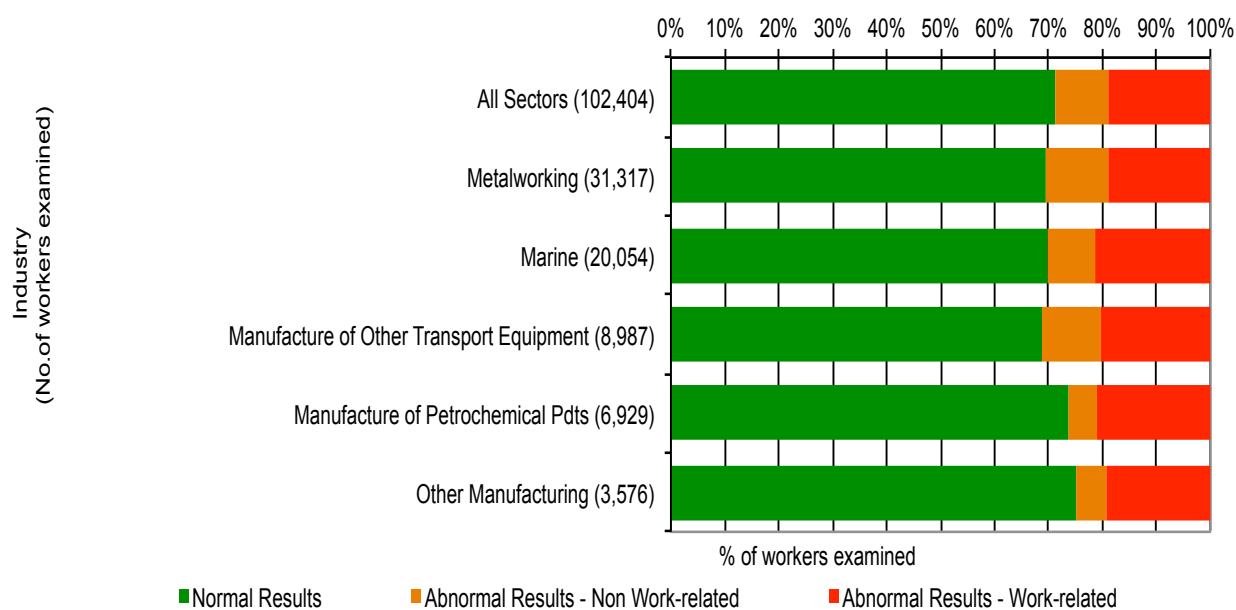


Figure 26: Results of medical monitoring¹³ for noise exposure for Top 5 industries, 2016

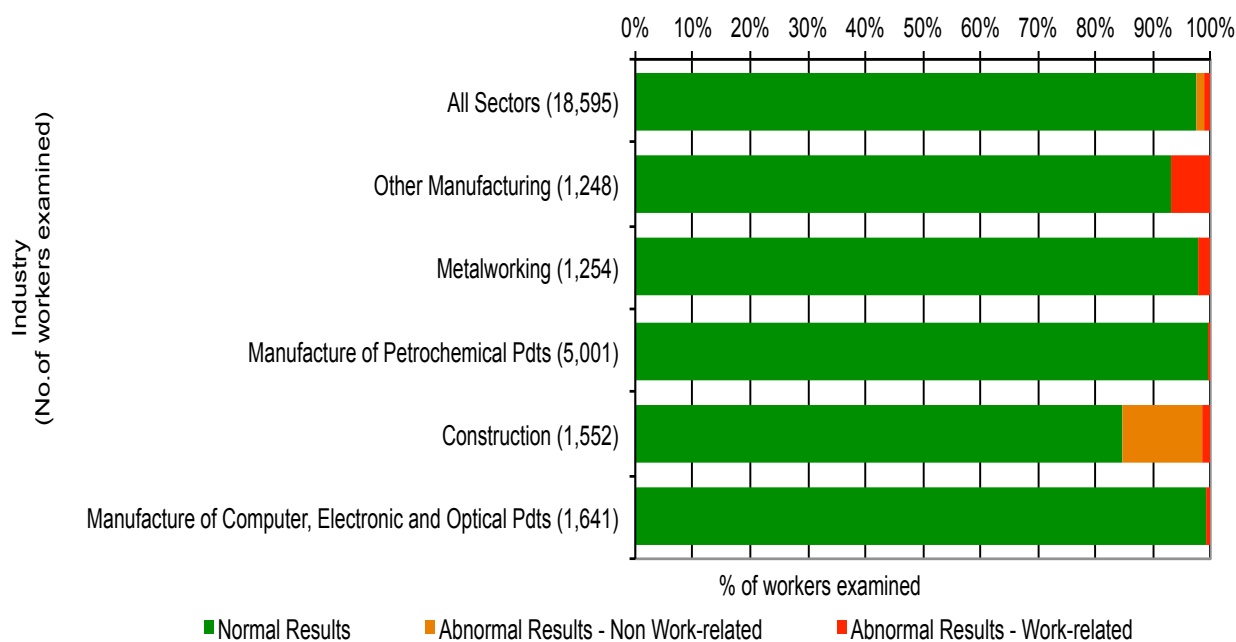


Figure 27: Results of medical monitoring for chemical exposure for Top 5 industries, 2016

¹³ Based on submissions received from Designated Workplace Doctors.

HYGIENE SURVEILLANCE

Workplaces with excessive noise, as defined under the WSH (Noise) Regulations, and toxic substances as listed in the First Schedule in the WSH (General Provisions) Regulations, are required to conduct regular industrial hygiene monitoring to monitor their workers' exposure to noise and chemicals respectively.

NOISE EXPOSURE LEVELS

Based on the noise monitoring results submitted, 81% 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. 82% 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.

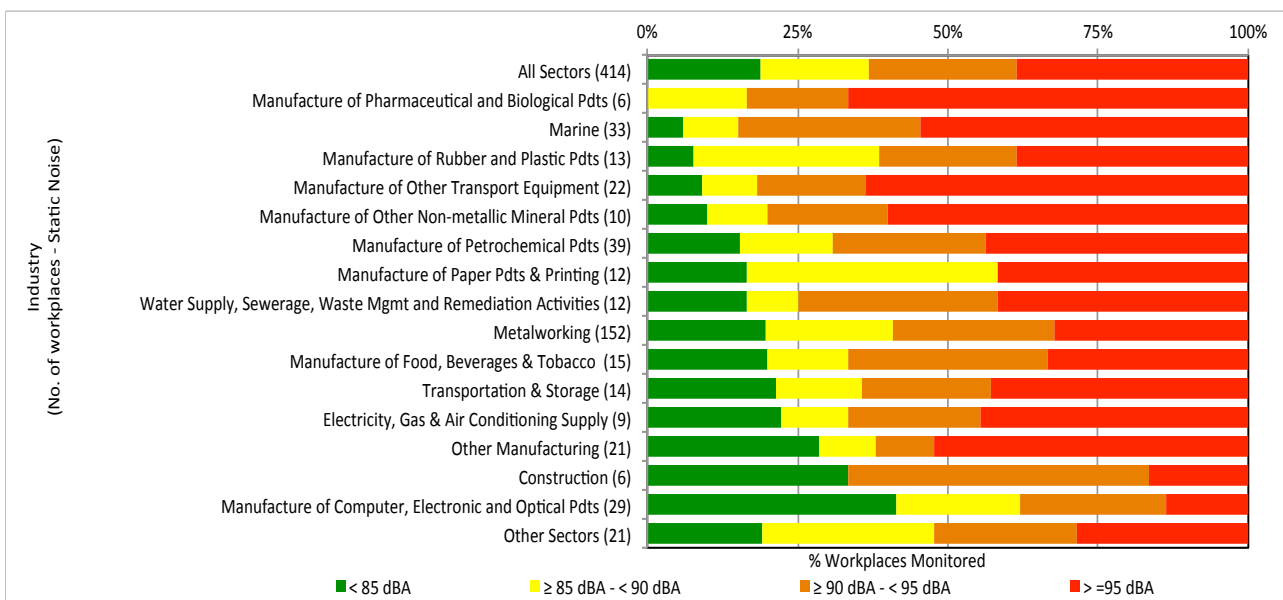


Figure 28: Static noise exposure by industry, 2016

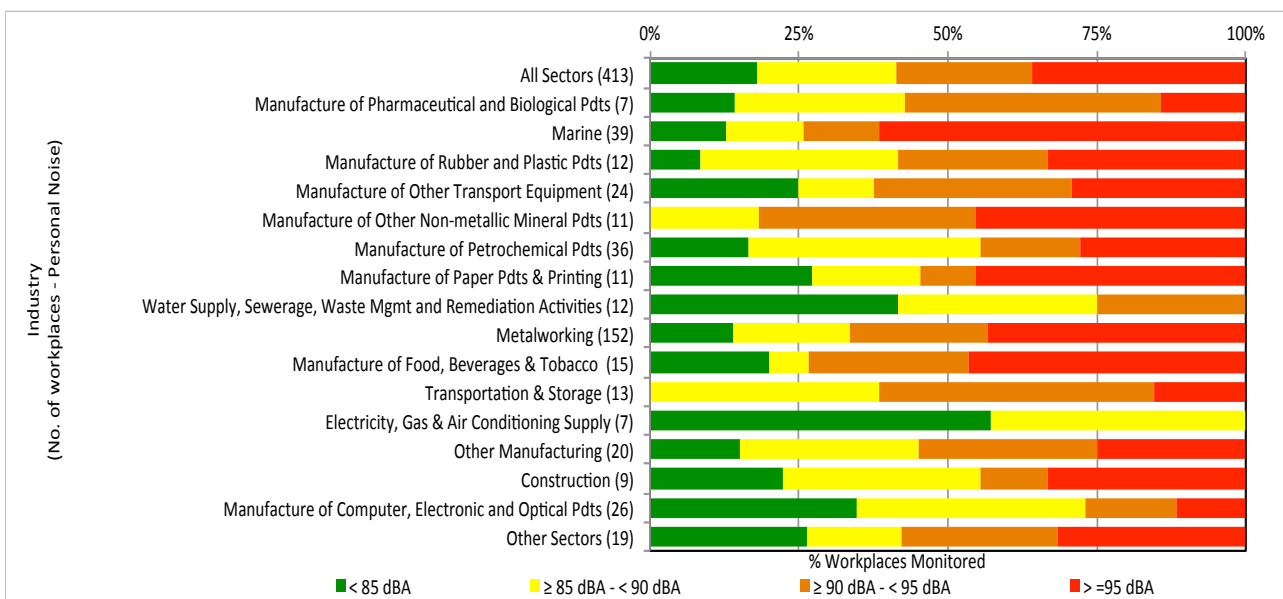


Figure 29: Personal noise exposure by industry, 2016

CHEMICAL EXPOSURE LEVELS

A total of 3,832 chemical monitoring results were received, of which 833 came from the manufacture of petrochemical products industry. Overall, chemical exposure levels remained low, with most of the workplaces having air levels below 10% PEL¹⁴. However, there were a few workplaces with levels higher than PEL which required implementation of additional engineering and other control measures.

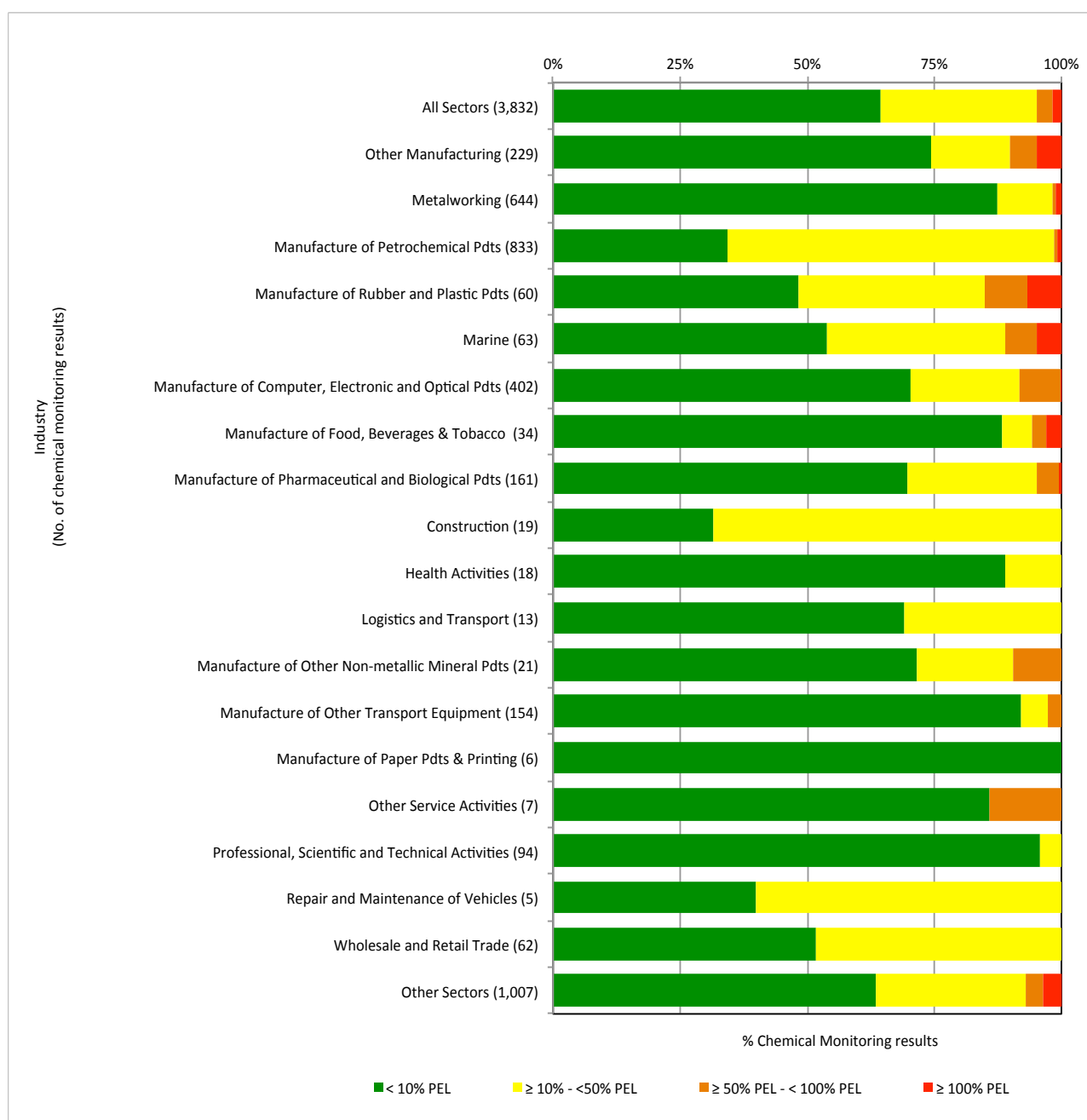


Figure 30: Chemical exposures by industry, 2013-2016

¹⁴ Permissible Exposure Levels (PELs) refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects.

ANNEX A

STATISTICAL TABLES

Table 1.3: Number of workplace fatal injuries by industry, 2015 and 2016

Industry	2016	2015
All Sectors	66	66
Construction	24	27
Marine	6	4
Manufacturing	9	6
<i>Metalworking</i>	5	3
<i>Manufacture of Food Products</i>	2	1
<i>Manufacture of Other Non-metallic Mineral Products</i>	1	0
<i>Manufacture of Wood Products</i>	1	0
<i>Manufacture of Petrochemical Products</i>	0	1
<i>Manufacture of Rubber and Plastic Products</i>	0	1
Water Supply, Sewerage & Waste Management and Remediation Activities	2	0
Wholesale & Retail Trade	3	2
<i>Wholesale Trade</i>	0	2
<i>Retail Trade</i>	3	0
Transportation & Storage	11	15
<i>Logistics & Transport¹⁵</i>	6	12
Food & Beverage Service Activities	0	1
Telecommunications	0	1
Security & Investigation Activities	2	1
Cleaning & Landscape Maintenance Activities	5	5
Office Administrative, Office Support & Other Business Support Activities	0	1
Other Amusement and Recreation Activities	1	0
Activities of Religious Organisations	1	0
Repair of Personal and Household Goods	1	0
Repair & Maintenance of Vehicles	1	2
Activities not Adequately Defined	0	1

¹⁵ 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, 2015 and 2016

Per 100,000 employed persons

Industry	2016	2015
All Sectors	1.9	1.9
Construction	4.9	5.4
Marine	6.7	4.2
Manufacturing	2.2	1.4
<i>Metalworking</i>	4.5	2.5
<i>Manufacture of Food Products</i>	4.6	2.4
<i>Manufacture of Other Non-metallic Mineral Products</i>	22.2	0.0
<i>Manufacture of Wood Products</i>	25.6	0.0
<i>Manufacture of Petrochemical Products</i>	0.0	2.0
<i>Manufacture of Rubber and Plastic Products</i>	0.0	8.1
Water Supply, Sewerage & Waste Management and Remediation Activities	12.0	0.0
Wholesale & Retail Trade	0.6	0.4
<i>Wholesale Trade</i>	0.0	0.6
<i>Retail Trade</i>	1.8	0.0
Transportation & Storage	4.6	6.3
<i>Logistics & Transport</i>	6.0	12.2
Food & Beverage Service Activities	0.0	0.5
Telecommunications	n.a.	n.a.
Security & Investigation Activities	4.5	2.4
Cleaning & Landscape Maintenance Activities	8.4	8.7
Office Administrative, Office Support & Other Business Support Activities	n.a.	n.a.
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, 2015 and 2016

Incident Type	Incident Agent	2016	2015
Total Workplace Fatal Injuries		66	66
Falls	Total	19	23
<i>Falls from Heights</i>	Total	13	14
	Physical Workplace - Structures	5	7
	Physical Workplace - Roofs	4	1
	Means of Access - Ladders	2	2
	Means of Access - Scaffold	1	0
	Vehicles - Forklifts	1	0
	Physical Workplace - Formwork	0	3
	Lifting Equipment - Mobile Work Platform	0	1
<i>Slips, Trips & Falls</i>	Total	6	9
	Physical Workplace - Floor/Level Surfaces	3	3
	Means of Access - Stairs or Steps	2	1
	Means of Access - Others	1	1
	Lifting Equipment - Lifts & Hoists	0	1
	Means of Access - Gangway	0	1
	Metal Items (excluding knives/needles)	0	1
	Vehicles - Excavator, Forklift, Lorry, Truck	0	1
Struck by Moving Objects	Total	13	10
	Vehicles - Bus, Car, Excavator, Forklift, Lorry, Prime Mover, Train, Truck	12	10
	Pressurised Equipment - Pressurised Piping/Accessories	1	0
Caught in/ between Objects	Total	8	4
	Vehicles - Excavator, Lorry, Prime Mover, Taxi, Truck	5	1
	Industrial Machines	3	0
	Electrical Installation	0	1
	Goods/ Cargo	0	1
	Lifting Equipment - Mobile Work Platform	0	1
Struck by Falling Objects From Heights	Total	6	5
	Metal Items (excluding knives/needles)	4	0
	Industrial Machines	1	0
	Wooden Items	1	0
	Animals, Plants and Insects	0	1
	Lifting Equipment - Lifts & Hoists	0	1
	Other Incident Agents	0	1
	Physical Workplace - Formwork	0	1
	Vehicles - Excavator, Forklift	0	1

(continued) Table 1.5: Number of workplace fatal injuries by incident type and incident agent, 2015 and 2016

Incident Type		Incident Agent	2016	2015
Total Workplace Fatal Injuries			66	66
Work-related Traffic	Total		5	10
	Motorcycle		2	6
	Large Goods Vehicles (LGVs) - Lorry, Prime Mover, Truck		2	2
	E-bike		1	0
	Taxi		0	1
	Van		0	1
Crane-related	Total		4	5
	Lifting Appliances/ Gears		2	0
	Lifting Equipment - Cranes		1	5
	Other Lifting Equipment		1	0
Collapse of Formwork/Failure of its Supports	Total		2	1
	Physical Workplace - Formwork		2	1
Drowning	Total		2	0
Electrocution	Total		2	0
	Electrical Equipment		1	0
	Pressurised Equipment - Pressurised Piping/Accessories		1	0
Collapse/Failure of Structure & Equipment	Total		1	5
	Vehicles - Excavator, Prime Mover		1	1
	Industrial Machines		0	1
	Lifting Equipment - Mobile Work Platform		0	1
	Means of Access - Scaffold		0	1
	Physical Workplace - Structures		0	1
Exposure to/contact with Biological Substances	Total		1	0
	Animals, Plants and insects		1	0
Exposure to/contact with Extreme Temperatures	Total		1	0
	Other Incident Agents		1	0
Strike Against Objects	Total		1	0
	Vehicles - Forklifts		1	0
Other Incident Type	Total		1	0
	Other Incident Agents		1	0
Fires & Explosion	Total		0	1
	Dust, Gas, Liquid and Chemicals		0	1
Cave-in	Total		0	1
	Other Incident Agents		0	1
Suffocation	Total		0	1
	Dust, Gas, Liquid and Chemicals		0	1

Table 1.6: Number of workplace fatal injuries by industry and incident type, 2016

Industry	All	Construction	Marine	Manufacturing	Water Supply, Sewerage & Waste Management and Remediation Activities	Wholesale & Retail Trade	Transportation & Storage
Total	66	24	6	9	2	3	11
Falls	19	7	2	2	0	0	1
<i>Falls from Heights</i>	13	6	2	1	0	0	1
<i>Slips, Trips & Falls</i>	6	1	0	1	0	0	0
Struck by Moving Objects	13	6	2	2	0	0	3
Caught in/between objects	8	1	0	1	2	1	2
Struck by Falling Objects From Heights	6	3	0	1	0	0	1
Work-related Traffic	5	0	0	1	0	2	2
Crane-related	4	3	0	0	0	0	1
Collapse of Formwork/Failure of its Supports	2	2	0	0	0	0	0
Drowning	2	0	1	0	0	0	1
Electrocution	2	0	0	1	0	0	0
Collapse/Failure of Structure & Equipment	1	1	0	0	0	0	0
Exposure to/ contact with Biological Substances	1	0	0	0	0	0	0
Exposure to/ contact with Extreme Temperature	1	0	1	0	0	0	0
Strike Against Objects	1	0	0	1	0	0	0
Other Incident Type	1	1	0	0	0	0	0

(continued) Table 1.6: Number of workplace fatal injuries by industry and incident type, 2016

Industry	Logistics & Transport	Security & Investigation Activities	Cleaning & Landscape Maintenance Activities	Other Amusement and Recreation Activities	Activities of Religious Organisations	Repair of Personal and Household Goods	Repair & Maintenance of Vehicles
Total	6	2	5	1	1	1	1
Falls	1	2	3	0	1	1	0
<i>Falls from Heights</i>	1	0	1	0	1	1	0
<i>Slips, Trips & Falls</i>	0	2	2	0	0	0	0
Struck by Moving Objects	1	0	0	0	0	0	0
Caught in/between objects	1	0	0	0	0	0	1
Struck by Falling Objects From Heights	1	0	1	0	0	0	0
Work-related Traffic	1	0	0	0	0	0	0
Crane-related	1	0	0	0	0	0	0
Collapse of Formwork/Failure of its Supports	0	0	0	0	0	0	0
Drowning	0	0	0	0	0	0	0
Electrocution	0	0	1	0	0	0	0
Collapse/Failure of Structure & Equipment	0	0	0	0	0	0	0
Exposure to/ contact with Biological Substances	0	0	0	1	0	0	0
Exposure to/ contact with Extreme Temperature	0	0	0	0	0	0	0
Strike Against Objects	0	0	0	0	0	0	0
Other Incident Type	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, 2015 and 2016

Industry	2016	2015
All Sectors	594	597
Construction	153	157
Marine	33	32
Manufacturing	125	126
<i>Metalworking</i>	48	38
<i>Manufacture of Food, Beverages & Tobacco</i>	24	28
<i>Manufacture of Furniture</i>	10	3
<i>Manufacture of Other Non-Metallic Mineral Products</i>	10	6
Water Supply, Sewerage & Waste Management and Remediation Activities	9	10
Wholesale & Retail Trade	33	30
<i>Wholesale Trade</i>	22	21
<i>Retail Trade</i>	11	9
Transportation & Storage	43	37
<i>Logistics & Transport</i>	30	27
Accommodation & Food Service Activities	39	46
<i>Accommodation</i>	9	4
<i>Food & Beverage Service Activities</i>	30	42
Financial & Insurance Activities ¹⁶	6	1
Real Estate Activities	12	10
Professional, Scientific & Technical Activities	9	16
Administrative & Support Service Activities	25	10
Community, Social & Personal Services	34	41
<i>Education</i>	8	13
<i>Repair & Maintenance of Vehicles</i>	7	3
<i>Health Activities</i>	6	9
<i>Arts, Entertainment and Recreation</i>	6	3

¹⁶ Financial & Insurance Activities include banks, finance companies and activities of holding companies.

Table 1.8: Workplace major injury rates by industry, 2015 and 2016

Per 100,000 employed persons

Industry	2016	2015
All Sectors	17.4	17.6
Construction	30.9	31.3
Marine	37.0	33.2
Manufacturing	30.2	30.0
<i>Metalworking</i>	43.0	32.0
<i>Manufacture of Food, Beverages & Tobacco</i>	52.5	62.4
<i>Manufacture of Furniture</i>	87.0	25.2
<i>Manufacture of Other Non-Metallic Mineral Products</i>	222.2	113.2
Water Supply, Sewerage & Waste Management and Remediation Activities	54.2	59.5
Wholesale & Retail Trade	6.8	6.1
<i>Wholesale Trade</i>	6.8	6.5
<i>Retail Trade</i>	6.8	5.5
Transportation & Storage	17.9	15.6
<i>Logistics & Transport</i>	30.0	27.4
Accommodation & Food Service Activities	16.0	19.2
<i>Accommodation</i>	26.0	11.4
<i>Food & Beverage Service Activities</i>	14.4	20.5
Financial & Insurance Activities	3.0	0.5
Real Estate Activities	13.3	11.0
Professional, Scientific & Technical Activities	3.6	6.5
Administrative & Support Service Activities	11.5	4.7
Community, Social & Personal Services	4.3	5.3
<i>Education</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Repair & Maintenance of Vehicles*</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Health Activities*</i>	6.1	9.5
<i>Arts, Entertainment and Recreation</i>	10.8	5.4

Table 1.9: Types of workplace major injury, 2015 and 2016

Workplace Major Injury Types	2016	2015
Total	594	597
Crushing, Fractures and Dislocations	329	323
Amputations	143	117
Hypothermia/Burns, with more than 20 MC days	57	73
Multiple Injuries	34	45
Exposure to Electric Current	17	16
Concussion, with more than 20 MC days	10	20
Blindness	2	3
Asphyxia/Drowning	1	0
Paralysis	1	0

Table 1.10: Number of workplace major injuries by key incident type and key incident agent, 2015 and 2016

Incident Type	Incident Agent	2016	2015
Total Workplace Major Injuries		594	597
Falls	Total	246	255
<i>Slips, Trips & Falls</i>	Total	173	153
	Physical Workplace - Floor/Level Surfaces	74	68
	Vehicles	36	16
	Means of Access - Stairs or Steps	17	16
<i>Falls from Heights</i>	Total	73	102
	Means of Access - Ladders	32	48
	Means of Access - Scaffold	11	20
	Lifting Equipment Including Cranes	9	6
Struck by Moving Objects	Total	73	55
	Vehicles	20	14
	Industrial Hand Tools	12	9
	Lifting Equipment Including Cranes	8	9
Caught in/ between Objects	Total	68	66
	Industrial Machines	21	27
	Vehicles	12	12
	Lifting Equipment Including Cranes	9	13
Cut/Stabbed by Objects	Total	45	26
	Industrial Machines	31	19
	Industrial Hand Tools	9	7
	Knives and Needles	5	0
Struck by Falling Objects	Total	33	63
	Metal Items (excluding knives/needles)	10	17
	Furniture and Fittings	6	6
	Goods/Cargo	4	7
Exposure to Extreme Temperatures	Total	30	45
	Hot scalding liquid/Steam	23	32
	Pressurised Equipment	2	5
Exposure to Electric current	Total	25	20
	Electrical Installation	19	10
	Industrial Machines	4	4
	Other Incident Agents	2	4
Work-related Traffic	Total	18	25
Fires & Explosions	Total	18	13
	Explosives/Flammable Substances	5	0
	Pressurised Equipment	4	2
	Industrial Machines	3	6

Table 1.11: Top 3 incident types for workplace major injuries by industry, 2016

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

Legend:

CIBO Caught In/Between Objects

CSBO Cut/Stabbed by Objects

ETEC Exposure to Electric Current

ETET Exposure to Extreme Temperature

FE Fires & Explosion

FFH Falls (Falls from Heights)

OESM Over-exertion and Strenuous Movements

SAO Strike Against Objects

SBFO Struck by Falling Objects

SBMO Struck by Moving Objects¹⁷

STF Falls (Slips, Trips and Falls)

WRT Work-related Traffic

¹⁷ This includes flying fragments but excludes falling objects.

Table 1.12: Number of workplace minor injuries by industry, 2015 and 2016

Industry	2016	2015
All Sectors	12,354	11,688
Construction	2,132	2,076
Marine	329	354
Manufacturing	2,605	2,556
<i>Metalworking</i>	1,115	1,099
<i>Manufacture of Food, Beverages & Tobacco</i>	439	402
<i>Manufacture of Other Non-Metallic Mineral Products</i>	152	172
Water Supply, Sewerage & Waste Management and Remediation	110	135
Activities		
Wholesale & Retail Trade	608	594
<i>Wholesale Trade</i>	335	322
<i>Retail Trade</i>	273	272
Transportation & Storage	1,090	1,051
<i>Logistics & Transport</i>	723	705
Accommodation & Food Service Activities	1,072	923
<i>Accommodation</i>	252	226
<i>Food & Beverage Service Activities</i>	820	697
Information & Communications ¹⁸	45	36
Financial & Insurance Activities	145	141
Real Estate Activities	345	284
Professional, Scientific & Technical Activities	393	418
<i>Architectural & Engineering Activities</i>	173	163
<i>Legal, Accounting & Management Activities</i>	164	200
Administrative & Support Service Activities	415	343
<i>Office Administrative, Office Support & Other Business Support Activities</i>	160	141
<i>Cleaning & Landscape Maintenance Activities</i>	115	126
<i>Security and Investigation Activities</i>	105	50
Community, Social & Personal Services	1,229	1,114
<i>Health Activities</i>	401	383
<i>Education</i>	221	206
<i>Other Personal Service Activities</i>	163	154
<i>Arts, Entertainment and Recreation</i>	135	105
<i>Repair & Maintenance of Vehicles</i>	118	112

¹⁸ 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, 2015 and 2016

Per 100,000 employed persons

Industry	2016	2015
All Sectors	363	344
Construction	431	414
Marine	369	368
Manufacturing	630	609
<i>Metalworking</i>	999	927
<i>Manufacture of Food, Beverages & Tobacco</i>	961	895
<i>Manufacture of Other Non-Metallic Mineral Products</i>	3,378	3,245
Water Supply, Sewerage & Waste Management and Remediation Activities	663	804
Wholesale & Retail Trade	125	122
<i>Wholesale Trade</i>	103	99
<i>Retail Trade</i>	168	167
Transportation & Storage	453	443
<i>Logistics & Transport</i>	723	714
Accommodation & Food Service Activities	441	385
<i>Accommodation</i>	728	646
<i>Food & Beverage Service Activities</i>	393	341
Information & Communications	35	29
Financial & Insurance Activities	71	70
Real Estate Activities	382	313
Professional, Scientific & Technical Activities	158	171
<i>Architectural & Engineering Activities</i>	284	257
<i>Legal, Accounting & Management Activities</i>	125	161
Administrative & Support Service Activities	191	161
<i>Office Administrative, Office Support & Other Business Support Activities</i>	n.a.	n.a.
<i>Cleaning & Landscape Maintenance Activities</i>	193	219
<i>Security and Investigation Activities</i>	239	119
Community, Social & Personal Services	156	145
<i>Health Activities*</i>	408	404
<i>Education</i>	n.a.	n.a.
<i>Other Personal Service Activities</i>	n.a.	n.a.
<i>Arts, Entertainment and Recreation</i>	243	189
<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, 2015 and 2016

Incident Type	Incident Agent	2016	2015
Total Workplace Minor Injuries		12,354	11,688
Falls	Total	3,906	3,434
<i>Slips, Trips & Falls</i>	Total	3,315	2,863
	Physical Workplace - Floor/Level Surfaces	1,483	1,341
	Means of Access - Stairs or Steps	526	457
	Vehicles	328	283
<i>Falls from Heights</i>	Total	591	571
	Means of Access - Ladders	380	360
	Means of Access - Scaffold	63	64
	Physical Workplace - Structures	46	57
Struck by Moving Objects	Total	2,031	1,911
	Industrial Hand Tools	442	454
	Vehicles	361	341
	Metal Items (excluding knives/needles)	323	311
Cut/Stabbed by Objects	Total	1,525	1,430
	Knives and Needles	507	422
	Industrial Machines	365	338
	Industrial Hand Tools	303	301
Struck by Falling Objects	Total	1,150	1,221
	Metal Items (excluding knives/needles)	330	390
	Goods/Cargo	169	161
	Furniture and Fittings	140	162
Caught in/ between Objects	Total	1,044	1,112
	Industrial Machines	309	342
	Metal Items (excluding knives/needles)	202	199
	Furniture and Fittings	128	127
Over-exertion/ Strenuous Movements	Total	786	791
	Human Factors	300	282
	Goods/Cargo	204	174
	Furniture and Fittings	52	58
Strike against Objects	Total	674	644
	Metal Items (excluding knives/needles)	195	172
	Furniture & Fittings	153	157
	Vehicles	65	47
Exposure to Extreme Temperatures	Total	339	300
	Hot scalding liquid/steam	258	209
	Industrial Machines	27	43
	Vehicles	11	12
Work-related Traffic	Total	251	219

Table 1.15: Top 3 incident types for workplace minor injuries by industry, 2016

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

Legend:

CIBO Caught In/Between Objects

CSBO Cut/Stabbed by Objects

ETBM Exposure to Biological Materials

ETET Exposure to Extreme Temperature

OESM Over-exertion and Strenuous Movements

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 1.16: Types of workplace minor injury, 2015 and 2016

Workplace Minor Injury Types	2016	2015
Total	12,354	11,688
Cuts and Bruises	4,674	4,453
Crushing, Fractures and Dislocations	2,932	2,860
Sprains & Strains	2,071	1,965
Burns	402	410
Multiple Injuries	257	251
Puncture Wound	203	212
Concussion	75	62
Bites and Stings	73	77
Others	1,667	1,398

Table 1.17: Dangerous occurrences by industry, 2015 and 2016

Industry	2016	2015
All Sectors	45	46
Construction	22	23
Marine	3	1
Manufacturing	11	12
<i>Metalworking</i>	5	3
<i>Manufacture of Petrochemical Products</i>	2	4
<i>Manufacture of Computer, Electronic and Optical Products</i>	1	1
<i>Manufacture of Food, Beverages & Tobacco</i>	1	2
<i>Manufacture of Other Transport Equipment</i>	1	1
<i>Manufacture of Wood Products</i>	1	0
Water Supply, Sewerage & Waste Management and Remediation Activities	1	0
Wholesale & Retail Trade	1	0
Transportation & Storage	2	2
<i>Logistics & Transport</i>	1	2
Accommodation & Food Service Activities	1	1
Professional, Scientific & Technical Activities	1	1
Education	2	3
Office Administrative, Office Support & Other Business Support Activities	1	0
Activities not Adequately Defined	0	3

Table 1.18: Types of dangerous Occurrences, 2015 and 2016

Incident Type	Incident Agent	2016	2015
Total Dangerous Occurrences		45	46
Collapse/Failure of Structure & Equipment	Total	27	31
	Lifting Equipment - Cranes	19	21
	Lifting Equipment - Mobile Work Platform	3	4
	Lifting Equipment - Others	2	0
	Vehicles - Excavator	2	0
	Physical Workplace - Formwork	1	1
	Lifting Equipment - Piling Machines	0	3
	Pressurised Equipment	0	2
Fires & Explosion	Total	18	15
	Dust, Gas, Liquid and Chemicals	4	2
	Electrical Installation	3	1
	Explosives/ Flammable Substances	3	2
	Industrial Machines	3	6
	Pressurised Equipment	2	2
	Lifting Equipment - Cranes	0	1
	Other Incident Agents	3	1

Table 1.19: Number of confirmed occupational disease cases by industry, 2015 and 2016

Industry	2016	2015
All Sectors	732	935
Construction	93	145
Marine	53	125
Manufacturing	260	312
<i>Metalworking</i>	112	179
<i>Manufacture of Other Transport Equipment</i>	76	23
<i>Manufacture of Food, Beverages & Tobacco</i>	16	30
Water Supply, Sewerage & Waste Management and Remediation Activities	3	5
Wholesale & Retail Trade	31	28
Transportation & Storage	80	97
<i>Logistics & Transport</i>	29	48
Accommodation & Food Service Activities	47	19
<i>Accommodation</i>	8	5
<i>Food & Beverage Service Activities</i>	39	14
Information & Communications	2	3
Financial & Insurance Activities	2	22
Real Estate Activities	9	9
Professional, Scientific & Technical Activities	22	31
<i>Architectural & Engineering Activities</i>	11	14
Administrative & Support Service Activities	9	22
Community, Social & Personal Services	87	78
<i>Health Activities</i>	50	41
<i>Other Personal Service Activities</i>	16	14
<i>Education</i>	10	6

Table 1.20: Occupational disease incidence rates by industry, 2015 and 2016

Per 100,000 employed persons

Industry	2016	2015
All Sectors	21.5	27.5
Construction	18.8	28.9
Marine	59.4	129.8
Manufacturing	62.9	74.3
<i>Metalworking</i>	<i>100.4</i>	<i>150.9</i>
<i>Manufacture of Other Transport Equipment</i>	<i>324.8</i>	<i>100.9</i>
<i>Manufacture of Food, Beverages & Tobacco</i>	<i>35.0</i>	<i>66.8</i>
Water Supply, Sewerage & Waste Management and Remediation Activities	18.1	29.8
Wholesale & Retail Trade	6.4	5.7
Transportation & Storage	33.2	40.9
<i>Logistics & Transport</i>	<i>29.0</i>	<i>48.6</i>
Accommodation & Food Service Activities	19.3	7.9
<i>Accommodation</i>	<i>23.1</i>	<i>14.3</i>
<i>Food & Beverage Service Activities</i>	<i>18.7</i>	<i>6.8</i>
Information & Communications	1.6	2.4
Financial & Insurance Activities	1.0	10.9
Real Estate Activities	10.0	9.9
Professional, Scientific & Technical Activities	8.8	12.7
<i>Architectural & Engineering Activities</i>	<i>18.0</i>	<i>22.1</i>
Administrative & Support Service Activities	4.1	10.3
Community, Social & Personal Services	11.0	10.1
<i>Health Activities*</i>	<i>50.9</i>	<i>45.6</i>
<i>Other Personal Service Activities</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Education</i>	<i>n.a.</i>	<i>n.a.</i>

Table 1.21: Number of confirmed occupational diseases by type, 2015 and 2016

	2016	2015
Total	732	935
Noise Induced Deafness	322	498
<i>NID (E) - Early</i>	301	476
<i>NID (A) - Advanced</i>	21	22
Work-related Musculoskeletal Disorders	316	304
<i>Back injuries due to ergonomic risks</i>	293	281
<i>Tendinitis</i>	7	8
<i>Nerve Disorder such as Carpal Tunnel Syndrome, Cubital Tunnel Syndrome</i>	4	3
<i>Tenosynovitis</i>	2	0
<i>Trigger Finger/Thumb</i>	1	4
<i>Lateral Epicondylitis (Tennis Elbow)</i>	1	2
<i>Medial Epicondylitis (Golfer's Elbow)</i>	1	0
<i>Musculoskeletal Disorder of the Back</i>	1	0
<i>Neck Sprain</i>	1	0
<i>Cervical Spondylosis</i>	0	4
<i>Others</i>	5	2
Occupational Skin Disease	47	89
<i>Eczema</i>	43	68
<i>Others</i>	4	21
Compressed Air Illness	14	18
<i>CAI Type 1</i>	13	15
<i>CAI Type 2</i>	1	3
Barotrauma	12	7
<i>Aural</i>	11	6
<i>Sinus</i>	1	1
Cancers	8	7
<i>Mesothelioma²⁰</i>	8	7
Occupational Lung Disease	7	5
<i>Tuberculosis (pulmonary)</i>	4	0
<i>Occupational Asthma</i>	2	5
<i>Asbestosis</i>	1	0
Heat Disorder	2	3
Infectious Disease	2	2
Excessive Absorption of Chemicals	2	1
<i>Cobalt</i>	2	0
<i>Cadmium</i>	0	1
Chemical Poisoning	0	1
<i>Methyl Bromide</i>	0	1

²⁰ Mesothelioma is a cancer involving the lining of the internal organs.

Table 1.22: Number of confirmed NID cases by industry, 2015 and 2016

Industry	2016	2015
All Sectors	322	498
Construction	42	63
Marine	44	113
Manufacturing	185	229
<i>Metalworking</i>	89	148
<i>Manufacture of Other Transport Equipment</i>	66	18
<i>Manufacture of Petrochemical Products</i>	8	22
Water Supply, Sewerage & Waste Management and Remediation Activities	2	4
Wholesale & Retail Trade	7	10
Transportation & Storage	9	31
<i>Logistics & Transport</i>	4	24
Financial & Insurance Activities	0	18
Professional, Scientific & Technical Activities	4	11
<i>Architectural & Engineering Activities</i>	4	10
Administrative & Support Service Activities	2	12
Community, Social & Personal Services	5	7
<i>Health Activities</i>	2	0
<i>Repair and Maintenance of Vehicles</i>	2	1
<i>Education</i>	1	1

Table 1.23: NID incidence rates by industry, 2015 and 2016

Per 100,000 employed persons

Industry	2016	2015
All Sectors	9.5	14.7
Construction	8.5	12.6
Marine	49.3	117.3
Manufacturing	44.8	54.6
<i>Metalworking</i>	79.7	124.8
<i>Manufacture of Other Transport Equipment</i>	282.1	78.9
<i>Manufacture of Petrochemical Products</i>	14.9	44.3
Water Supply, Sewerage & Waste Management and Remediation Activities	12.0	23.8
Wholesale & Retail Trade	1.4	2.0
Transportation & Storage	3.7	13.1
<i>Logistics & Transport</i>	4.0	24.3
Financial & Insurance Activities	0.0	8.9
Professional, Scientific & Technical Activities	1.6	4.5
<i>Architectural & Engineering Activities</i>	6.6	15.8
Administrative & Support Service Activities	0.9	5.6
Community, Social & Personal Services	0.6	0.9
<i>Health Activities*</i>	2.0	0.0
<i>Repair and Maintenance of Vehicles*</i>	n.a.	n.a.
<i>Education</i>	n.a.	n.a.

Table 1.24: Number of confirmed WRMSD cases by industry, 2015 and 2016

Industry	2016	2015
All Sectors	316	304
Construction	24	25
Marine	3	6
Manufacturing	50	58
<i>Metalworking</i>	14	22
<i>Manufacture of Food, Beverages & Tobacco</i>	10	10
<i>Other Manufacturing Industries</i>	6	7
Wholesale & Retail Trade	24	18
<i>Wholesale Trade</i>	14	8
<i>Retail Trade</i>	9	10
Transportation & Storage	70	64
<i>Air Transport</i>	32	38
<i>Logistics & Transport</i>	24	22
Accommodation & Food Service Activities	25	15
<i>Accommodation</i>	8	4
<i>Food & Beverage Service Activities</i>	17	11
Information & Communications	2	3
Financial & Insurance Activities	2	3
Real Estate Services	8	9
Professional, Scientific & Technical Activities	14	14
Administrative & Support Service Activities	4	7
Community, Social & Personal Services	63	48
<i>Health Activities</i>	32	26
<i>Other Personal Service Activities</i>	14	9

Table 1.25: Number of confirmed OSD cases by industry, 2015 and 2016

Industry	2016	2015
All Sectors	47	89
Construction	0	34
Marine	1	2
Manufacturing	20	20
<i>Manufacture of Other Transport Equipment</i>	6	1
<i>Metalworking</i>	6	8
<i>Other Manufacturing</i>	4	1
<i>Manufacture of Food, Beverages & Tobacco</i>	2	5
Accommodation & Food Service Activities	6	3
Financial & Insurance Activities	0	1
Professional, Scientific & Technical Activities	3	3
Administrative & Support Service Activities	2	2
Community, Social & Personal Services	13	20
<i>Health Activities</i>	10	13
<i>Other Personal Service Activities</i>	2	3
<i>Public Administration and Defence</i>	1	1

Table 1.26: Top 5 Causative Agents of Occupational Skin Diseases, 2016

Causative Agents	No. of Cases
Wetwork and Occlusion	15
Solvents	6
Hot Environment	4
Oils	4
Latex	3

Table 1.27: Accident Frequency Rate (AFR) and Accident Severity Rate (ASR) in selected sectors, 2015 and 2016

Per million man-hours worked

Industry	AFR		ASR	
	2016	2015	2016	2015
All Sectors	1.6	1.5	86	85
Construction	1.7	1.7	159	166
Marine	1.5	1.4	190	137
Manufacturing	2.6	2.5	115	101
<i>Metalworking</i>	4.0	3.6	199	137
<i>Manufacture of Food, Beverages & Tobacco</i>	4.2	3.9	203	132
<i>Manufacture of Other Non-Metallic Mineral Products</i>	n.a.	12.5	n.a.	237
Water Supply, Sewerage & Waste Management and Remediation Activities	n.a.	3.6	n.a.	68
Wholesale & Retail Trade	0.6	0.6	29	23
<i>Wholesale Trade</i>	0.5	0.5	11	27
<i>Retail Trade</i>	0.8	0.8	67	14
Transportation & Storage	2.0	2.0	162	205
<i>Logistics & Transport</i>	3.1	3.1	216	373
Accommodation & Food Services	2.1	1.9	32	45
<i>Accommodation</i>	3.1	2.7	48	39
<i>Food & Beverage Service Activities</i>	1.9	1.7	29	46
Information & Communications	0.2	0.1	3	26
Financial & Insurance Activities	0.3	0.3	6	6
Real Estate Activities	1.7	1.4	32	23
Professional, Scientific & Technical Activities	0.7	0.8	16	16
<i>Legal, Accounting & Management Activities</i>	0.6	0.8	14	16
<i>Architectural & Engineering Activities</i>	1.2	1.1	28	22
Administrative & Support Service Activities	0.8	0.7	97	93
<i>Security and Investigation Activities</i>	0.9	0.5	122	64
<i>Cleaning & Landscape Maintenance Activities</i>	0.9	1.0	234	243
Community, Social & Personal Services	0.7	0.7	27	19
<i>Health Activities*</i>	1.9	2.0	30	36
<i>Arts, Entertainment and Recreation</i>	1.1	0.8	68	14

Table 1.28: Number of man-days lost to workplace incidents²¹ in selected sectors, 2015 and 2016

Industry	2016	2015
All Sectors	697,139	685,379
Construction	212,968	225,860
Marine	46,162	36,903
Manufacturing	119,343	106,163
<i>Metalworking</i>	57,650	42,893
<i>Manufacture of Food, Beverages & Tobacco</i>	22,479	14,484
<i>Manufacture of Other Non-Metallic Mineral Products</i>	10,289	3,382
Water Supply, Sewerage & Waste Management and Remediation Activities	15,139	2,721
Wholesale & Retail Trade	31,786	25,235
<i>Wholesale Trade</i>	8,001	20,215
<i>Retail Trade</i>	23,785	5,020
Transportation & Storage	93,277	115,501
<i>Logistics & Transport</i>	53,120	89,432
Accommodation & Food Services	16,862	23,177
<i>Accommodation</i>	4,012	3,337
<i>Food & Beverage Service Activities</i>	12,850	19,840
Information & Communications	710	7,068
Financial & Insurance Activities	2,566	2,672
Real Estate Activities	6,676	4,768
Professional, Scientific & Technical Activities	8,803	8,746
<i>Legal, Accounting & Management Activities</i>	3,845	4,228
<i>Architectural & Engineering Activities</i>	4,201	3,243
Administrative & Support Service Activities	51,120	47,841
<i>Security and Investigation Activities</i>	14,225	7,088
<i>Cleaning & Landscape Maintenance Activities</i>	32,147	31,887
Community, Social & Personal Services	46,231	32,507
<i>Health Activities</i>	6,575	7,075
<i>Arts, Entertainment and Recreation</i>	8,675	1,805

²¹ 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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