



# Workplace Safety and Health Report 2014

National Statistics





# CONTENTS

Notations and List of Charts	Page 01
List of Tables	Page 02
Key Facts	Page 03
Overview of Trends	Page 05
Workplace Fatal Injuries	Page 12
Workplace Major Injuries	Page 23
Workplace Minor Injuries	Page 29
Occupational Diseases	Page 36
Surveillance Programmes	Page 45
Annex A Table A-1 – Accident Frequency Rate (AFR) and Accident Severity Rate (ASR) in selected sectors, 2013 and 2014	Page 50
Annex A Table A-2 – Number of man-days lost to workplace incidents in selected sectors, 2013 and 2014	Page 51
Annex B - Business under Surveillance	Page 52
Annex C - Hygiene and Medical Surveillance	Page 53
Annex D - Source of Data	Page 54
Annex E - Data Coverage	Page 55
Annex F - Concepts and Definitions	Page 56

## NOTATIONS

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

## LIST OF CHARTS

- Figure 1: Workplace injury rate, 2006-2014
- Figure 2: Workplace injury rate by industry, 2006-2014
- Figure 3: Workplace fatal injury rate, 2006-2014
- Figure 4: Proportion of workplace fatal Injuries by industry, 2006-2014
- Figure 5: Proportion of workplace fatal Injuries by incident type, 2006-2014
- Figure 6: Workplace major injury rate, 2011-2014
- Figure 7: Workplace minor injury rate, 2011-2014
- Figure 8: Occupational disease incidence rate, 2006-2014
- Figure 9: Proportion of occupational disease by type, 2006-2014
- Figure 10: Workplace fatal injury rate for Construction sector, 2006-2014
- Figure 11: Workplace fatal injury rate for Marine sector, 2006-2014
- Figure 12: Workplace fatal injury rate for Manufacturing sector, 2006-2014
- Figure 13: Workplace fatal injury rate for Transportation & Storage sector, 2006-2014
- Figure 14: Noise-induced Deafness incidence rate, 2006-2014
- Figure 15: Number of companies entering and exiting surveillance, 2012-2014
- Figure 16: Number of workers under medical surveillance, 2005-2014
- Figure 17: Number of workplaces under medical surveillance, 2005-2014
- Figure 18: Results of medical monitoring for noise exposure for Top 5 industries, 2014
- Figure 19: Results of medical monitoring for chemical exposure for Top 5 industries, 2014
- Figure 20: Noise exposure by industry, 2012-2014
- Figure 21: Chemical exposure by industry, 2012-2014



## LIST OF TABLES

Table 1.1:	Number of workplace injuries and occupational diseases, 2013 and 2014
Table 1.2:	Key safety and health indicators, 2013 and 2014
Table 1.3:	Number of workplace fatal injuries by industry, 2013 and 2014
Table 1.4:	Workplace fatal Injury rates by industry, 2013 and 2014
Table 1.5:	Number of workplace fatal injuries by incident type and incident agent, 2013 and 2014
Table 1.6:	Number of workplace fatal injuries by industry and incident type, 2014
Table 1.7:	Number of workplace major injuries by industry, 2013 and 2014
Table 1.8:	Workplace major injury rates by industry, 2013 and 2014
Table 1.9:	Types of workplace major injury, 2013 and 2014
Table 1.10:	Number of workplace major injuries by key incident type and key incident agent, 2013 and 2014
Table 1.11:	Top 3 incident types for workplace major injuries by industry, 2014
Table 1.12:	Number of workplace minor injuries by industry, 2013 and 2014
Table 1.13:	Workplace minor injury rates by industry, 2013 and 2014
Table 1.14:	Number of workplace minor injuries by key incident type and key incident agent, 2013 and 2014
Table 1.15:	Top 3 incident types for workplace minor injuries by industry, 2014
Table 1.16:	Types of workplace minor injury, 2013 and 2014
Table 1.17:	Number of confirmed occupational disease cases by industry, 2013 and 2014
Table 1.18:	Occupational disease incidence rates by industry, 2013 and 2014
Table 1.19:	Number of confirmed occupational diseases by type, 2013 and 2014
Table 1.20:	Number of confirmed NID cases by industry, 2013 and 2014
Table 1.21:	NID incidence rates by industry, 2013 and 2014
Table 1.22:	Number of confirmed WRMSD cases by industry, 2013 and 2014
Table 1.23:	Number of confirmed OSD cases by industry, 2013 and 2014
Table 1.24:	Top 5 causative agents of Occupational Skin Diseases, 2014

## KEY FACTS

## WORKPLACE FATAL INJURY RATE REDUCED TO 1.8 PER 100,000 EMPLOYED PERSONS; WORKPLACE MAJOR AND WORKPLACE MINOR INJURY RATES INCREASED TO 20.0 PER 100,000 EMPLOYED PERSONS AND 383 PER 100,000 EMPLOYED PERSONS RESPECTIVELY IN 2014

From 2014, Ministry of Manpower made changes to the criteria for work-related accident and the following changes are reflected in the WSH Statistics Report:

- Included work-related traffic injuries
- Reclassified work-related back injuries due to ergonomic risks from workplace minor injuries to work-related musculoskeletal disorders, an occupational disease; and
- Expanded the number of workers to include all workplaces covered under the WSH Act.

As such, the workplace injury rates for 2014 are not strictly comparable with the previous years. For purpose of comparison, the 2013 numbers were adjusted from previously published data to include these changes, but not prior to 2013 as data are not available.

**Table 1.1: Number of workplace injuries and occupational diseases, 2013 and 2014**

	2014	2013
<b>Workplace Injuries</b>	<b>13,595 (565)</b>	<b>12,453 (552)</b>
Fatal Injuries	60 (6)	73 (14)
Major Injuries	672 (57)	640 (51)
Minor Injuries	12,863 (502)	11,740 (487)
<b>Occupational Diseases (OD)</b>	<b>992</b>	<b>887</b>

Note: Figures in parentheses refer to the number of work-related traffic injuries.

**Table 1.2: Key safety and health indicators, 2013 and 2014**

Per 100,000 employed persons

	2014	2013
<b>Workplace Injury Rate<sup>1</sup></b>	<b>405</b>	<b>384</b>
Fatal Injury rate	1.8	2.3
Major Injury rate	20.0	19.8
Minor Injury rate	383	362
Accident Frequency Rate <sup>2</sup>	1.7	1.6
Accident Severity Rate <sup>3</sup>	84	93
<b>Occupational Diseases Incidence Rate<sup>4</sup></b>	<b>29.5</b>	<b>27.4</b>

<sup>1</sup> Workplace Injury Rate =  $\frac{\text{No. of Fatal and Non-Fatal Workplace Injuries}}{\text{No. of Employed Persons}} \times 100,000$

<sup>2</sup> Accident Frequency Rate (AFR) =  $\frac{\text{No. of Workplace Accidents Reported}}{\text{No. of Man-hours Worked}} \times 1,000,000$

<sup>3</sup> Accident Severity Rate (ASR) =  $\frac{\text{No. of Man Days Lost To Workplace Accidents}}{\text{No. of Man-hours Worked}} \times 1,000,000$

<sup>4</sup> Occupational Disease Incidence Rate =  $\frac{\text{No. of Occupational Diseases}}{\text{No. of Employed Persons}} \times 100,000$

While the number of workplace fatal injury cases has seen a decrease, the number of workplace major and workplace minor injury cases have increased in 2014. 672 workers sustained workplace major injuries and 12,863 workers met with workplace minor injuries in 2014.

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 monitor 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 2014 statistics on workplace safety and health are:

## WORKPLACE INJURIES

- 60 (6) workers were fatally injured, a rate of 1.8 per 100,000 employed persons.
- 672 (57) workers sustained workplace major injuries, a rate of 20.0 per 100,000 employed persons.
- 12,863 (502) workers sustained less severe injuries (i.e. minor injuries), a rate of 383 per 100,000 employed persons.
- 678,951 (47,025) man-days were lost, a rate of 84 man-days lost per million man-hours worked (i.e. accident severity rate).
- 1.7 incidents occurred for every million man-hours worked (i.e. accident frequency rate).

## OCCUPATIONAL DISEASES

- 992 occupational disease (OD) cases were confirmed in 2014, an incidence rate of 29.5 per 100,000 employed persons.
- Leading OD was noise-induced deafness with 594 cases.
- Second most common OD was work-related musculoskeletal disorders (WRMSD) with 315 cases, with inclusion of back injury cases due to ergonomic risks.

## SURVEILLANCE PROGRAMMES

- 19 companies entered the surveillance phase under the Business under Surveillance (BUS) programme in 2014.
- 139,685 workers from 2,217 workplaces were monitored under the Medical Surveillance programme.
- Under Hygiene Surveillance Programme, 423 workplaces were under the noise monitoring programme and 1,085 chemicals monitoring results were received for the chemical monitoring programme.

# OVERVIEW OF TRENDS

## WORKPLACE INJURIES

For 2014, the overall number of reported<sup>5</sup> injuries<sup>6</sup> increased by 9.2% compared to 2013 (Figure 1). Manufacturing sector had the highest overall injury rate since 2011, followed by Construction sector (Figure 2).



Figure 1: Workplace injury rate, 2006-2014

<sup>5</sup> Employer or Occupier has to report work incidents to the Ministry of Manpower under the WSH (Incident Reporting) Regulations.

<sup>6</sup> A **workplace injury** is any personal injury or death resulting from a workplace accident. Please refer to the annex for the types of workplace injuries covered.

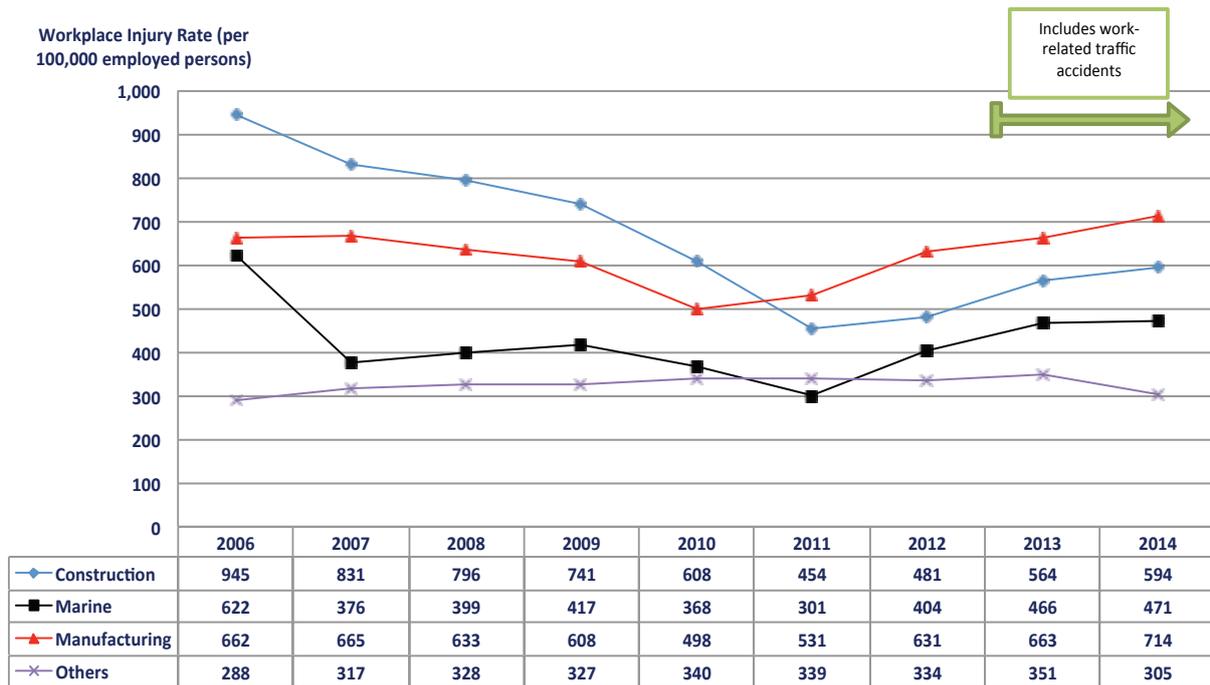


Figure 2: Workplace injury rate by industry, 2006-2014

### WORKPLACE FATAL INJURIES

There was a decrease in the number of workplace fatal injuries from 73 in 2013 to 60 in 2014 (Table 1.1). Workplace fatal injury rate decreased to 1.8 per 100,000 employed persons compared to 2.3 per 100,000 employed persons in 2013 (Figure 3). Overall, the workplace fatal injury rate has been decreasing since 2006.

Among the workplace fatal injuries, there were 6 work-related traffic fatal injuries in 2014, a decrease of 57% compared to 2013.

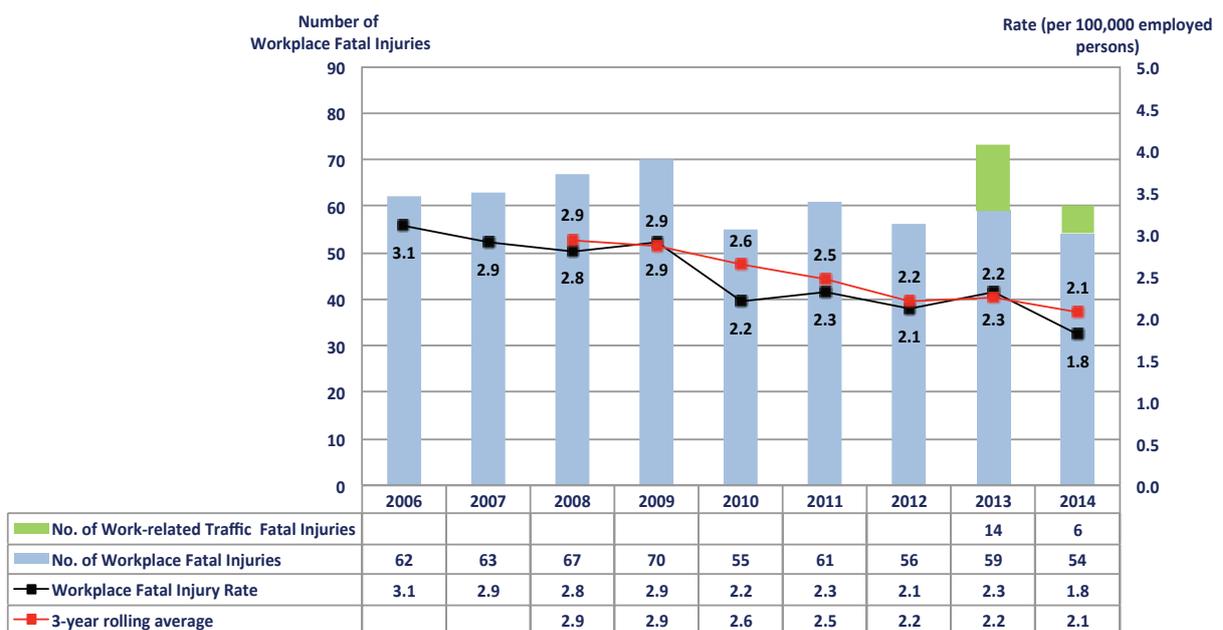


Figure 3: Workplace fatal injury rate, 2006-2014

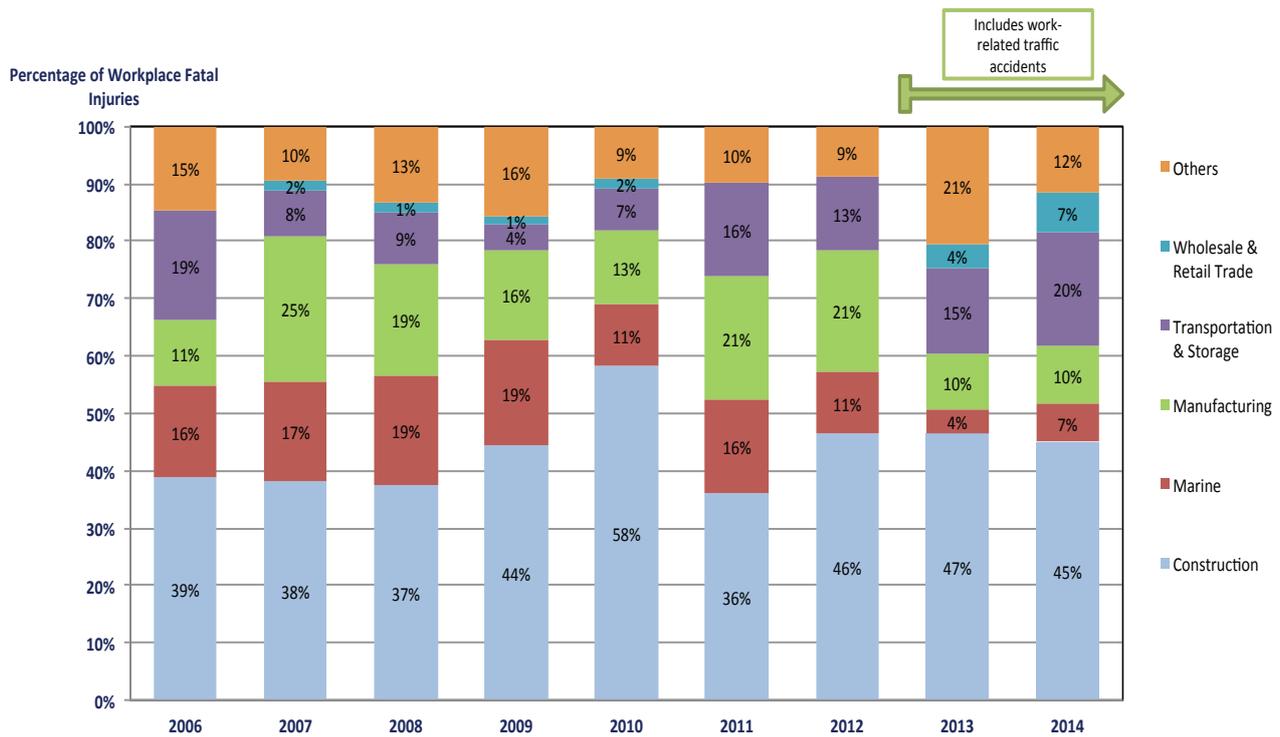


Figure 4: Proportion of fatal Injuries by industry, 2006-2014



Figure 5: Proportion of workplace fatal Injuries by incident type, 2006-2014

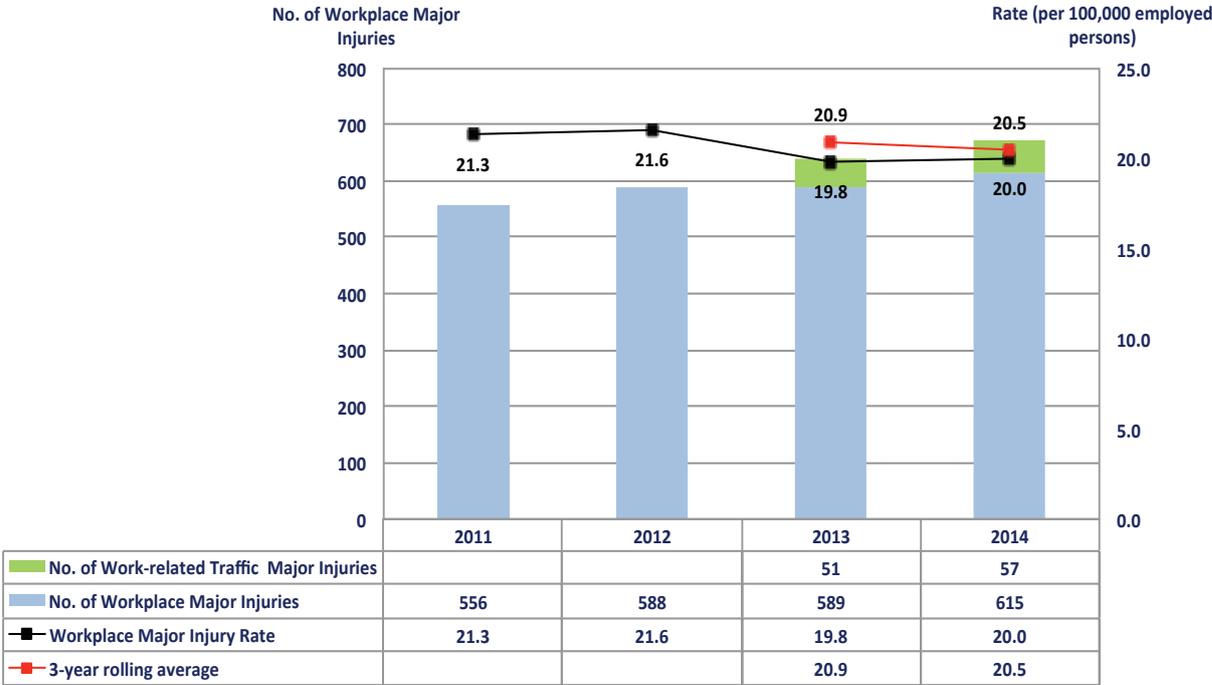
Note:

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



**WORKPLACE MAJOR INJURIES**

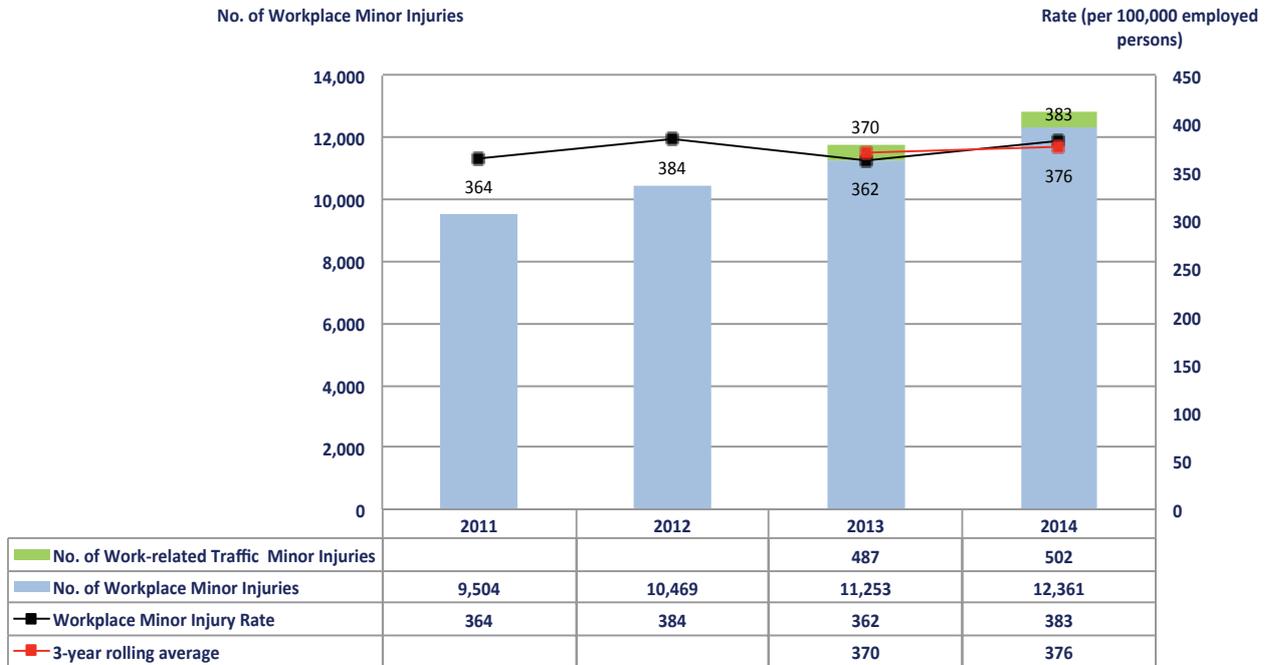
Workplace major injuries increased from 640 (19.8 per 100,000 employed persons) in 2013 to 672 (20.0 per 100,000 employed persons) in 2014 (Figure 6). The number of workplace major injuries has increased by 21% since 2011.



**Figure 6: Workplace major injury rate, 2011-2014**

## WORKPLACE MINOR INJURIES

Compared to 2013, there was a 10% increase in workplace minor injuries, from 11,740 (362 per 100,000 employed persons) in 2013 to 12,863 (383 per 100,000 employed persons) in 2014 (Figure 7). There was a 35% increase in the number of workplace minor injuries since 2011.



**Figure 7: Workplace Minor injury rate, 2011-2014**

A total of 678,951 man-days were lost from workplace injuries, a decrease of 6.4% from 2013. The accident frequency rate (AFR), which measures how often work incidents occur, was 1.7 incidents per million man-hours worked in 2014. The accident severity rate (ASR) was 84 man-days lost for every million hours worked in 2014. Detailed industry breakdown of the AFR, ASR and man-days lost data can be found in Tables A-1 and A-2 in Annex A.



## OCCUPATIONAL DISEASES

For occupational diseases (OD)<sup>7</sup>, the number of cases confirmed was 992 in 2014, up from 887 in 2013. For 2014, OD incidence was 29.5 confirmed cases per 100,000 employed persons, an increase compared to 27.4 in the previous year (Figure 8). The increase was contributed mainly by back injury cases due to ergonomic risks.

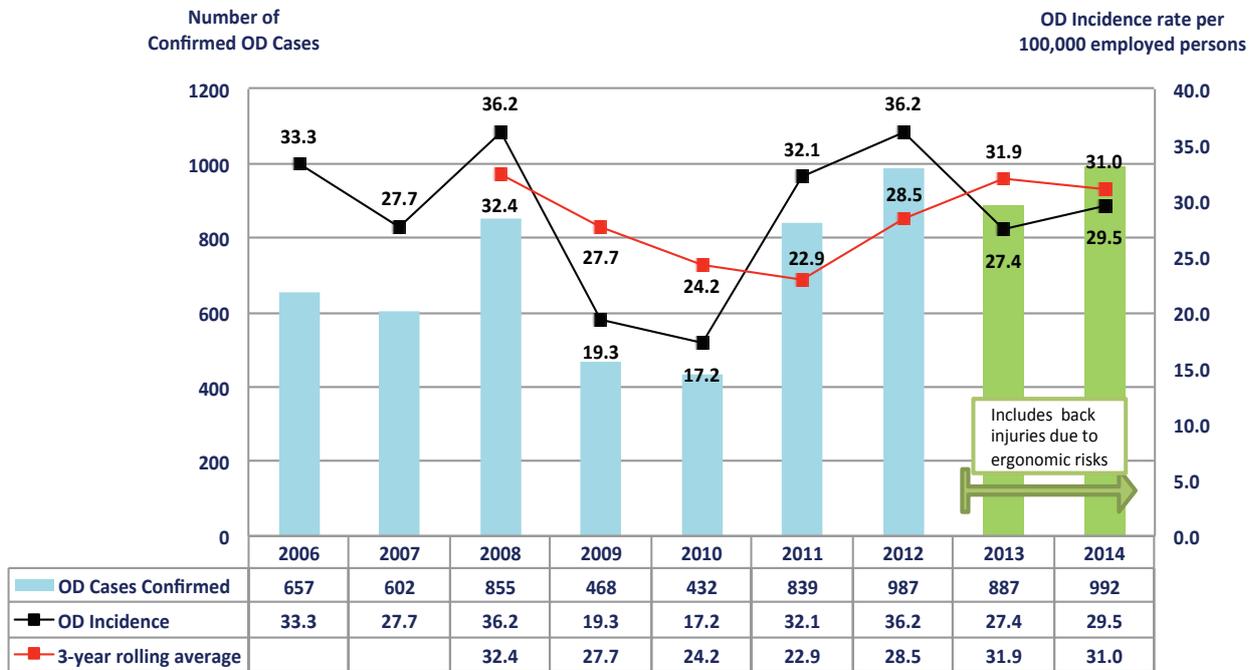


Figure 8: Occupational disease incidence rate, 2006-2014

<sup>7</sup> An occupational disease is a disease contracted as a result of exposure to risk factors arising from work.

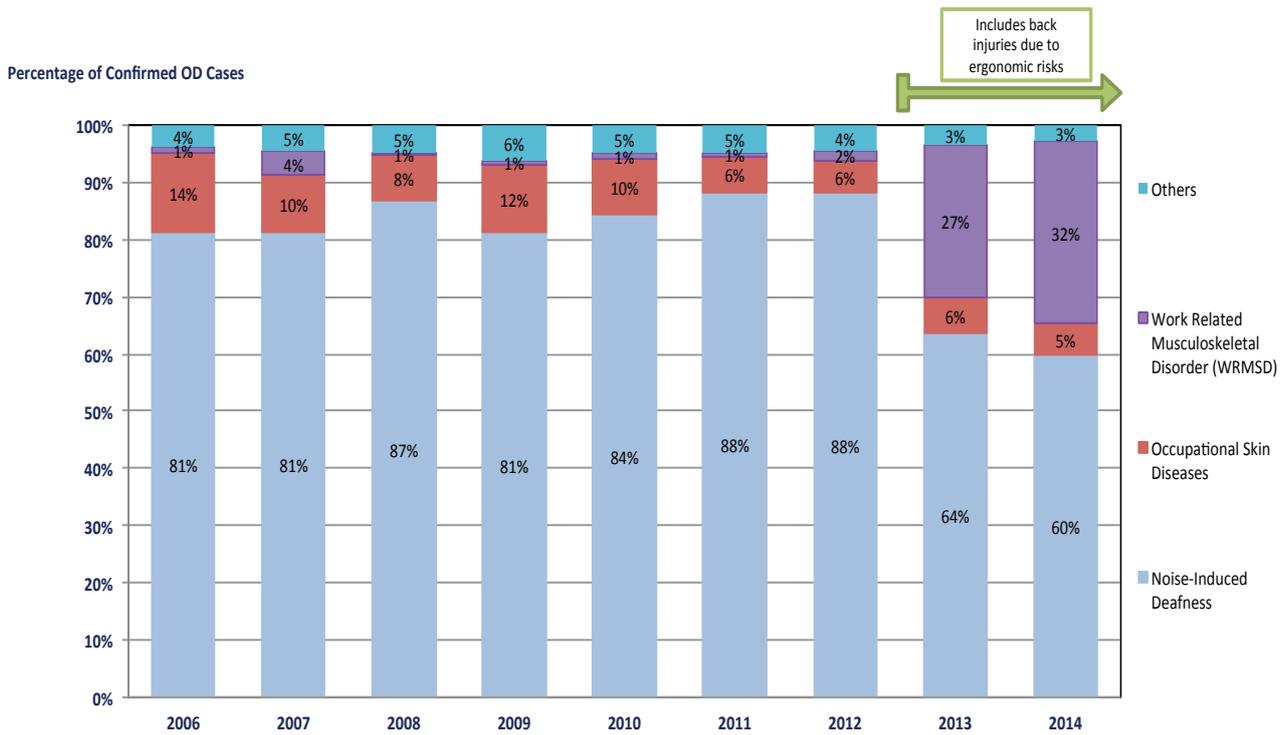


Figure 9: Proportion of occupational disease by type, 2006-2014

### SURVEILLANCE PROGRAMMES

The number of companies placed into the Business under Surveillance (BUS) programme has increased following a review of the entry criteria in 2014.

The number of workers and workplaces covered under the Medical Surveillance programme has increased to 139,685 and 2,217 respectively. Please refer to Figures 16 and 17.

# ACCIDENTS AT WORK

## WORKPLACE FATAL INJURIES

### 60 WORKPLACE FATAL INJURIES (INCLUDING 6 WORK-RELATED TRAFFIC FATAL INJURIES) IN 2014, ALMOST HALF (45%) OF THE WORKPLACE FATAL INJURIES WERE FROM CONSTRUCTION SECTOR

There were 60 workplace fatal injuries in 2014, a decrease from 73 workplace fatal injuries in 2013. Workplace fatal injury rate decreased to 1.8 per 100,000 employed persons compared to 2.3 per 100,000 employed persons in 2013 (Table 1.3 & Table 1.4).

## WORKPLACE FATAL INJURIES BY SECTOR

### CONSTRUCTION

While the workplace fatal injury rate in the Construction sector fell from 7.2 per 100,000 employed persons in 2013 to 5.5 per 100,000 employed persons in 2014, it remained the top contributor in 2014 with 27 workplace fatal injuries or 45% of all workplace fatal injuries, down from 34 in 2013 (Table 1.3). It posted the highest workplace fatal injury rate amongst the three traditionally higher risk sectors<sup>8</sup> (Table 1.4).

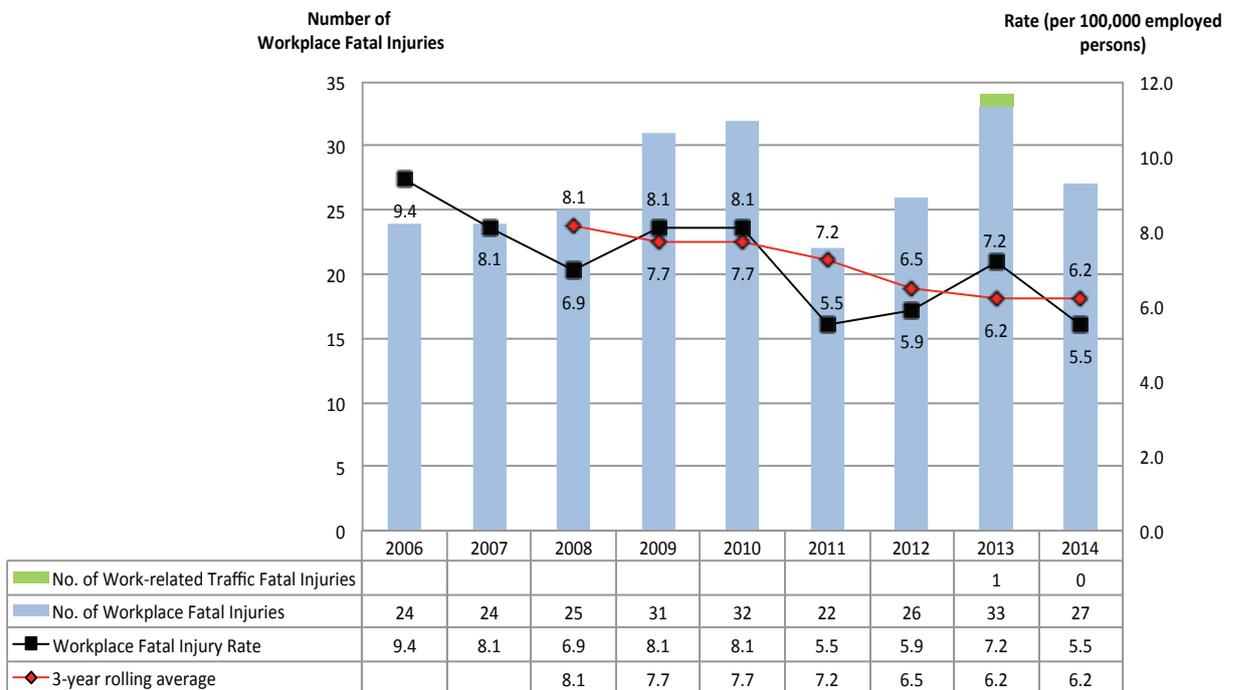


Figure 10: Workplace fatal injury rate for Construction sector, 2006-2014

<sup>8</sup> The three traditionally higher risk sectors are Construction, Marine & Manufacturing.

## MARINE

For the Marine<sup>9</sup> sector, there were 4 workplace fatal injuries in 2014, compared to 3 in 2013 (Table 1.3). The workplace fatal injury rate saw an increase from 2.7 per 100,000 employed persons in 2013 to 3.8 per 100,000 employed persons in 2014 (Table 1.4).

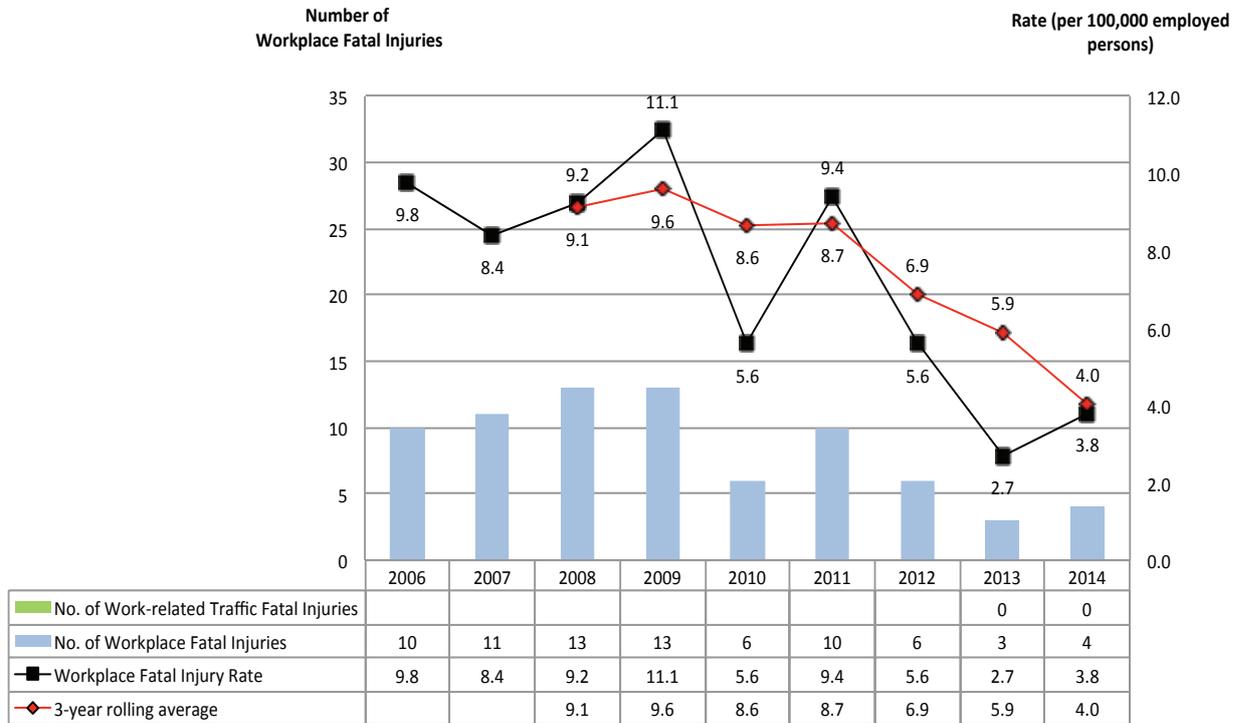


Figure 11: Workplace fatal injury rate for Marine sector, 2006-2014

<sup>9</sup> 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

The Manufacturing sector saw a further reduction in its workplace fatal injury number and rate. There were 6 workplace fatal injuries for 2014, down from 7 in 2013 (Table 1.3). The workplace fatal injury rate saw a decrease from 1.6 per 100,000 employed persons in 2013 to 1.4 per 100,000 employed persons in 2014 (Table 1.4).

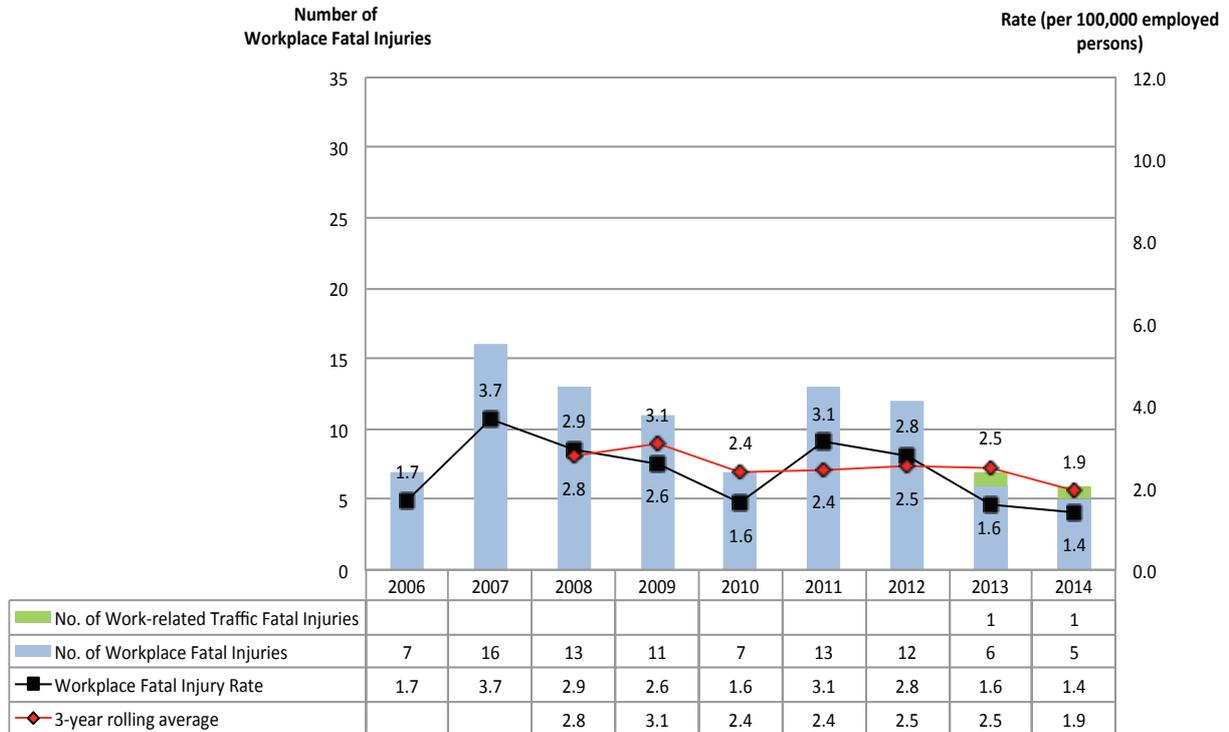


Figure 12: Workplace fatal injury rate for Manufacturing sector, 2006-2014

## TRANSPORTATION & STORAGE

For Transportation & Storage sector, the number of workplace fatal injuries increased slightly from 11 cases in 2013 to 12 cases in 2014 (Table 1.3). The workplace fatal injury rate rose from 4.9 per 100,000 employed persons in 2013 to 5.1 per 100,000 employed persons in 2014.

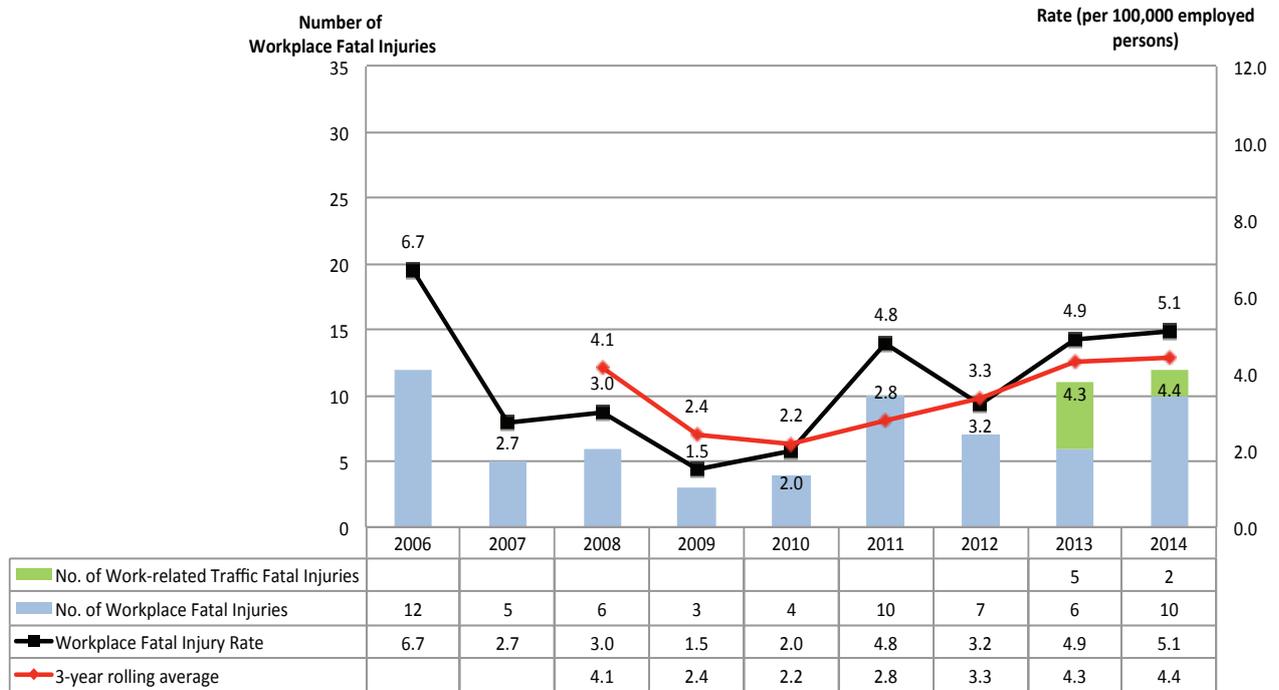


Figure 13: Workplace fatal injury rate for Transportation & Storage sector, 2006-2014

## OTHERS

Water Supply, Sewerage, Waste Management and Remediation Activities, Retail Trade, Activities Auxiliary to Financial Service and Insurance Activities, Travel Agencies and Tour Operators Activities and Security & Investigation Activities sectors which had no workplace fatal injuries in 2013, saw a total of 7 workplace fatal injuries in 2014 (Table 1.3).

Agriculture & Related Services Activities, Food & Beverage Service Activities, Real Estate Activities, Architectural & Engineering Activities, Rental & Leasing Activities, Education, Gambling & Betting sector, Repair & Maintenance of Vehicles and Other Personal Service Activities Sectors which had a total of 13 workplace fatal injuries in 2013, had no workplace fatal injury in 2014 (Table 1.3).

## WORK-RELATED TRAFFIC FATAL INJURIES BY SECTOR

In 2014, the Transportation & Storage sector was the main contributor of work-related traffic fatal injuries with 2 fatal injuries, a 60% decrease compared to 2013. Manufacture of Non-metallic Mineral Products, Retail Trade, Activities Auxiliary to Financial Service and Insurance Activities and Security & Investigation Activities sectors each had 1 fatal case (Table 1.3).

**Table 1.3: Number of workplace fatal injuries by industry, 2013 and 2014**

Industry	2014	2013
<b>All Sectors</b>	<b>60 (6)</b>	<b>73 (14)</b>
Construction	27	34 (1)
Marine	4	3
Manufacturing	6 (1)	7 (1)
<i>Manufacture of Food Products</i>	2	2 (1)
<i>Metalworking</i>	2	1
<i>Manufacture of Computer, Electronic and Optical Products</i>	1	0
<i>Manufacture of Non-metallic Mineral Products</i>	1 (1)	1
<i>Tanning &amp; Dressing of Leather</i>	0	2
<i>Manufacture of Other Transport Equipment</i>	0	1
Agriculture & Related Services Activities	0	1
Water Supply, Sewerage & Waste Management and Remediation Activities	1	0
Wholesale & Retail Trade	4 (1)	3 (2)
<i>Wholesale Trade</i>	2	3 (2)
<i>Retail Trade</i>	2 (1)	0
Transportation & Storage	12 (2)	11 (5)
<i>Logistics &amp; Transport<sup>10</sup></i>	9	6 (2)
Food & Beverage Service Activities	0	3 (3)
Activities Auxiliary to Financial Service and Insurance Activities	1 (1)	0
Real Estate Activities	0	2
Architectural & Engineering Services	0	1
Rental & Leasing Activities	0	1
Travel Agencies and Tour Operators Activities	1	0
Security & Investigation Activities	2 (1)	0
Cleaning & Landscape Maintenance Activities	2	2
Education	0	1 (1)
Gambling & Betting Activities	0	1
Repair & Maintenance of Vehicles	0	2
Other Personal Service Activities	0	1 (1)

Note:  
 Figures in parentheses refer to the number of work-related traffic injuries.

<sup>10</sup> The logistics and 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

**Table 1.4: Workplace fatal injury rates by industry, 2013 and 2014**

Per 100,000 employed persons

Industry	2014	2013
<b>All Sectors</b>	<b>1.8</b>	<b>2.3</b>
Construction	5.5	7.2
Marine	3.8	2.7
Manufacturing	1.4	1.6
<i>Manufacture of Food Products</i>	5.1	5.4
<i>Metalworking</i>	1.6	0.8
<i>Manufacture of Computer, Electronic and Optical Products</i>	1.1	0.0
<i>Manufacture of Non-metallic Mineral Products</i>	18.9	18.5
<i>Tanning &amp; Dressing of Leather</i>	n.a.	n.a.
<i>Manufacture of Other Transport Equipment</i>	0.0	4.2
Agriculture & Related Services Activities	n.a.	n.a.
Water Supply, Sewerage & Waste Management Remediation Activities	6.1	0.0
Wholesale & Retail Trade	0.8	0.6
<i>Wholesale Trade</i>	0.6	1.0
<i>Retail Trade</i>	1.2	0.0
Transportation & Storage	5.1	4.9
<i>Logistics &amp; Transport</i>	9.2	6.5
Food & Beverage Service Activities	0.0	1.6
Activities Auxiliary to Financial Service and Insurance Activities	n.a.	n.a.
Real Estate Activities	0.0	2.3
Architectural & Engineering Services	0.0	1.6
Rental & Leasing Activities	n.a.	n.a.
Travel Agencies and Tour Operators Activities	n.a.	n.a.
Security & Investigation Activities	n.a.	n.a.
Cleaning & Landscape Maintenance Activities	4.0	4.2
Education	n.a.	n.a.
Gambling & Betting Activities	n.a.	n.a.
Repair & Maintenance of Vehicles	n.a.	n.a.
Other Personal Service Activities	n.a.	n.a.

## WORKPLACE FATAL INJURIES BY INCIDENT TYPES AND INCIDENT AGENTS

### FALLS REMAINED THE LEADING INCIDENT TYPE

The top incident types which accounted for 50% of total workplace fatal injuries in 2014 were (Table 1.5):

- Falls (Falls from Heights (FFH)<sup>11</sup>) (10 fatal injuries, 17%)
- Struck by Moving Objects (8 fatal injuries, 13%)
- Collapse/ Failure of Structure & Equipment (6 fatal injuries, 10%)
- Work-related Traffic (6 fatal injuries, 10%)

Falls from Heights (FFH) was the leading incident type in 2014, with 10 cases. Majority fell from physical workplaces such as structures, roofs and formwork.

Struck by Moving Objects saw 8 workplace fatal injuries in 2014. 75% of these workplace fatal injuries were hit by moving vehicles such as trucks inside workplace premises. The cases were from Construction and Logistics & Transport sectors.

There was a decrease in the number of workplace fatal injuries due to Collapse/ Failure of Structure & Equipment, from 10 workplace fatal injuries in 2013 to 6 workplace fatal injuries in 2014. 83% of these workplace fatal injuries were due to collapse/ failure of structures. These cases were from the Construction sector.

3 out of the 6 work-related traffic fatal injuries in 2014 involved motorcycles. These cases were from Activities Auxiliary to Financial Service and Insurance Activities, Security & Investigation Activities and Transportation & Storage sectors.

Other than the above, there were 4 workplace fatal injuries due to Struck by Falling Objects from heights in 2014, compared to just 1 workplace fatal injury in 2013. Half of the cases were from the Construction sector.

<sup>11</sup> 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.

Table 1.5: Number of workplace fatal injuries by incident type and incident agent, 2013 and 2014

Incident Type	Incident Agent	2014	2013	
<b>Total Workplace Fatal Injuries</b>		<b>60</b>	<b>73</b>	
<b>Falls</b>	<b>Total</b>	<b>14</b>	<b>17</b>	
	<i>Falls from Heights</i>	Total	10	14
		Physical Workplace - Structures	4	5
		Physical Workplace - Roofs	2	3
		Means of Access - Ladders	2	2
		Physical Workplace - Formwork	1	3
		Means of Access - Scaffold	1	0
		Lifting Equipment - Cranes	0	1
	<i>Slips, Trips &amp; Falls<sup>12</sup></i>	<b>Total</b>	<b>4</b>	<b>3</b>
		Moving Vehicles - Boat, Lorry, Forklifts	3	1
Means of Access - Stairs or Steps		1	0	
Physical Workplace - Floor/Level Surfaces		0	1	
	Animals, Plants and Insects	0	1	
<b>Struck by Moving Objects</b>	<b>Total</b>	<b>8</b>	<b>9</b>	
	Moving Vehicles - Prime Mover, Lorry, Truck, Forklift, Car	6	6	
	Lifting Equipment - Others	1	0	
	Pressurised Equipment - Pressurised Piping/Accessories	1	0	
	Industrial Machines	0	1	
	Lifting Equipment - Piling Machines	0	1	
	Lifting Equipment - Lifts & Hoists	0	1	
<b>Collapse/Failure of Structure &amp; Equipment</b>	<b>Total</b>	<b>6</b>	<b>10</b>	
	Physical Workplace - Structures	5	3	
	Lifting Equipment - Mobile Work Platform	1	0	
	Moving Vehicles - Prime Mover, Forklift	0	2	
	Physical Workplace - Formwork	0	1	
	Lifting Equipment - Lifting appliances/gears	0	1	
	Means of Access - Scaffold	0	1	
	Animals, Plants and Insects	0	1	
	Furniture & Fittings	0	1	
<b>Work-related Traffic</b>	<b>Total</b>	<b>6</b>	<b>14</b>	
	Motorcycle	3	6	
	Taxi	1	1	
	Industrial Trucks - Cement Mixer	1	0	
	Large Goods Vehicles (LGVs) - Lorry, Truck	1	5	
	Car	0	1	
	Van	0	1	

<sup>12</sup> Slips, Trips and Falls includes Slips and Trips on same level/Fall from vehicle/stairs/steps/machines/other locations.



(continued) Table 1.5: Number of workplace fatal injuries by incident type and incident agent, 2013 and 2014

Incident Type	Incident Agent	2014	2013
<b>Total Workplace Fatal Injuries</b>		<b>60</b>	<b>73</b>
<b>Caught in/ between Objects</b>	<b>Total</b>	<b>5</b>	<b>5</b>
	Moving Vehicles - Truck, Forklift, Prime Mover	3	4
	Lifting Equipment - Mobile Work Platform	1	0
	Metal Items	1	0
	Lifting Equipment - Piling Machines	0	1
<b>Struck by Falling Objects From Heights</b>	<b>Total</b>	<b>4</b>	<b>1</b>
	Industrial Machines	1	0
	Metal Items	1	0
	Moving Vehicles - Forklift	1	0
	Physical Workplace - Formwork	1	0
	Goods/Cargo	0	1
<b>Crane-related</b>	<b>Total</b>	<b>3</b>	<b>4</b>
	Lifting Equipment - Cranes	3	4
<b>Collapse of Formwork/Failure of its Supports</b>	<b>Total</b>	<b>3</b>	<b>0</b>
	Physical Workplace - Formwork	3	0
<b>Drowning</b>	<b>Total</b>	<b>2</b>	<b>1</b>
<b>Electrocution</b>	<b>Total</b>	<b>2</b>	<b>5</b>
	Electrical Equipment	2	3
	Industrial Machines	0	2
<b>Exposure to/ contact with extreme temperatures</b>	<b>Total</b>	<b>2</b>	<b>0</b>
	Hot scalding liquid/Steam	2	0
<b>Fires &amp; Explosion</b>	<b>Total</b>	<b>2</b>	<b>2</b>
	Explosives/Flammable Substances	2	0
	Pressurised Equipment - Pressurised Piping/Accessories	0	1
	Industrial Machines	0	1
<b>Exposure to/ contact with harmful substances</b>	<b>Total</b>	<b>1</b>	<b>0</b>
	Corrosives	1	0
<b>Physical Assault</b>	<b>Total</b>	<b>1</b>	<b>0</b>
	Human Factors	1	0
<b>Suffocation</b>	<b>Total</b>	<b>1</b>	<b>1</b>
	Dust, Gas, Liquid and Chemicals	1	1
<b>Exposure to/ contact with biological materials</b>	<b>Total</b>	<b>0</b>	<b>1</b>
	Animals, Plants and Insects	0	1
<b>Other Incident Types</b>	<b>Total</b>	<b>0</b>	<b>3</b>
	Other Incident Agents	0	3

**Table 1.6: Number of workplace fatal injuries by industry and incident type, 2014**

Industry	All	Construction	Marine	Manufacturing	Water Supply, Sewerage & Waste Management Remediation Activities	Wholesale & Retail Trade
<b>Total</b>	<b>60</b>	<b>27</b>	<b>4</b>	<b>6</b>	<b>1</b>	<b>4</b>
Falls	14	8	0	2	0	0
<i>Falls from Heights</i>	10	8	0	0	0	0
<i>Slips, Trips &amp; Falls</i>	4	0	0	2	0	1
Struck by Moving Objects	8	3	1	0	1	1
Collapse/Failure of Structure & Equipment	6	4	0	0	0	1
Work-related Traffic	6	0	0	1	0	1
Caught in/between objects	5	2	0	0	0	0
Struck by Falling Objects From Heights	4	2	1	1	0	0
Crane-related	3	2	0	0	0	0
Collapse of Formwork/Failure of its Supports	3	3	0	0	0	0
Drowning	2	0	1	0	0	0
Electrocution	2	1	0	0	0	0
Exposure to/contact with extreme temperatures	2	0	0	2	0	0
Fires & Explosion	2	2	0	0	0	0
Exposure to/contact with harmful substances	1	0	0	0	0	0
Physical Assault	1	0	0	0	0	0
Suffocation	1	0	1	0	0	0

(continued) Table 1.6: Number of workplace fatal injuries by industry and incident type, 2014

Industry	Transportation & Storage	Logistics & Transport	Activities Auxiliary to Financial Service and Insurance Activities	Travel Agencies and Tour Operators Activities	Security & Investigation Activities	Cleaning & Landscape Maintenance Activities
<b>Total</b>	<b>12</b>	<b>9</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>
Falls	2	2	0	0	0	1
<i>Falls from Heights</i>	1	1	0	0	0	1
<i>Slips, Trips &amp; Falls</i>	1	1	0	0	0	0
Struck by Moving Objects	2	2	0	0	0	0
Collapse of Formwork/Failure of its Supports	0	0	0	0	0	0
Work-related Traffic	2	0	1	0	1	0
Caught in/between objects	3	3	0	0	0	0
Struck by Falling Objects From Heights	0	0	0	0	0	0
Crane-related	1	1	0	0	0	0
Collapse/Failure of Structure & Equipment	1	1	0	0	0	0
Drowning	1	0	0	0	0	0
Electrocution	0	0	0	1	0	0
Exposure to/contact with extreme temperatures	0	0	0	0	0	0
Fires & Explosion	0	0	0	0	0	0
Exposure to/contact with harmful substances	0	0	0	0	0	1
Physical Assault	0	0	0	0	1	0
Suffocation	0	0	0	0	0	0

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

## WORKPLACE MAJOR INJURIES

### NUMBER OF WORKPLACE MAJOR INJURIES INCREASED BY 5% OVER 2013, CONSTRUCTION SECTOR WAS THE TOP CONTRIBUTOR

672 workers (20.0 per 100,000 employed persons) sustained workplace major injuries<sup>13</sup> in 2014, compared to 640 workers (19.8 per 100,000 employed persons) in 2013 (Table 1.7 & 1.8). 80,804 man-days were lost as a result of these incidents.

### WORKPLACE MAJOR INJURIES BY SECTOR

The three traditional higher risk sectors accounted for 371 (55%) of the workplace major injuries reported (Table 1.7).

Construction sector worsened, with 202 cases (41.2 per 100,000 employed persons) in 2014, up from 176 cases (37.1 per 100,000 employed persons) in 2013. Increased workplace major injury rate was also seen in the Wholesale & Retail Trade and to a lesser degree in the Logistics & Transport, Financial & Insurance Activities, Real Estate Activities and Administrative & Support Service Activities sectors compared to 2013.

Marine sector saw a reduction in workplace major injury rate to 27.2 per 100,000 employed persons from 35.6 per 100,000 employed persons in 2013. Workplace major injury rates decreased for the Water Supply, Sewerage, Waste Management and Remediation Activities (62.1 per 100,000 employed persons in 2013 to 60.6 per 100,000 employed persons in 2014), Accommodation & Food Service Activities from 16.9 per 100,000 employed persons in 2013 to 11.6 per 100,000 employed persons in 2014, Professional, Scientific & Technical Activities (9.0 per 100,000 employed persons in 2013 to 6.8 per 100,000 employed persons in 2014) and Health Activities sectors (11.1 per 100,000 employed persons in 2013 to 6.9 per 100,000 employed persons in 2014).

### WORK-RELATED TRAFFIC MAJOR INJURIES BY SECTOR

In 2014, Construction, Manufacturing and Wholesale & Retail Trade sectors were the main contributors of work-related traffic major injuries with a total of 38 out of 57 cases (Table 1.7).

---

<sup>13</sup> Refer to Annex F for definition.



**Table 1.7: Number of workplace major injuries by industry, 2013 and 2014**

Industry	2014	2013
<b>All Sectors</b>	<b>672 (57)</b>	<b>640 (51)</b>
Construction	202 (14)	176 (12)
Marine	29 (3)	39 (3)
Manufacturing	140 (10)	140 (6)
<i>Metalworking</i>	51 (4)	55 (2)
<i>Manufacture of Food, Beverages &amp; Tobacco</i>	20 (1)	21 (1)
<i>Manufacture of Petrochemical Products</i>	10 (1)	12
<i>Manufacture of Computer, Electronic and Optical Products</i>	10 (1)	3
<i>Other Manufacturing Industries</i>	10 (1)	6
Water Supply, Sewerage & Waste Management and Remediation Activities	10 (1)	10 (2)
Wholesale & Retail Trade	44 (14)	30 (3)
<i>Wholesale Trade</i>	28 (10)	22 (3)
<i>Retail Trade</i>	16 (4)	8
Transportation & Storage	39 (5)	43 (9)
<i>Logistics &amp; Transport</i>	30 (1)	28 (5)
Accommodation & Food Service Activities	27 (2)	38 (5)
<i>Accommodation</i>	4	7 (1)
<i>Food &amp; Beverage Service Activities</i>	23 (2)	31 (4)
Financial & Insurance Activities <sup>14</sup>	10	6
Real Estate Activities	14	12
Professional, Scientific & Technical Activities	16 (1)	20 (4)
Administrative & Support Service Activities	13 (3)	11 (3)
Community, Social & Personal Services	35 (3)	49 (3)
<i>Education</i>	10	15 (2)
<i>Repair &amp; Maintenance of Vehicles</i>	7 (1)	11
<i>Health Activities</i>	6 (1)	9 (1)
<i>Other Personal Service Activities</i>	4	7

Note: Figures in parentheses refer to the number of work-related traffic injuries.

<sup>14</sup> Financial & Insurance Activities include banks, finance companies and activities of holding companies.

**Table 1.8: Workplace major injury rates by industry, 2013 and 2014**

Per 100,000 employed persons

Industry	2014	2013
<b>All Sectors</b>	<b>20.0</b>	<b>19.8</b>
Construction	41.2	37.1
Marine	27.2	35.6
Manufacturing	32.6	32.6
<i>Metalworking</i>	41.3	45.0
<i>Manufacture of Food, Beverages &amp; Tobacco</i>	47.6	52.6
<i>Manufacture of Petrochemical Products</i>	18.3	21.3
<i>Manufacture of Computer, Electronic and Optical Products</i>	11.3	3.3
<i>Other Manufacturing Industries</i>	49.8	31.4
Water Supply, Sewerage & Waste Management and Remediation Activities	60.6	62.1
Wholesale & Retail Trade	8.9	6.3
<i>Wholesale Trade</i>	8.6	7.0
<i>Retail Trade</i>	9.4	5.0
Transportation & Storage	16.7	19.0
<i>Logistics &amp; Transport</i>	30.8	30.1
Accommodation & Food Service Activities	11.6	16.9
<i>Accommodation</i>	11.4	20.1
<i>Food &amp; Beverage Service Activities</i>	11.6	16.4
Financial & Insurance Activities	5.1	3.2
Real Estate Activities	14.6	13.6
Professional, Scientific & Technical Activities	6.8	9.0
Administrative & Support Service Activities	6.5	5.9
Community, Social & Personal Services	4.7	6.9
<i>Education</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Repair &amp; Maintenance of Vehicles</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Health Activities*</i>	6.9	11.1
<i>Other Personal Service Activities</i>	<i>n.a.</i>	<i>n.a.</i>

**Table 1.9: Types of workplace major injury, 2013 and 2014**

Workplace Major Injury Types	2014	2013
<b>Total</b>	<b>672</b>	<b>640</b>
Crushing, Fractures and Dislocations	354	341
Amputations	129	132
Hypothermia/Burns, with more than 20 MC days	73	83
Multiple Injuries	57	42
Exposure to Electric Current	24	12
Concussion, with more than 20 MC days	23	25
Blindness	5	3
Asphyxia/Drowning	4	0
Paralysis	2	1
Deafness	1	1

### WORKPLACE MAJOR INJURIES BY INJURY TYPES

Crushing, Fractures and Dislocations were the leading types of injury, accounting for 53% of all workplace major injuries. This was followed by Amputations, with 129 workers suffering from complete loss or loss of use of any member/part of a member of the injured person’s body in 2014. The number of Hypothermia/Burns cases with more than 20 MC days decreased from 83 cases in 2013 to 73 cases in 2014 (Table 1.9).

### WORKPLACE MAJOR INJURIES BY INCIDENT TYPES AND INCIDENT AGENTS

The top three incident types, accounting for 57% of workplace major injuries were (Table 1.10):

- Falls (Falls from Heights (FFH) (88 injuries, 13%), Slips, Trips and Falls (171 injuries, 25%))
- Caught in/between Objects (69 injuries, 10%)
- Work-related Traffic (57 injuries, 8%)

Falls (Falls from Heights (FFH), Slips, Trips and Falls) was the leading incident type for workplace major injuries, contributing 39%. The top incident agent associated with ‘Slips, Trips and Falls’ was Physical Workplace - Floor/Level Surfaces. The top incident agent for Falls from Heights was Means of Access - Ladders. For Caught in/between Objects, the top incident agent was Industrial Machines. 81% of the Caught in/between Objects cases resulted in amputations. For Work-related Traffic major injuries, crushing, fractures and dislocations contributed to 61% of the injuries.

Table 1.10: Number of workplace major injuries by key incident type and key incident agent, 2013 and 2014

Incident Type	Incident Agent	2014	2013
<b>Total Workplace Major Injuries</b>		<b>672</b>	<b>640</b>
<b>Falls</b>	<b>Total</b>	<b>259</b>	<b>250</b>
	<i>Slips, Trips &amp; Falls</i>	<b>171</b>	<b>157</b>
<b>Falls from Heights</b>	Physical Workplace - Floor/Level Surfaces	66	64
	Means of Access - Stairs or Steps	26	11
	Moving Vehicles	25	36
	<b>Total</b>	<b>88</b>	<b>93</b>
	Means of Access - Ladders	30	35
	Physical Workplace - Structures	17	12
<b>Caught in/ between Objects</b>	Means of Access - Scaffold	9	21
	<b>Total</b>	<b>69</b>	<b>82</b>
	Industrial Machines	26	38
	Moving Vehicles	12	7
<b>Work-related Traffic</b>	Lifting Equipment Including Cranes	8	21
	<b>Total</b>	<b>57</b>	<b>51</b>
<b>Struck by Falling Objects</b>	<b>Total</b>	<b>56</b>	<b>68</b>
	Metal Items (excluding knives/needles)	12	19
	Goods/Cargo	8	9
	Furniture and Fittings	7	6
<b>Struck by Moving Objects</b>	<b>Total</b>	<b>53</b>	<b>40</b>
	Moving Vehicles	17	20
	Lifting Equipment Including Cranes	8	4
	Industrial Machines	7	5
<b>Cut/Stabbed by Objects</b>	<b>Total</b>	<b>35</b>	<b>27</b>
	Industrial Machines	23	17
	Industrial Hand Tools	6	10
	Knives and Needles	4	0
<b>Exposure to Extreme Temperatures</b>	<b>Total</b>	<b>35</b>	<b>39</b>
	Hot scalding liquid/Steam	22	26
	Moving Vehicles	3	3
	Pressurised Equipment	2	0
	Welding Equipment	2	0
<b>Exposure to Electric current</b>	<b>Total</b>	<b>32</b>	<b>14</b>
	Electrical Installation	17	12
	Industrial Machines	7	1
	Industrial Hand Tools	2	0
	Lifting Equipment Including Cranes	2	0

**Table 1.11: Top 3 incident types for workplace major injuries by industry, 2014**

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

**Legend:**

CIBO	Caught In/Between Objects	FE	Fires & Explosion	SBFO	Struck by Falling Objects
CSBO	Cut/Stabbed by Objects	FFH	Falls (Falls from Heights)	SBMO	Struck by Moving Objects <sup>15</sup>
ETEC	Exposure to Electric Current	OESM	Over-exertion and Strenuous Movements	SOO	Stepping on Objects
ETET	Exposure to Extreme Temperature	PA	Physical Assault	SD	Suffocation/Drowning
ETHS	Exposure to Hazardous Substances	SAO	Strike Against Objects	STF	Falls (Slips, Trips and Falls)
				WRT	Work-related Traffic

<sup>15</sup> This includes flying fragments but excludes falling objects.

## WORKPLACE MINOR INJURIES

### WORKPLACE MINOR INJURIES SAW AN INCREASE OF 10% OVER 2013; 25% INCREASE FOR THE TRANSPORTATION & STORAGE SECTOR

Workplace minor injuries include all other reportable injuries that did not result in death or major injuries. Workplace minor injuries increased from 11,740 cases in 2013 (362 per 100,000 employed persons) to 12,863 cases (383 per 100,000 employed persons) in 2014 (Table 1.12 & 1.13).

### WORKPLACE MINOR INJURIES BY SECTOR

The three traditionally higher risk sectors accounted for 48% of workplace minor injuries. Manufacturing sector remained the highest contributor to the number of workplace minor injuries with the workplace minor injury rate increasing from 629 per 100,000 employed persons in 2013 to 680 per 100,000 employed persons in 2014 (Table 1.12 and 1.13). Construction sector recorded 8.8% increase in workplace minor injuries and its rates increased from 520 per 100,000 employed persons in 2013 to 547 per 100,000 employed persons in 2014. The number of workplace minor injuries for Marine sector was on par with 2013, but the corresponding rate increased from 428 per 100,000 employed persons in 2013 to 440 per 100,000 employed persons in 2014.

Other sectors such as Water Supply, Sewerage, Waste Management and Remediation Activities, Wholesale & Retail Trade, Logistics & Transport, Accommodation & Food Service Activities, Information & Communications, Financial & Insurance Activities and Health Activities saw an increase in workplace minor injury rates (Table 1.13).

### WORK-RELATED TRAFFIC MINOR INJURIES BY SECTOR

In 2014, Construction, Transportation & Storage and Administrative & Support Service Activities sectors were the main contributors of work-related traffic minor injuries with 48% (Table 1.12).



**Table 1.12: Number of workplace minor injuries by industry, 2013 and 2014**

Industry	2014	2013
<b>All Sectors</b>	<b>12,863 (502)</b>	<b>11,740 (487)</b>
Construction	2,686 (79)	2,468 (70)
Marine	469 (39)	469 (12)
Manufacturing	2,992 (43)	2,697 (43)
<i>Metalworking</i>	1,289 (19)	1,218 (15)
<i>Manufacture of Food, Beverages &amp; Tobacco</i>	460 (10)	403 (7)
<i>Manufacture of Computer, Electronic &amp; Optical Products</i>	201 (3)	155 (2)
Water Supply, Sewerage, Waste Management and Remediation Activities	141 (8)	118 (18)
Wholesale & Retail Trade	631 (45)	577 (60)
<i>Wholesale Trade</i>	350 (37)	308 (46)
<i>Retail Trade</i>	281 (8)	269 (14)
Transportation & Storage	1,062 (79)	847 (87)
<i>Logistics &amp; Transport</i>	649 (37)	501 (27)
Accommodation & Food Service Activities	920 (43)	878 (45)
<i>Accommodation</i>	228 (2)	228 (1)
<i>Food &amp; Beverage Service Activities</i>	692 (41)	650 (44)
Information & Communications <sup>16</sup>	52 (4)	40 (7)
Financial & Insurance Activities	123 (5)	116 (5)
Real Estate Activities	284 (16)	286 (17)
Professional, Scientific & Technical Activities	383 (26)	381 (15)
<i>Legal, Accounting &amp; Management Activities</i>	148 (13)	176 (7)
<i>Architectural &amp; Engineering Activities</i>	179 (11)	163 (8)
Administrative & Support Service Activities	406 (81)	380 (70)
<i>Office Administrative, Office Support &amp; Other Business Support Activities</i>	143 (19)	163 (21)
<i>Cleaning &amp; Landscape Maintenance Activities</i>	122 (9)	114 (9)
<i>Security and Investigation Activities</i>	98 (44)	65 (29)
Community, Social & Personal Services	1,043 (25)	930 (32)
<i>Health Activities</i>	320 (12)	269 (10)
<i>Education</i>	189 (5)	177 (5)
<i>Other Personal Service Activities</i>	157 (1)	154 (4)
<i>Repair &amp; Maintenance of Vehicles</i>	124 (6)	105 (8)

Note: Figures in parentheses refer to the number of work-related traffic injuries.

<sup>16</sup> 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, 2013 and 2014

Per 100,000 employed persons

Industry	2014	2013
<b>All Sectors</b>	<b>383</b>	<b>362</b>
Construction	547	520
Marine	440	428
Manufacturing	680	629
<i>Metalworking</i>	1,044	996
<i>Manufacture of Food, Beverages &amp; Tobacco</i>	1,095	1,010
<i>Manufacture of Computer, Electronic &amp; Optical Products</i>	226	173
Water Supply, Sewerage, Waste Management and Remediation	855	733
Activities		
Wholesale & Retail Trade	128	121
<i>Wholesale Trade</i>	108	98
<i>Retail Trade</i>	166	168
Transportation & Storage	456	374
<i>Logistics &amp; Transport</i>	720	539
Accommodation & Food Service Activities	395	392
<i>Accommodation</i>	650	653
<i>Food &amp; Beverage Service Activities</i>	350	343
Information & Communications <sup>16</sup>	44	35
Financial & Insurance Activities	63	62
Real Estate Activities	297	324
Professional, Scientific & Technical Activities	163	171
<i>Legal, Accounting &amp; Management Activities</i>	131	165
<i>Architectural &amp; Engineering Activities</i>	276	253
Administrative & Support Service Activities	202	203
<i>Office Administrative, Office Support &amp; Other Business Support Activities</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Cleaning &amp; Landscape Maintenance Activities</i>	244	241
<i>Security and Investigation Activities</i>	<i>n.a.</i>	<i>n.a.</i>
Community, Social & Personal Services	140	130
<i>Health Activities*</i>	368	332
<i>Education</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Other Personal Service Activities</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Repair &amp; Maintenance of Vehicles</i>	<i>n.a.</i>	<i>n.a.</i>

## WORKPLACE MINOR INJURIES BY INCIDENT TYPES AND INCIDENT AGENTS

### FALLS (SLIPS, TRIPS AND FALLS) REMAINED THE MAIN AREA OF CONCERN FOR WORKPLACE MINOR INJURIES

The top three incident types that accounted for 51% of workplace minor injuries in 2014 were (Table 1.14):

- Falls (Slips, Trips and Falls (STF)) (2,962 injuries, 23%)
- Struck by Moving Objects (SBMO) (1,965 injuries, 15%)
- Cut/Stabbed by Objects (CSBO) (1,623 injuries, 13%)

STF which was the top incident type for workplace minor injuries were common in many sectors including Water Supply, Sewerage, Waste Management and Remediation Activities, Wholesale & Retail Trade, Logistics & Transport, Information & Communications, Financial & Insurance Activities, Real Estate Activities, Professional, Scientific & Technical Activities, Administrative & Support Service Activities, Health Activities, Education, Other Personal Service Activities sectors and Repair & Maintenance of Vehicles (Table 1.15). The injuries were mainly seen in workers who were exposed to wet or contaminated surfaces. The top incident agent for STF in 2014 was Physical Workplace - Floors/Level Surfaces, accounting for 48% of STF injuries (Table 1.14).

SBMO, which continued to be one of the leading incident types, accounted for 15% of the total workplace minor injuries in 2014. It was also the top incident type for the three traditional higher risk sectors. 24% of SBMO injuries were caused by work involving industrial hand tools.

CSBO was commonly seen in Manufacturing, Wholesale & Retail Trade, Accommodation & Food Service Activities, Financial & Insurance Activities, Real Estate Activities, Legal, Accounting & Management Activities, Office Administrative, Office Support & Other Business Support Activities, Cleaning & Landscape Maintenance Activities and Other Personal Service Activities sectors. The top incident agent for CSBO was knives and needles, accounting for 26% of CSBO injuries.

## WORKPLACE MINOR INJURIES BY INJURY TYPES

The top three types of injury that accounted for 81% of all workplace minor injuries were (Table 1.16):

- Cuts and Bruises (5,101 injuries, 40%)
- Crushing, Fractures and Dislocations (3,128 injuries, 24%)
- Sprains and Strains (2,146 injuries, 17%)

Table 1.14: Number of workplace minor injuries by key incident type and key incident agent, 2013 and 2014

Incident Type	Incident Agent	2014	2013
<b>Total Workplace Minor Injuries</b>		<b>12,863</b>	<b>11,740</b>
<b>Falls</b>	<b>Total</b>	<b>3,653</b>	<b>3,259</b>
	<i>Slips, Trips &amp; Falls</i>	<b>2,962</b>	<b>2,659</b>
<i>Falls from Heights</i>	Physical Workplace - Floor/Level Surfaces	1,420	1,201
	Means of Access - Stairs or Steps	466	390
	Moving Vehicles	304	275
	<b>Total</b>	<b>691</b>	<b>600</b>
	Means of Access - Ladders	413	360
	Means of Access - Scaffold	93	75
<b>Struck by Moving Objects</b>	Physical Workplace - Structures	78	75
	<b>Total</b>	<b>1,965</b>	<b>2,124</b>
	Industrial Hand Tools	476	495
	Moving Vehicles	340	311
<b>Cut/Stabbed by Objects</b>	Metal Items (excluding knives/needles)	291	325
	<b>Total</b>	<b>1,623</b>	<b>1,328</b>
	Knives and Needles	425	390
	Industrial Hand Tools	361	239
<b>Struck by Falling Objects</b>	Industrial Machines	339	235
	<b>Total</b>	<b>1,347</b>	<b>1,407</b>
	Metal Items (excluding knives/needles)	423	432
	Goods/Cargo	161	166
<b>Caught in/ between Objects</b>	Furniture and Fittings	156	144
	<b>Total</b>	<b>1,266</b>	<b>1,005</b>
	Industrial Machines	373	356
	Metal Items (excluding knives/needles)	229	164
<b>Over-exertion/ Strenuous Movements</b>	Moving Vehicles	155	95
	<b>Total</b>	<b>833</b>	<b>642</b>
	Human Factors	271	175
	Goods/Cargo	206	159
<b>Strike against Objects</b>	Furniture and Fittings	57	38
	<b>Total</b>	<b>689</b>	<b>568</b>
	Metal Items (excluding knives/needles)	176	139
	Furniture & Fittings	151	140
<b>Work-related Traffic</b>	Moving Vehicles	73	43
	<b>Total</b>	<b>502</b>	<b>487</b>
<b>Exposure to Extreme Temperatures</b>	<b>Total</b>	<b>328</b>	<b>279</b>
	Hot scalding liquid/steam	214	196
	Industrial Machines	31	14
	Welding Equipment	22	6

**Table 1.15: Top 3 incident types for workplace minor injuries by industry, 2014**

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

**Legend:**

- |      |                                       |      |  |
|------|---------------------------------------|------|--|
| CIBO | Caught In/Between Objects             | SBFO | Struck by Falling Objects              |
| CSBO | Cut/Stabbed by Objects                | SBMO | Struck by Moving Objects <sup>17</sup> |
| ETET | Exposure to Extreme Temperature       | STF  | Falls (Slips, Trips and Falls)         |
| OESM | Over-exertion and Strenuous Movements | WRT  | Work-related Traffic                   |

<sup>17</sup> This includes flying fragments but excludes falling objects.

**Table 1.16: Types of workplace minor injury, 2013 and 2014**

Workplace Minor Injury Types	2014	2013
<b>Total</b>	<b>12,863</b>	<b>11,740</b>
Cuts and Bruises	5,101	4,719
Crushing, Fractures and Dislocations	3,128	2,884
Sprains & Strains	2,146	1,894
Burns	437	378
Multiple Injuries	292	259
Puncture Wound	257	236
Bites and Stings	72	73
Concussion	66	69
Others	1,364	1,228

# OCCUPATIONAL DISEASES

## NUMBER OF CONFIRMED OCCUPATIONAL DISEASES WENT UP BY 12%, WORK-RELATED MUSCULOSKELETAL DISORDER (WRMSD) SAW A 33% INCREASE

992 cases (29.5 cases per 100,000 employed persons) of occupational diseases (OD) were confirmed in 2014, up from 887 cases (27.4 cases per 100,000 employed persons) in 2013 (Table 1.17 & 1.18). The increase in OD cases was due to the increase in work-related musculoskeletal disorder (WRMSD) cases which saw a 33% increase (Table 1.19).

### OCCUPATIONAL DISEASES BY SECTOR

Manufacturing continued to record the highest number of OD cases, accounting for 36% of total ODs confirmed in 2014 (Table 1.17). 65% of the ODs confirmed in this sector were from Metalworking. Metalworking also posted the highest incidence of OD cases (187.9 per 100,000 employed persons), followed by Marine at 141.7 cases per 100,000 employed persons.

Accommodation & Food Service Activities sector had a nearly two fold increase with 35 cases in 2014 compared to 18 cases in 2013. 74% of ODs confirmed in this sector came from Food & Beverage Services.

**Table 1.17: Number of confirmed occupational disease cases by industry, 2013 and 2014**

Industry	2014	2013
<b>All Sectors</b>	<b>992</b>	<b>887</b>
Construction	140	96
Marine	151	129
Manufacturing	356	331
<i>Metalworking</i>	232	214
<i>Manufacture of Petrochemical Products</i>	25	27
<i>Manufacture of Computer, Electronic and Optical Products</i>	22	19
Electricity, Gas & Air Conditioning Supply	5	3
Water Supply, Sewerage, Waste Management and Remediation Activities	2	6
Wholesale Trade & Retail Trade	32	27
Transportation & Storage	75	59
<i>Logistics &amp; Transport</i>	29	34
Accommodation & Food Service Activities	35	18
<i>Accommodation</i>	9	6
<i>Food &amp; Beverage Service Activities</i>	26	12
Information & Communications	4	2
Financial & Insurance Activities	20	12
Real Estate Activities	8	15
Professional, Scientific & Technical Activities	41	78
<i>Architectural &amp; Engineering Activities</i>	32	64
Administrative & Support Service Activities	19	17
Community, Social & Personal Services	68	62
<i>Health Activities</i>	25	20
<i>Repair and Maintenance of Vehicles</i>	15	7
<i>Other Personal Service Activities</i>	12	18

**Table 1.18: Occupational disease incidence rates by industry, 2013 and 2014**

Per 100,000 employed persons

Industry	2014	2013
<b>All Sectors</b>	<b>29.5</b>	<b>27.4</b>
Construction	28.5	20.2
Marine	141.7	117.6
Manufacturing	82.9	77.1
<i>Metalworking</i>	187.9	175.0
<i>Manufacture of Petrochemical Products</i>	45.9	48.0
<i>Manufacture of Computer, Electronic and Optical Products</i>	24.8	21.2
Electricity, Gas & Air Conditioning Supply	n.a.	n.a.
Water Supply, Sewerage, Waste Management and Remediation Activities	12.1	37.3
Wholesale Trade & Retail Trade	6.5	5.7
Transportation & Storage	32.2	26.1
<i>Logistics &amp; Transport</i>	29.8	36.6
Accommodation & Food Service Activities	15.0	8.0
<i>Accommodation</i>	25.6	17.2
<i>Food &amp; Beverage Service Activities</i>	13.2	6.3
Information & Communications	3.4	1.8
Financial & Insurance Activities	10.2	6.4
Real Estate Activities	8.4	17.0
Professional, Scientific & Technical Activities	17.4	35.1
<i>Architectural &amp; Engineering Activities</i>	49.3	99.5
Administrative & Support Service Activities	9.5	9.1
Community, Social & Personal Services	9.1	8.7
<i>Health Activities*</i>	28.7	24.7
<i>Repair and Maintenance of Vehicles</i>	n.a.	n.a.
<i>Other Personal Service Activities</i>	n.a.	n.a.

**BY TYPE OF OCCUPATIONAL DISEASE**

Noise-induced deafness (NID) was the leading OD in 2014 with 594 cases or 60% of the total OD cases confirmed. 98% of the NID cases were diagnosed at the early stage of the disease. 14 workers suffered from severe hearing loss (Table 1.19). Work-related musculoskeletal disorders (WRMSD) was the second leading occupational disease (Table 1.19).

**Table 1.19: Number of confirmed occupational diseases by type, 2013 and 2014**

	2014	2013
<b>Total</b>	<b>992</b>	<b>887</b>
Noise Induced Deafness	594	564
<i>NID (E) - Early</i>	580	544
<i>NID (A) - Advanced</i>	14	20
Work-related Musculoskeletal Disorders	315	237
<i>Back injuries due to ergonomic risks</i>	302	214
<i>Tendinitis</i>	4	11
<i>Musculoskeletal Disorder of the Back</i>	3	3
<i>Nerve Disorder such as Carpal Tunnel Syndrome, Cubital Tunnel Syndrome</i>	2	2
<i>Trigger Finger/Thumb</i>	2	2
<i>Cervical Spondylosis</i>	1	1
<i>Others</i>	1	4
Occupational Skin Disease	54	56
<i>Eczema</i>	52	52
<i>Others</i>	2	4
Barotrauma	8	7
<i>Aural</i>	4	3
<i>Sinus</i>	4	4
Compressed Air Illness	7	5
<i>CAI Type 1</i>	6	5
<i>CAI Type 2</i>	1	0
Cancers	5	2
<i>Mesothelioma<sup>18</sup></i>	5	2
Occupational Lung Disease	5	9
<i>Silicosis</i>	3	0
<i>Occupational Asthma</i>	1	8
<i>Tuberculosis (pulmonary)</i>	1	1
Excessive Absorption of Chemicals	2	4
<i>Lead</i>	2	4
Infectious Disease	1	0
Chemical Poisoning	0	3
<i>Lead</i>	0	2
<i>Solvent</i>	0	1
Others	1	0
<i>Upper Respiratory Tract Irritation</i>	1	0

<sup>18</sup> Mesothelioma is a cancer involving the lining of the internal organs

## NOISE-INDUCED DEAFNESS (NID)

### MANUFACTURING SECTOR CONTINUED TO HAVE HIGHEST NUMBER OF NID CASES

The Manufacturing sector continued to have the highest number of NID cases. It saw a slight increase of 4.7%, from 275 in 2013 to 288 in 2014 (Table 1.20). 69% of these cases were from Metalworking. Architectural & Engineering Activities saw a drop of 54% from 61 in 2013 to 28 in 2014.

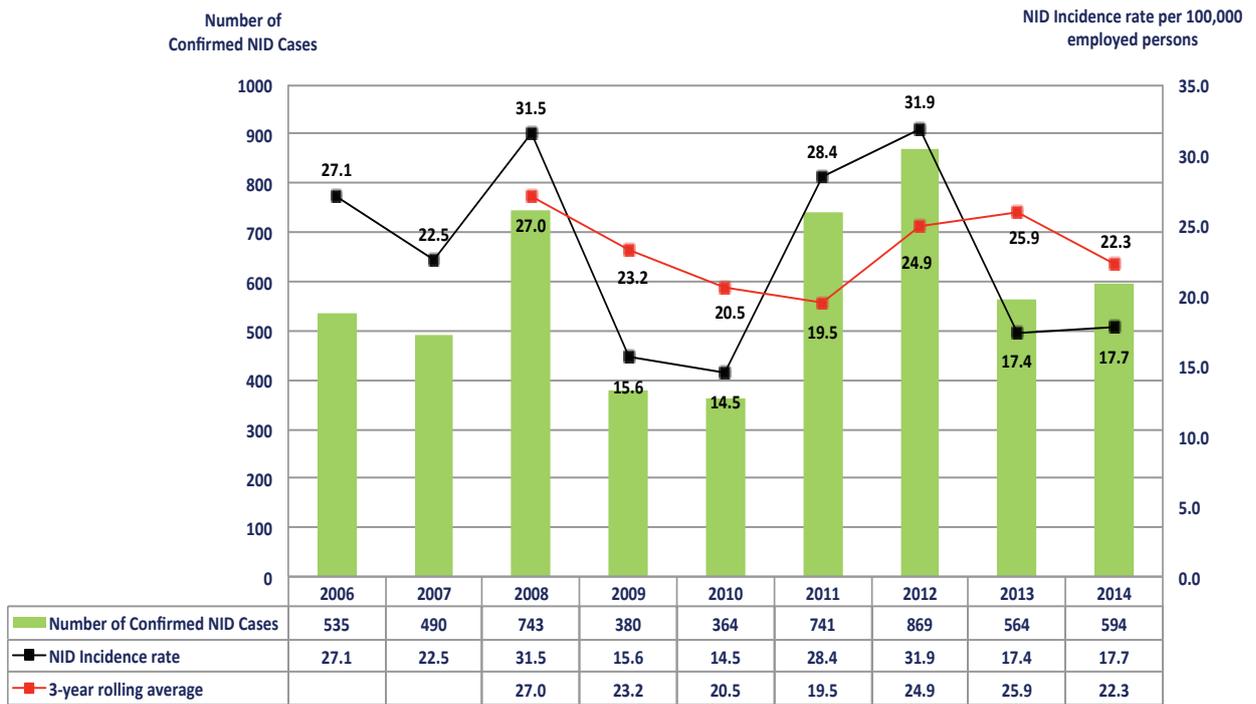


Figure 14: Noise-Induced Deafness incidence rate, 2006-2014

**Table 1.20: Number of confirmed NID cases by industry, 2013 and 2014**

Industry	2014	2013
<b>All Sectors</b>	<b>594</b>	<b>564</b>
Construction	79	48
Marine	139	122
Manufacturing	288	275
<i>Metalworking</i>	200	200
<i>Manufacture of Petrochemical Products</i>	22	23
<i>Manufacture of Other Transport Equipment</i>	16	14
Electricity, Gas & Air Conditioning Supply	5	2
Wholesale & Retail Trade	4	5
Transportation & Storage	22	16
<i>Logistics &amp; Transport</i>	10	16
Information & Communications	0	1
Financial & Insurance Activities	8	10
Professional, Scientific & Technical Activities	29	62
<i>Architectural &amp; Engineering Activities</i>	28	61
Administrative & Support Service Activities	5	10
Community, Social & Personal Services	15	11
<i>Repair &amp; Maintenance of Vehicles</i>	10	3
<i>Health Activities</i>	2	0
<i>Other Personal Service Activities</i>	1	7

**Table 1.21: NID incidence rates by industry, 2013 and 2014**

Per 100,000 employed persons

Industry	2014	2013
<b>All Sectors</b>	<b>17.7</b>	<b>17.4</b>
Construction	16.1	10.1
Marine	130.4	111.2
Manufacturing	67.0	64.1
<i>Metalworking</i>	<i>161.9</i>	<i>163.5</i>
<i>Manufacture of Petrochemical Products</i>	<i>40.4</i>	<i>40.9</i>
<i>Manufacture of Other Transport Equipment</i>	<i>68.7</i>	<i>58.8</i>
Electricity, Gas & Air Conditioning Supply	n.a.	n.a.
Wholesale & Retail Trade	0.8	1.1
Transportation & Storage	9.4	7.1
<i>Logistics &amp; Transport</i>	<i>10.3</i>	<i>17.2</i>
Information & Communications	0.0	0.9
Financial & Insurance Activities	4.1	5.3
Professional, Scientific & Technical Activities	12.3	27.9
<i>Architectural &amp; Engineering Activities</i>	<i>43.1</i>	<i>94.9</i>
Administrative & Support Service Activities	2.5	5.3
Community, Social & Personal Services	2.0	1.5
<i>Repair &amp; Maintenance of Vehicles</i>	<i>n.a.</i>	<i>n.a.</i>
<i>Health Activities*</i>	<i>2.3</i>	<i>0.0</i>
<i>Other Personal Service Activities</i>	<i>n.a.</i>	<i>n.a.</i>

**WORK-RELATED MUSCULOSKELETAL DISORDERS (WRMSD)**

**SECOND LEADING OCCUPATIONAL DISEASE; TRANSPORTATION & STORAGE SECTOR WAS THE TOP CONTRIBUTOR**

About 17% of the cases were from the Transportation & Storage sector (Table 1.22), followed by Manufacturing sector contributing 16% of the cases. Most of these cases were involved in manual handling activities such as carrying, lifting, pulling and pushing.

**Table 1.22: Number of confirmed WRMSD cases by industry, 2013 and 2014**

Industry	2014	2013
<b>All Sectors</b>	<b>315</b>	<b>237</b>
Construction	39	26
Marine	9	5
Manufacturing	50	34
<i>Metalworking</i>	24	9
<i>Manufacture of Food, Beverages &amp; Tobacco</i>	8	3
<i>Manufacture of Computer, Electronic and Optical Products</i>	6	4
Wholesale & Retail Trade	23	20
<i>Wholesale Trade</i>	13	14
<i>Retail Trade</i>	10	6
Transportation & Storage	53	39
<i>Air Transport</i>	24	18
<i>Logistics &amp; Transport</i>	19	14
Accommodation & Food Service Activities	28	15
<i>Food &amp; Beverage Service Activities</i>	20	9
<i>Accommodation</i>	8	6
Information & Communications	4	1
Financial & Insurance Activities	8	2
Professional, Scientific & Technical Activities	11	13
Administrative & Support Service Activities	9	7
Community, Social & Personal Services	41	35
<i>Health Activities</i>	16	14
<i>Other Personal Service Activities</i>	8	7

## OCCUPATIONAL SKIN DISEASES (OSD)

54 cases of occupational skin diseases (OSD) were confirmed in 2014, accounting for 5.4% of total OD cases confirmed (Table 1.19). The most common causative agent was wetwork and occlusion, followed by exposure to oils (Table 1.24).

**Table 1.23: Number of confirmed OSD cases by industry, 2013 and 2014**

Industry	2014	2013
<b>All Sectors</b>	<b>54</b>	<b>56</b>
Construction	6	8
Marine	0	2
Manufacturing	16	19
<i>Metalworking</i>	7	5
<i>Manufacture of Rubber and Plastic Products</i>	3	0
<i>Manufacture of Computer, Electronic &amp; Optical Products</i>	2	4
Electricity, Gas & Air Conditioning Supply	0	1
Wholesale & Retail Trade	5	2
Transportation & Storage	0	3
<i>Logistics &amp; Transport</i>	0	3
Accommodation & Food Service Activities	7	3
Financial & Insurance Activities	4	0
Professional, Scientific & Technical Activities	0	3
<i>Architectural &amp; Engineering Activities</i>	0	2
Administrative & Support Service Activities	3	0
Community, Social & Personal Services	12	14
<i>Health Activities</i>	7	5
<i>Other Personal Service Activities</i>	3	4

**Table 1.24: Top 5 Causative Agents of Occupational Skin Diseases, 2014**

Causative Agents	No. of Cases
Wetwork and Occlusion	12
Oils	9
Solvents	7
Cement	5
Coolant	2

## OTHER OCCUPATIONAL DISEASES

There were 7 cases of compressed air illness (CAI) and 8 cases of barotrauma as compared to 2013 when there were 5 cases of CAI and 7 cases of barotrauma. The majority of the CAI and barotrauma cases were from the tunnelling projects in the construction sector.

There were 5 cases of mesothelioma in 2014 from exposure to asbestos, an increase from 2 cases in 2013.

There were 5 cases of Occupational Lung Disease in 2014, down from 9 cases in 2013. Of these, 3 were cases of silicosis (arising from quarry work in the past), 1 of occupational asthma and another of pulmonary tuberculosis. The 2 cases of excessive absorption of lead arose from a scrap metal recycling plant. One case of melioidosis was confirmed in a construction foreman who was exposed to ground/soilwater in the course of work.

## SURVEILLANCE PROGRAMMES

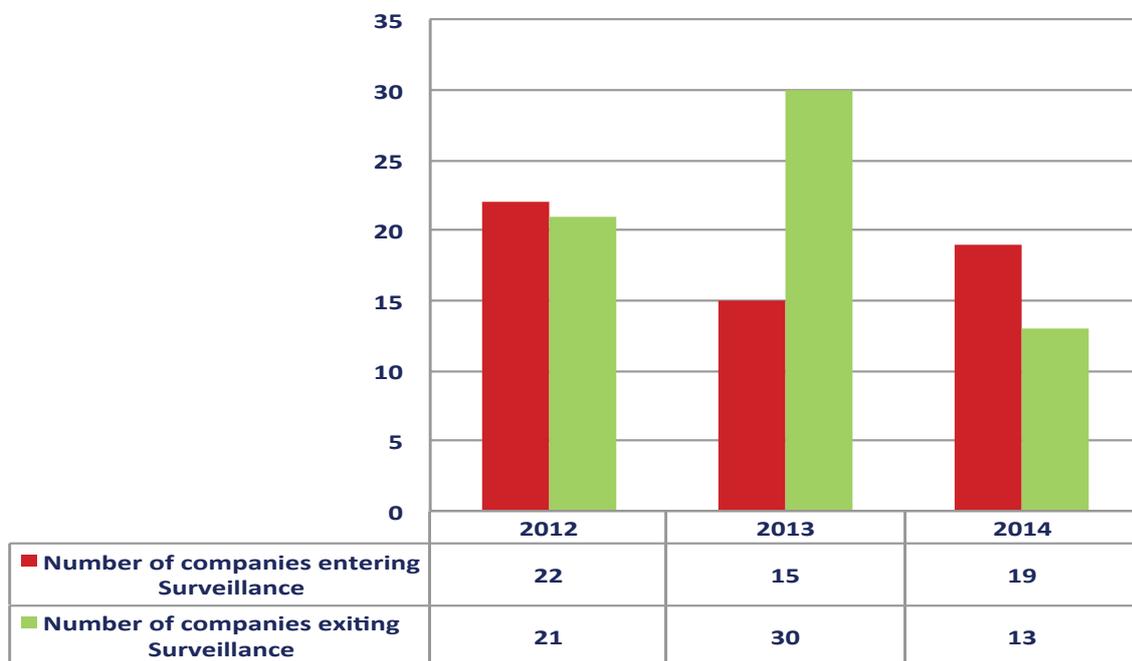
Proactive surveillance of high risk workplaces enables preventive measures to be taken early so as to prevent WSH injuries and ill health. Business Under Surveillance (BUS<sup>19</sup>) programme focuses on improvement of WSH management systems. Hygiene<sup>20</sup> and Medical<sup>21</sup> surveillance 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.

### 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 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 2014, 19 companies entered the surveillance phase of BUS programme (Figure 15). 89.5% were from the construction industry and the remaining from other industries. For the 13 companies which exited surveillance in 2014, the duration they were in the programme ranged from 5 to 18 months, with an average of 10 months.

Since the inception of BUS, 1 company which exited BUS had successfully achieved a WSH award.



**Figure 15: Number of companies entering and exiting surveillance, 2012-2014**

<sup>19</sup> Refer to Annex B and website <http://mom.gov.sg/workplace-safety-health/programmes/Pages/regulatory-programmes.aspx#bus> for information on BUS programme.

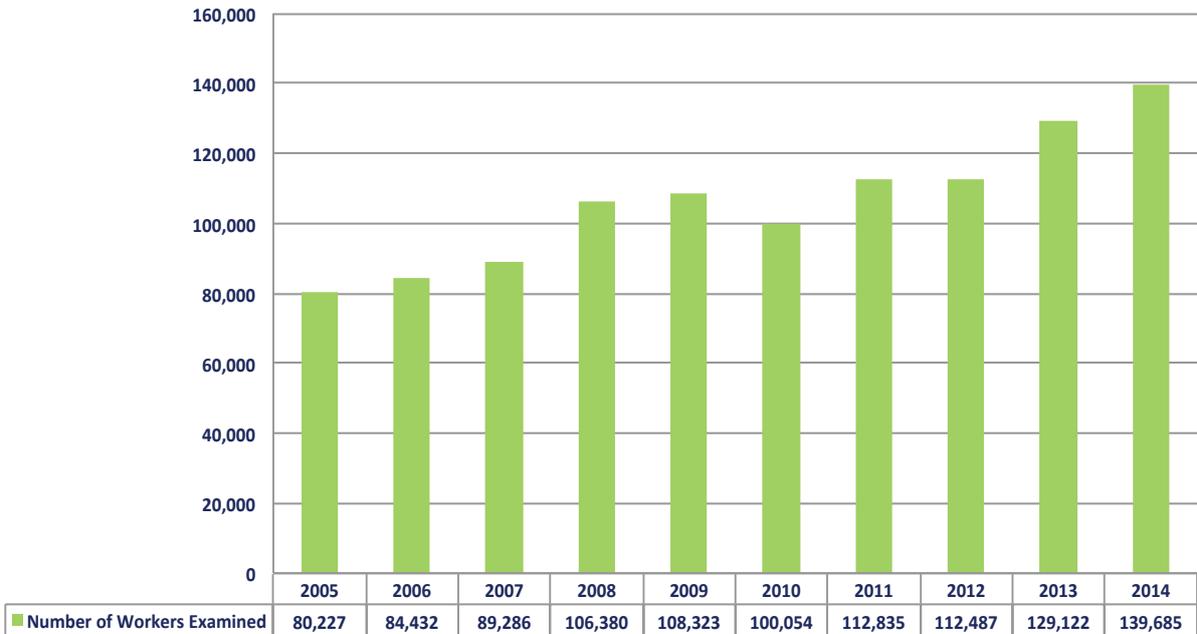
<sup>20</sup> Hygiene Surveillance determines the exposure levels of persons to airborne substances and compliance with the Permissible Exposure Levels (PELs). Refer to Annex C for more information.

<sup>21</sup> Medical Surveillance is the clinical examination and/or conduct of laboratory tests on 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.

**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 regular medical examinations.

As at 2014, 139,685 workers from 2,217 workplaces were covered under the Medical Surveillance programme, an increase from 129,122 workers from 2,099 workplaces in 2013.



**Figure 16: Number of workers under medical surveillance, 2005-2014**



**Figure 17: Number of workplaces under medical surveillance, 2005-2014**

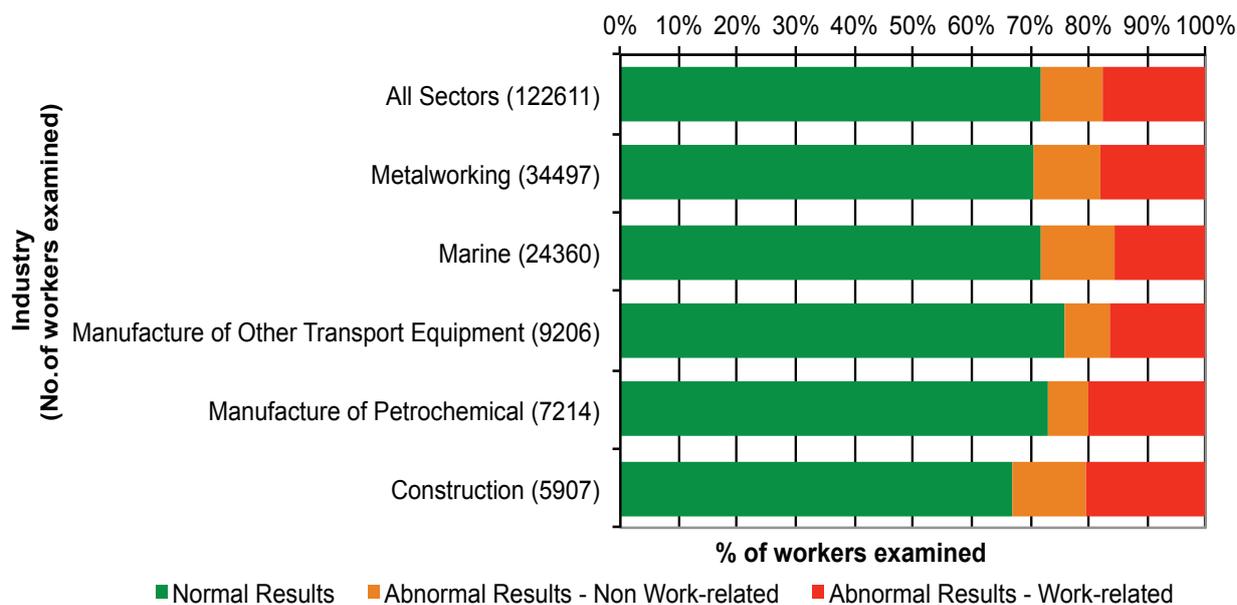


Figure 18: Results of medical monitoring<sup>22</sup> for noise exposure for Top 5 industries, 2014

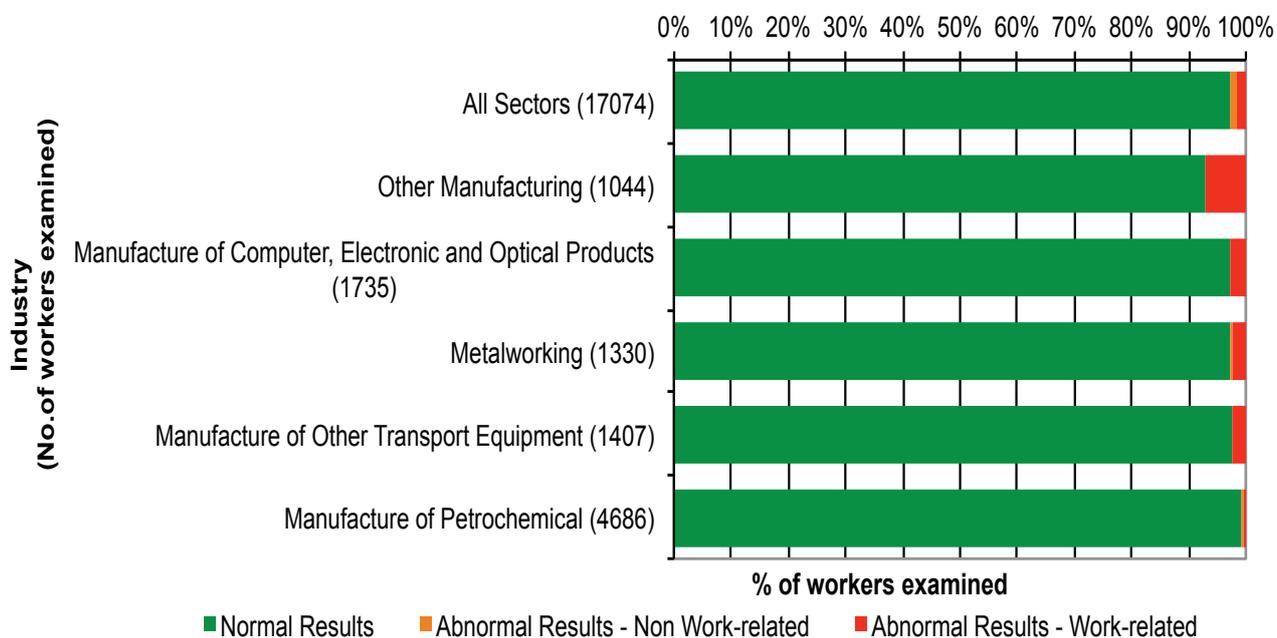


Figure 19: Results of medical monitoring<sup>22</sup> for chemical exposure for Top 5 industries, 2014

<sup>22</sup> 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

423 workplaces were under the noise monitoring programme, mainly from the metalworking industry. Overall, more than 75% of the workplaces monitored had workers who were exposed to excessive noise, i.e., above an equivalent sound pressure level of 85dBA over an 8-hour workday.

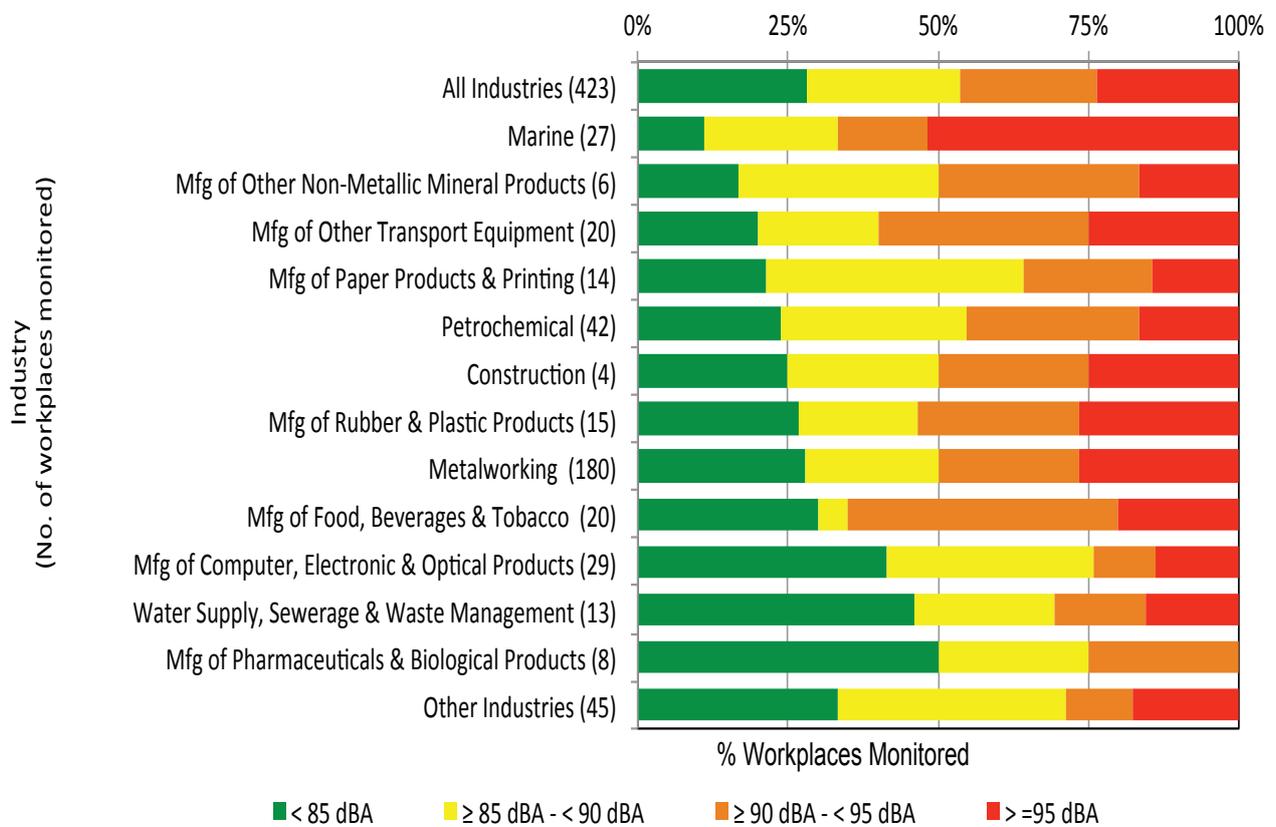


Figure 20: Noise exposure by industry, 2014

## CHEMICAL EXPOSURE LEVELS

A total of 1,085 chemicals monitoring results were received, of which 239 came from the metalworking industry. Overall, chemical exposure levels remained low, with most of the workplaces having air levels below 10% PEL<sup>23</sup>. However, there were a few workplaces with levels higher than PEL which required implementation of additional engineering and other control measures.

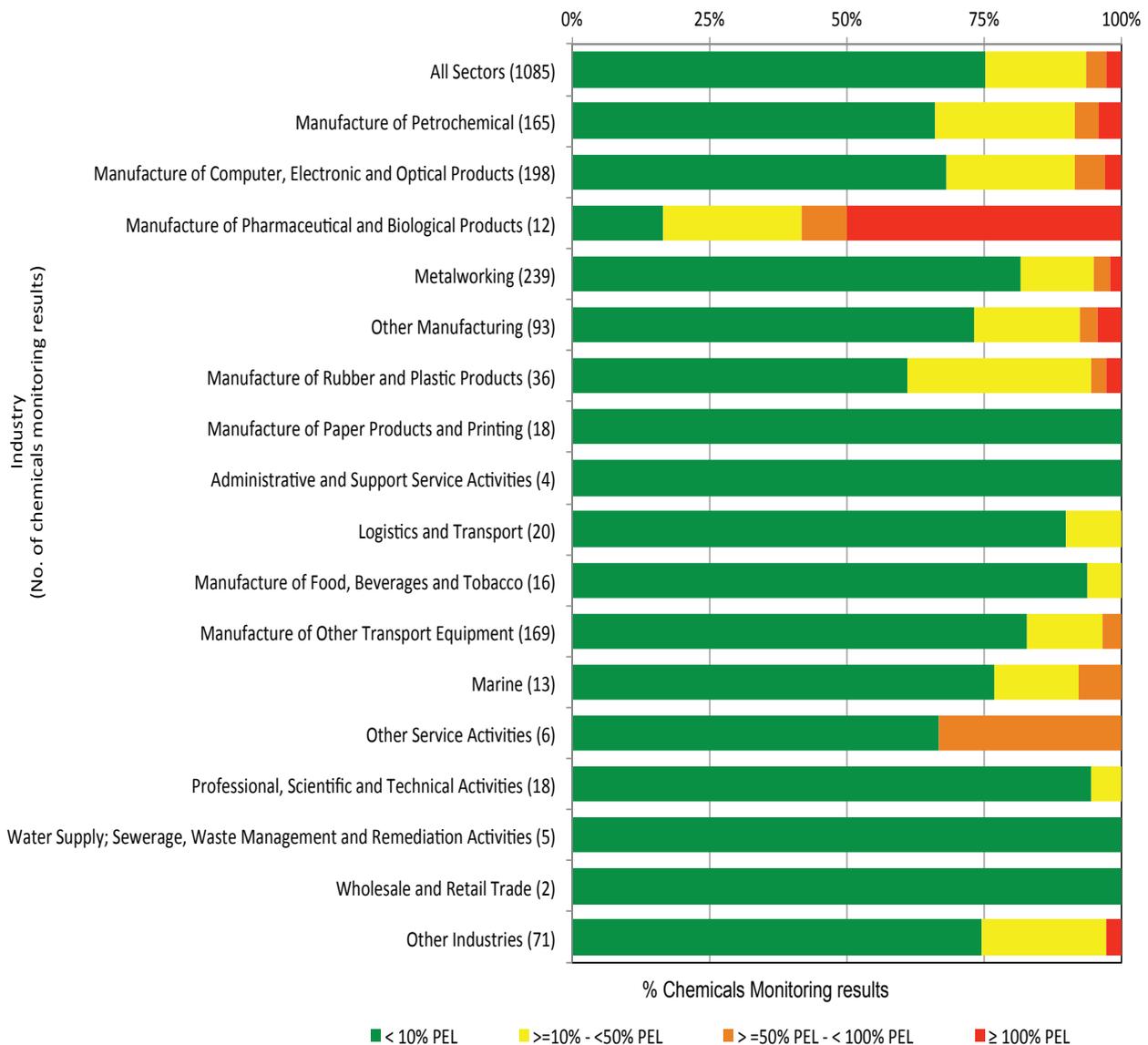


Figure 21: Chemical exposures by industry, 2012-2014

<sup>23</sup> 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**
**Table A-1: Accident Frequency Rate (AFR) and Accident Severity Rate (ASR) in selected sectors, 2013 and 2014**

Per million man-hours worked

Industry	AFR		ASR	
	2014	2013	2014	2013
<b>All Sectors</b>	<b>1.7</b>	<b>1.6</b>	<b>84</b>	<b>93</b>
Construction	2.1	2.0	183	210
Marine	1.6	1.6	135	107
Manufacturing	2.8	2.6	98	106
<i>Manufacture of Food, Beverages &amp; Tobacco</i>	4.7	4.4	224	265
<i>Metalworking</i>	4.0	3.8	115	115
<i>Manufacture of Computer, Electronic and Optical Products</i>	1.0	0.7	45	15
Water Supply, Sewerage, Waste Management and Remediation Activities	3.8	3.3	364	84
Wholesale & Retail Trade	0.6	0.6	35	31
<i>Wholesale Trade</i>	0.5	0.5	27	38
<i>Retail Trade</i>	0.8	0.8	49	15
Transportation & Storage	2.0	1.7	168	161
<i>Logistics &amp; Transport</i>	2.9	2.4	286	213
Accommodation & Food Services	1.8	1.8	33	60
<i>Accommodation</i>	2.7	2.8	51	34
<i>Food &amp; Beverage Service Activities</i>	1.7	1.6	29	66
Information & Communications	0.2	0.2	5	3
Financial & Insurance Activities	0.3	0.3	19	7
Real Estate Activities	1.3	1.5	23	83
Professional, Scientific & Technical Activities	0.7	0.8	14	29
<i>Legal, Accounting &amp; Management Activities</i>	0.6	0.8	12	17
<i>Architectural &amp; Engineering Activities</i>	1.2	1.0	21	62
Administrative & Support Service Activities	0.9	0.8	75	55
Community, Social & Personal Services	0.7	0.6	12	30
<i>Health Activities*</i>	1.7	1.6	32	27

**Table A-2: Number of man-days lost to workplace incidents<sup>24</sup> in selected sectors, 2013 and 2014**

Industry	2014	2013
<b>All Sectors</b>	<b>678,951</b>	<b>725,204</b>
Construction	245,987	274,183
Marine	40,178	33,050
Manufacturing	107,241	116,199
<i>Manufacture of Food, Beverages &amp; Tobacco</i>	22,751	25,708
<i>Metalworking</i>	45,389	38,321
<i>Manufacture of Computer, Electronic and Optical Products</i>	9,870	3,332
Water Supply, Sewerage, Waste Management and Remediation Activities	14,450	3,227
Wholesale & Retail Trade	38,194	32,475
<i>Wholesale Trade</i>	20,070	27,312
<i>Retail Trade</i>	18,124	5,163
Transportation & Storage	93,107	86,840
<i>Logistics &amp; Transport</i>	67,550	48,258
Accommodation & Food Services	16,898	30,549
<i>Accommodation</i>	4,319	2,920
<i>Food &amp; Beverage Service Activities</i>	12,579	27,629
Information & Communications	1,172	816
Financial & Insurance Activities	8,136	2,833
Real Estate Activities	5,111	16,823
Professional, Scientific & Technical Activities	7,265	14,466
<i>Legal, Accounting &amp; Management Activities</i>	2,862	3,863
<i>Architectural &amp; Engineering Activities</i>	3,382	9,748
Administrative & Support Service Activities	37,265	25,547
<i>Office Administrative, Office Support &amp; Other Business Support Activities</i>	2,239	3,228
Community, Social & Personal Services	20,316	47,466
<i>Health Activities</i>	6,070	4,817

<sup>24</sup> 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 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 and work-related traffic 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
- acute illness requiring medical treatment or loss of consciousness from exposure to chemical and/or biological agents
- asphyxia/drowning
- hypothermia
- burns with more than 20 days of medical leave
- concussion with more than 20 days of medical leave

ISSN 2424 - 7774 Print / ISSN 2424 - 7782 Online  
Published in April 2015 by the  
Workplace Safety and Health Institute, Singapore.  
1500 Bendemeer Road #04-01  
Ministry of Manpower Services Centre  
Singapore 339946  
website: [www.wsh-institute.sg](http://www.wsh-institute.sg)  
email: [contact@wshi.gov.sg](mailto:contact@wshi.gov.sg)

All rights reserved. This publication may not be reproduced or transmitted in any form or by any means, in whole or in part, without prior written permission.

An Initiative of



The Observatory for WSH Landscape (OWL) is a function of Workplace Safety and Health Institute. OWL aims to observe, analyse and communicate changes in the workforce, workplace and working life to researchers, policy makers and industries in Singapore and Asia.