

Annex A



**Workplace Safety and Health Report
2010**

Workplace Safety and Health Council

1. Overview

1.1 In 2010, there were fewer workplace fatalities, injuries and occupational diseases (ODs) reported across the board (Table 1).

1.2 The number of workplace fatalities fell 21% from 70 in 2009 to 55 in 2010. Correspondingly, the fatality rate fell to 2.2 per 100,000 employed persons from 2.9 in 2009 (Table 2). This is the lowest-ever fatality rate recorded, and follows a period of a stagnant rate of between 2.8 to 2.9 from 2007 to 2009 (Chart 1).

1.3 Temporary disablements, which formed the bulk of the reported injuries, declined by about 4.8% from 10,638 cases in 2009 to 10,128 in 2010. In 2010, the OD incidence was 17.2 confirmed cases per 100,000 employed persons, compared to 19.3 in 2009.

1.4 The only increase was in the number of permanent disablements which rose from 126 cases in 2009 to 136 in 2010. Correspondingly, the rate of permanent disablement rose from 5.2 per 100,000 employed persons in 2009 to 5.4 in 2010.

Table 1: Number of Workplace Injuries and Occupational Diseases, 2009 and 2010

	2010	2009
Overall Workplace Injuries	10,319	10,834
Fatal	55	70
Permanent Disablement	136	126
Temporary Disablement	10,128	10,638
Occupational Diseases	432	468

CHART 1: WORKPLACE FATALITY RATE, 2006 – 2010

	2006	2007	2008	2009	2010
No. of Workplace Fatalities	62	63	67	70	55
Fatality Rate per 100,000 employed person	3.1	2.9	2.8	2.9	2.2

Table 2: Key Workplace Safety and Health Indicators, 2009 and 2010

Per 100,000 employed persons

	2010	2009
Overall Workplace Injury Rate¹	411	446
Fatal	2.2	2.9
Permanent Disablement	5.4	5.2
Temporary Disablement	403	438
Accident Frequency Rate²	1.7	1.8
Accident Severity Rate³	87	112
Occupational Disease Incidence⁴	17.2	19.3

1.5 The accident frequency rate² (AFR), which measures how often workplace incidents occurred, has declined slightly since 2008, dropping from 1.9 per million man-hours worked in 2008 to 1.8 in 2009 to 1.7 in 2010 (Chart 2). This shows that there are fewer workplace incidents against the number of hours worked.

CHART 2: WORKPLACE ACCIDENT FREQUENCY RATE, 2006 – 2010

	2006	2007	2008	2009	2010
ACCIDENT FREQUENCY RATE (AFR)	1.9	1.9	1.9	1.8	1.7

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

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

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

⁴ Occupational Disease Incidence = $\frac{\text{No. of Occupational Diseases (i.e. chronic confirmed cases)}}{\text{No. of Employed Persons}} \times 100,000$

1.6 There was also a decline in the accident severity rate³ (ASR) to 87 man-days lost for every million man-hours worked in 2010 after remaining constant at 112 in 2008 and 2009. Detailed industry breakdown of the ASR, AFR and man-days loss data can be found in Tables 1-1 and 1-2 in Annex 1. This shows that, across the board, injuries are less severe and less man-days are lost due to workplace incidents.

CHART 3: WORKPLACE ACCIDENT SEVERITY RATE, 2006 – 2010

	2006	2007	2008	2009	2010
ACCIDENT SEVERITY RATE (ASR)	125	116	112	112	87

2. Fatal Workplace Injuries

BY INDUSTRY

2.1 In 2010, there were 55 fatalities from 53 fatal incidents, down from 70 fatalities in 67 fatal incidents in 2009.

2.2 Construction accounted for 58% of the total 55 workplace fatalities in 2010, up from 44% of the 70 fatalities in 2009 (Table 3). The fatality rate for Construction in 2010 stood at 8.1 per 100,000 employed persons. It was the highest amongst the 3 traditionally high risk sectors⁵ (Table 4).

2.3 Workplace fatalities in the Marine⁶ sector had declined by half compared to 2009. Its fatality rate dropped from 11.1 in 2009 to 5.6 in 2010.

2.4 Manufacturing saw a drop in its fatality number and rate. The sector saw 7 fatalities in 2010, down from 11 in 2009. The rate fell from 2.6 in 2009 to 1.6 in 2010 (Table 4). For the Petrochemical sub-sector, there was an increase from 1 fatality in 2009 to 3 in 2010. Manufacturing's biggest contributor to fatalities – the Metalworking sub-sector - saw a drop from 6 fatalities in 2009 to 3 in 2010.

2.5 Water Supply, Sewerage and Waste Management sector had 1 fatality, same as 2009.

2.6 Hotels and Restaurants, and Landscape Care and Maintenance Service Activities were fatality-free in 2010. Logistics and Transport saw an increase from 3 deaths in 2009 to 4 in 2010.

2.7 Generally, all sectors saw a decline in their fatality rates, except for the stagnation in the construction sector and the slight increase in the Logistics and Transport sector.

⁵ This refers to construction, marine and manufacturing.

⁶ 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.

Table 3: Number of Workplace Fatalities by Industry, 2009 and 2010

Industry	2010	2009
All Sectors	55 (53)	70 (67)
Construction	32 (31)	31 (31)
Marine	6 (6)	13 (13)
Manufacturing	7 (6)	11 (11)
Metalworking	3	6
Manufacture of Petrochemical Products	3 (2)	1
Manufacture of Food, Beverages and Tobacco	1	0
Water Supply, Sewerage & Waste Management	1	1
Logistics & Transport	4	3
Services Allied To Transport of Goods	0	0
Hotels & Restaurants	0	2
Veterinary Activities	0	0
Landscape Care & Maintenance Service Activities	0	1
Health Activities	0	0
Other Sectors	5	8 (5)

Note: Figures in parenthesis refer to the number of fatal incidents.

Table 4: Workplace Fatality Rate by Industry, 2009 and 2010

Per 100,000 employed persons

Industry	2010	2009
All Sectors	2.2	2.9
Construction	8.1	8.1
Marine	5.6	11.1
Manufacturing	1.6	2.6
Metalworking *	2.5	5.4
Manufacture of Petrochemical Products	6.0	2.0
Manufacture of Food, Beverages and Tobacco	2.6	0.0
Water Supply, Sewerage & Waste Management *	9.3	10.1
Logistics & Transport *	4.7	3.4
Services Allied To Transport of Goods *	0.0	0.0
Hotels & Restaurants	0.0	1.1
Veterinary Activities *	0.0	0.0
Landscape Care & Maintenance Service Activities *	0.0	11.5
Health Activities	0.0	0.0
Other Sectors	0.4	0.7

* Estimated Rates. The employment data excludes self-employed persons.

BY TYPE AND AGENCY OF INCIDENT

2.8 Falls from Height (FFH) was the leading incident type in 2010 (Table 5). While the overall number of FFH cases fell from 22 in 2009 to 18 in 2010, its proportion amongst work fatalities has increased slightly. In 2010, FFH accounts for about 33% of fatalities, up from 31% in 2009. More than half of the FFH-related deaths were from the Construction sector (Table 7). *[Falls from Height was the top contributor to the 3 traditionally high risk sectors. To address this growing concern, a national Work at Height taskforce was set up in August 2009 with the aim of reducing Work at Height risks through implementing Fall Protection Plans in all workplaces by 2015⁷.]*

2.9 Struck by falling objects was the second highest incident type, with 12 fatalities in 2010 compared to 17 fatalities last year.

2.10 Struck by moving objects saw an increase from 6 fatalities in 2009 to 9 fatalities in 2010, with more than half of the fatalities being hit by prime movers/trucks/lorries/excavators.

2.11 There were 2 deaths due to fires and explosion, up from zero death a year ago.

Table 5: Number of Workplace Fatalities by Type of Incident, 2009 and 2010

	2010	2009
Total	55	70
Falls from height [^]	18	22
Struck by falling objects [^]	12	17
- from heights	6	10
- due to collapse/ failure of structure and equipment	6	7
Struck by moving objects	9	6
- by prime movers/ trucks/ lorries/ excavators	6	4
Fires and explosion	2	0
Caught in/between objects [^]	4	4
Electrocution [^]	1	1

⁷ Please refer to http://www.mom.gov.sg/Home/Pages/Press_Release/20091202-PR_Work_at_height.html for more information on the national Work at Height taskforce.

	2010	2009
Oxygen deficiency in confined spaces ⁸	1	0
Exposure to / Contact with hazardous substances	0	4
Crane-related - <i>Collapse of Crane</i>	2 1	10 2
Slips and trips	4	3
Other incident types^ (e.g. drowning, collapse of formwork, exposure to heat)	2	3

^ Excludes Crane-related fatalities

2.12 Crane-related fatalities decreased from 10 in 2009 to 2 in 2010 (Table 5 and 6).

2.13 There were 6 fatalities resulting from trucks (including Lorries) in 2010 compared to 1 in the preceding year (Table 6).

Table 6: Number of Workplace Fatalities by Agency of Incident, 2009 and 2010

Agency of Incident	2010	2009
Total	55	70
Working Environment		
Confined spaces ⁹	1	0
Floors/Level Surfaces	4	8
Formworks	4	1
Ladders	4	3
Structures	4	1
Roofs	2	3
Scaffolding and Staging	2	1
Others (e.g. stairs/steps, catwalk, gangway, working platform)	2	4

⁸ Confined spaces refer to any chamber, tank, vat, pipe or flue where dangerous fumes are liable to be present and can result in fires, explosions or persons being overcome by the fumes or where the supply of air is inadequate, or is likely to be reduced to be inadequate for sustaining life. Works performed in confined spaces present risks uncommon to the regular workplace.

The presence of hazardous substances in confined spaces can lead to air contamination. High concentration of toxic gases such as carbon monoxide, hydrogen sulphide and petroleum solvent vapours can result in chemical poisonings or oxygen deficiency.

⁹ This refers to fatalities arising from accidents in confined spaces.

Agency of Incident	2010	2009
Materials and Substances		
Metal Items	3	3
Ceramic Items (e.g. wall)	1	2
Other Material & Substances (e.g. window panel)	1	5
Lifting Equipment		
Other Lifting Equipment (e.g. piling machine/rig, gondola, lift)	5	8
Cranes	2	10
Lifting Appliance/Gear	0	1
Pressurised Vessels	2	1
Industrial Machines		
Excavators	1	2
Other Industrial Machines (e.g. milling machine, band saw, boring machine)	4	5
Transport Equipment (including vehicles)		
Trucks (includes lorries)	6	1
Forklift	2	2
Prime Movers/Trailers	1	3
Other Transport Equipment (e.g. van, car, train)	1	0
Electrical Equipment (e.g. circuit connections, spotlight)	1	1
Incident Agencies Not Elsewhere Classified	2	5

Table 7: Number of Workplace Fatalities by Industry and Type of Incident, 2010

	All Sectors	Construction	Marine	Manufacturing	Landscape Care & Maintenance Service	Logistics & Transport	Water Supply, Sewerage & Waste Mgmt	Hotels & Restaurants	Other Sectors
Total	55 (70)	32 (31)	6 (13)	7 (11)	0 (1)	4 (3)	1 (1)	0 (2)	5 (8)
Falls from height^	18 (22)	10 (9)	4 (7)	0 (4)	0 (0)	2 (0)	1 (1)	0 (0)	1 (1)
Struck by moving objects	9 (6)	4 (4)	1 (0)	2 (0)	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)
Struck by objects falling^ from height	6 (10)	3 (5)	1 (1)	2 (2)	0 (1)	0 (1)	0 (0)	0 (0)	0 (0)
Collapse / failure of structure and equipment	6 (7)	6 (1)	0 (2)	0 (3)	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)
Exposure to / contact with hazardous substances	0 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (4)
Fires and explosion	2 (0)	0 (0)	0 (0)	2 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Crane-related - Collapse of crane	2 (10) 1 (2)	2 (8) 1 (1)	0 (2) 0 (1)	0 (0) 0 (0)	0 (0) 0 (0)	0 (0) 0 (0)	0 (0) 0 (0)	0 (0) 0 (0)	0 (0) 0 (0)
Electrocution^	1 (1)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (1)	0 (0)
Oxygen deficiency in confined spaces	1 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Slips and trips	4 (3)	1 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (1)	2 (2)
Caught in/between objects^	4 (4)	3 (3)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Other incident types^	2 (3)	1 (1)	0 (1)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)

^ Excludes Crane-related fatalities Note: Figures in parenthesis pertain to 2009 figures.

3. Permanent Disablements

3.1 Permanent disablements refer to non-fatal injuries which are more severe in nature, involving the complete loss, or loss of use of any member/part of a member of the injured victim's body (e.g. the amputation of an arm, a finger or the bone of a finger).

3.2 Manufacturing and Construction sectors were the main industries that contributed to the total permanent disablements in 2010 (Table 9).

3.3 In 2010, 136 workers sustained permanent injuries, up from 126 in the preceding year (Table 9). For every 100,000 employed persons, an average of 5.4 workers was permanently injured, up from 5.2 in 2009 (Table 10). Such incidents resulted in a loss of 44,059 man-days.

3.4 91% of the permanent disablements involved the complete loss or loss of the use of hands (including fingers), while 5.0% were localised to the lower limb and injuries in multiple locations (Table 8).

Table 8: Number of Permanent Disablements by Body Part Injured, 2009 and 2010

Body Part Injured	2010	2009
Total	136	126
Upper Limb	124	121
Hands (including fingers)	124	120
Shoulder/ arm	-	1
Lower Limb	6	4
Foot (including toes)	5	4
Leg (including ankle)	1	-
Multiple locations	1	1
Others	5	-

BY INDUSTRY

3.5 Manufacturing continued to be the largest contributor to permanent disablements. It accounted for almost 40% of such injuries in 2009 and 2010 (Table 9). One of its sub-sectors, Manufacture of Furniture, showed an increase with 8 permanent disablement cases in 2010, up from 3 in 2009.

3.6 Construction, the second largest contributor, registered a drop of such injuries from 44 cases in 2009 to 38 in 2010. In 2010, there were also more permanent disablements cases from Hotels and Restaurants (8) and Wholesale & Retail Trade (5) and Logistic & Transport (4) sectors compared to 2009.

Table 9: Number of Permanent Disablements by Industry, 2009 and 2010

Industry	2010	2009
All Sectors	136	126
Construction	38	44
Marine	9	12
Manufacturing	54	46
Metalworking	22	22
Manufacture of Furniture	8	3
Manufacture of Food Products	6	9
Water Supply, Sewerage & Waste Management	1	-
Logistics & Transport	4	3
Services Allied To Transport of Goods	-	2
Hotels & Restaurants	8	3
Veterinary Activities	-	-
Landscape Care & Maintenance Service Activities	-	-
Health Activities	-	-
Other Sectors	22	18

Industry	2010	2009
Wholesale & Retail Trade	5	3

Table 10: Permanent Disablement Rates by Industry, 2009 and 2010

Per 100,000 employed persons

Industry	2010	2009
All Sectors	5.4	5.2
Construction	9.6	11.4
Marine	8.4	10.3
Manufacturing	12.5	10.8
Metalworking *	18.3	19.8
Manufacture of Furniture *	69.6	28.6
Manufacture of Food products *	17.5	29.2
Water Supply, Sewerage & Waste Management *	9.3	-
Logistics & Transport *	4.7	3.4
Services Allied To Transport of Goods *	-	8.7
Hotels & Restaurants	4.2	1.7
Veterinary Activities *	-	-
Landscape Care & Maintenance Service Activities *	-	-
Health Activities	-	-
Other Sectors		
Wholesale & Retail Trade	1.3	0.7

* Estimated Rates. The employment data excludes self-employed persons.

BY TYPE AND AGENCY OF INCIDENT

3.7 In 2010, being caught in or between objects was the leading incident type for permanent disablements. Such incidents, accounted for half of the total permanent disablements (Table 11).

Table 11: Number of Permanent Disablements by Type of Incident, 2009 and 2010

Type of Incident	2010	2009
Total	136	126
Caught In / Between Objects - <i>Amputations</i>	68 67	69 64
Cut/Stabbed by Objects	35	16
Struck by Falling Objects	17	20
Struck by Moving Objects	11	13
Other Types of Accidents	5	8

Table 12: Number of Permanent Disablements by Industry and Type of Incident, 2009 and 2010

Industry	Caught in/ between Objects	Cut/ Stabbed by Objects	Struck by Falling Objects	Struck by Moving Objects	Other Incident Types
Total	68 (69)	35 (16)	17 (20)	11 (13)	5 (8)
Construction	13 (17)	12 (6)	7 (12)	3 (6)	3 (3)
Marine	6 (8)	1 (0)	0 (2)	2 (0)	0 (2)
Manufacturing	31 (29)	14 (7)	6 (4)	2 (5)	1 (1)
Water Supply, Sewerage & Waste Management	1 (0)	-	-	-	-
Logistics & Transport	1 (2)	-	1 (1)	2 (0)	-
Hotels & Restaurants	3 (1)	4 (2)	1 (0)	-	-
Landscape Care & Maintenance Service Activities	-	-	-	-	-
Veterinary Activities	-	-	-	-	-

Health Activities	-	-	-	-	-
Other Sectors	13 (12)	4 (1)	2 (1)	2 (2)	1 (2)
Wholesale & Retail Trade	2 (3)	2 (0)	1 (0)	-	-

Note: Figures in parenthesis pertain to 2009 figures.

3.8 The key incident agencies for 2009 and 2010 were broadly similar (Table 13). Industrial Machines remained the top incident agency, accounting for 43% of total permanent disablements in 2010. The second and third most common incident agencies are fairly close in numbers, with work involving Metal Items accounting for about 16% and work involving Industrial Hand Tools accounting for about 13%. Together, these three incident types account for 72% of total permanent disablements in 2010 (Table 13).

Table 13: Key Incident Agencies Leading To Permanent Disablements, 2009 and 2010

Agency of Incident	2010	2009
Key Incident Agencies	115	103
Industrial Machines	58	50
Metal Items	22	20
Industrial Hand Tools (electrical and non-electrical)	18	18
Lifting Equipment including Cranes	13	9
Forklift, Excavators and Other Industrial Trucks	4	6

4. Temporary Disablement

4.1 Temporary disablements dropped by about 5% in 2010 (Table 14). Furthermore, temporary disablements from each of the three traditionally high-risk sectors (Construction, Manufacturing and Marine) saw a decline of about 16% - 18% in 2010. Hotels, Restaurants and Logistics & Transport also registered a drop in the number and rate of temporary disablements.

4.2 Some sectors saw an increase in temporary work injuries and temporary disablement rates, including Health Activities, Wholesale & Retail Trade sectors, Water Supply, Sewerage & Waste Management.

Table 14: Number of Temporary Disablements by Industry, 2009 and 2010

Industry	2010	2009
All Sectors	10,128	10,638
Construction	2,336	2,778
Marine	380	462
Manufacturing	2,083	2,530
Metalworking	939	1,164
Manufacture of Food, Beverages & Tobacco Products	267	303
Manufacture of Electronic Products	159	150
Manufacture of Paper Products & Printing	110	147
Manufacture of Non-metallic Mineral Products	108	201
Manufacture of Petrochemical Products	98	77
Manufacture of Furniture	95	101
Manufacture of Rubber & Plastic Products	88	67
Water Supply, Sewerage & Waste Management	88	69
Logistics & Transport	470	507
Services Allied To Transport of Goods	83	73
Hotels & Restaurants	699	768
Veterinary Activities	S	S
Landscape Care & Maintenance Service Activities	46	S
Health Activities	288	212
Other Sectors	3,733	3,306

Wholesale & Retail Trade	649	429
Administrative & Support Service Activities ¹⁰	365	184
Real Estate Activities	209	132

S: Suppressed because the injury numbers are too small (i.e. less than 10) for meaningful analysis.

¹⁰ This includes the Landscape Care & Maintenance Service Activities sector.

Table 15: Temporary Disablement Rates by Industry, 2009 and 2010

Per 100,000 employed persons

Industry	2010	2009
All Sectors	403	438
Construction	591	722
Marine	354	395
Manufacturing	484	594
Metalworking *	781	1,047
Manufacture of Food, Beverages & Tobacco Products	685	854
Manufacture of Electronic Products	165	165
Manufacture of Paper Products & Printing	462	563
Manufacture of Non-metallic Mineral Products *	2,348	4,277
Manufacture of Petrochemical Products	195	155
Manufacture of Furniture *	826	962
Manufacture of Rubber & Plastic Products	629	453
Water Supply, Sewerage & Waste Management *	822	697
Logistics & Transport*	548	573
Services Allied To Transport of Goods *	358	316
Hotels & Restaurants	368	425
Veterinary Activities *	S	S
Landscape Care & Maintenance Service Activities*	517	S
Health Activities	435	339
Other Sectors		
Wholesale & Retail Trade	166	105
Administrative & Support Service Activities ¹¹	197	131
Real Estate Activities	277	195

S: Suppressed because the injury numbers are too small (i.e. less than 10) for meaningful analysis.

¹¹ This includes the Landscape Care & Maintenance Service Activities sector.

* Estimated Rates. The employment data excludes self-employed persons.

BY TYPE AND AGENCY OF INCIDENT

4.3 The top 3 incident types¹² which accounted for around 48% of total temporary disablements in 2010 were:

- Struck by Moving Objects (SBMO);
- Slips and Trips (ST); and
- Struck by Falling Objects (SBFO).

4.4 Temporary work injuries arising from Struck by Moving Objects (SBMO) and Slips and Trips (ST) had increased, contributing to about 34% of the total temporary disablements in 2010, up from 24% in 2009.

4.5 Similar to the 18% drop in falling from height (FFH) fatalities, FFH-related temporary injuries also fell in 2010. The number of FFH cases fell by about 22% from 1,632 in 2009 to 1,281 in 2010. FFH also fell from being the number one contributor of temporary injuries in 2009 to fourth place in 2010.

4.6 For Hotels and Restaurants sector, the common types of incidents were;

- Cut or Stabbed by Objects (CSBO);
- Slips and Trips (ST); and
- Contact with Extreme Temperatures (CWET)

4.7 For Logistics and Transport sector, the top three incident types were:

- Struck by Moving Objects (SBMO)
- Slips and Trips (ST); and
- Falls from Height (FFH)

4.8 Slips and Trips are prevalent in the Health Activities Sector.

¹² *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.

Table 16: Key Incident Types Leading To Temporary Disablements, 2009 and 2010

Type of Incident	2010	2009
Key Incident Types	9,135 (90.2)	9,678 (91.0)
Struck by Moving Objects (excludes falling objects)	1,801 (17.8)	1,375 (12.9)
Slips and Trips	1,693 (16.7)	1,214 (11.4)
Struck by Falling Objects	1,362 (13.4)	1,395 (13.1)
Falls from Height	1,281 (12.6)	1,632 (15.3)
Cut or Stabbed by Objects	1,094 (10.8)	1,325 (12.5)
Caught In / Between Objects	823 (8.1)	1,290 (12.1)
Strike Against Objects	562 (5.5)	692 (6.5)
Over-Exertion and Strenuous Movement	519 (5.1)	755 (7.1)

* Figures in parenthesis refer to the % of total number of TDs.

Table 17: Top 3 Incident Types For Temporary Disablements by Industry, 2010

Industry	Top 3 Incident Types		
	1 st	2 nd	3 rd
All Sectors	SBMO	ST	SBFO
Construction	SBMO	SBFO	FFH
Marine	SBMO	SBFO	CIBO
Manufacturing	SBMO	SBFO	CIBO
Metalworking	SBMO	SBFO	CIBO
Manufacture of Food, Beverages & Tobacco Products	ST	CSBO	CIBO
Manufacture of Electronic Products	ST	SBMO	CIBO
Manufacture of Paper Products & Printing	SBMO	CIBO	ST
Manufacture of Non-metallic Mineral Products	SBFO	SBMO	CSBO

Industry	Top 3 Incident Types		
	1 st	2 nd	3 rd
Manufacture of Petrochemical Products	ST	SBFO	ETHS
Manufacture of Furniture	SBMO	CSBO	SBFO
Manufacture of Rubber & Plastic Products	SBMO	CIBO	CSBO
Water Supply, Sewerage & Waste Management	SBMO	ST	FFH
Logistics & Transport	SBMO	ST	FFH
Services Allied To Transport of Goods	SBMO	FFH	SBFO
Hotels & Restaurants	CSBO	ST	CWET
Veterinary Activities	S	S	S
Landscape Care & Maintenance Service Activities	S	S	S
Health Activities	ST	Physical Assault	SBMO
Other Sectors			
Wholesale & Retail Trade	ST	FFH	SBMO
Administrative & Support Service Activities ¹³	ST	SBMO	FFH
Real Estate Activities	ST	FFH	SBFO
S: Suppressed because the injury numbers are too small (i.e. less than 10) for meaningful analysis.			
<u>Legend:</u>			
CIBO : Caught In/Between Objects		FFH : Falls from Height	
SBFO : Struck by Falling Objects		SBMO : Struck by Moving Objects ¹⁴	
ST : Slips and Trips		CWET : Contact with Extreme Temperatures	
CSBO : Cut or Stabbed by Objects		ETHS : Exposure to Harmful Substances	

4.9 The key incident agencies¹⁵ leading to temporary disablements were (Table 18):

- Metal Items;
- Floor/Level Surfaces;
- Industrial Machines; and
- Hand Tools (electrical and non-electrical).

¹³ This includes the Landscape Care & Maintenance Service Activities sector.

¹⁴ This includes flying fragments but excludes falling objects.

¹⁵ Incident agency 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.

Metal Items, Industrial Machines and Hand Tools were the common agencies found in temporary injuries arising from being struck by moving objects.

4.10 Floor or level surfaces leading to temporary disablements in 2010 had decreased by 23%. However, it is still one of the most common agencies, accounting for about 11% of the total temporary disablements.

Table 18: Key Incident Agencies Leading To Temporary Disablements, 2009 and 2010

Agency of Incident	2010	2009
Key Accident Agencies	7,014 (69.2)	7,780 (73.1)
Metal Items	1,749 (17.3)	1,944 (18.3)
Floors or Level Surfaces	1,102 (10.9)	1,439 (13.5)
Industrial Machines	882 (8.7)	1,011 (9.5)
Hand Tools (both electrical and non-electrical)	751 (7.4)	1,000 (9.4)
Furniture and Fittings	556 (5.5)	360 (3.4)
Goods/Cargo	450 (4.4)	406 (3.8)
Transport Equipment	419 (4.1)	509 (4.8)
Ladders, Mobile Ramps	410 (4.0)	372 (3.5)
Stairs, Steps and Gangways	376 (3.7)	359 (3.4)
Forklift, Excavator and Other Industrial Trucks	319 (3.1)	380 (3.6)

* Figures in parenthesis refer to the % of total number of TD.

5. Occupational Diseases

5.1 In 2010, 432 cases of occupational diseases (OD) were confirmed, down from 468 cases in 2009 ([Table 19](#)). The overall OD incidence rate stood at 17.2 cases per 100,000 employed persons, also a decline from 19.3 in 2009 ([Table 20](#)).

5.2 Manufacturing continued to be the top contributor for OD cases, accounting for 45% (195 cases) of total ODs confirmed in 2010 ([Table 19](#)). 68% of the ODs confirmed in this sector were from the Metalworking and Transport Equipment sub-sectors.

Table 19: Number of Confirmed Occupational Diseases by Industry, 2009 and 2010

Industry	2010	2009
All Sectors	432	468
Construction	20	31
Marine	52	29
Manufacturing	195	285
Metalworking	108	144
Manufacture of Transport Equipment	24	70
Manufacture of Petrochemical Products	15	13
Manufacture of Electronic Products	13	5
Manufacture of Pharmaceutical & Biological Products	9	3
Manufacture of Paper Products & Printing	7	9
Manufacture of Medical & Precision Instruments	6	11
Water Supply, Sewerage & Waste Management	12	3
Logistics & Transport	27	56
Services Allied To Transport of Goods	2	-
Hotels & Restaurants	5	7
Veterinary Activities	-	-
Landscape Care & Maintenance Service Activities	-	-

Industry	2010	2009
Health Activities	1	5
Other Sectors	120	52
Repair & Maintenance of Motor Vehicles	52	14

Table 20: Occupational Disease Incidence by Industry, 2009 and 2010

Per 100,000 employed persons

Industry	2010	2009
All Sectors	17.2	19.3
Construction	5.1	8.1
Marine	48.5	24.8
Manufacturing	45.3	67.0
Metalworking *	89.8	129.5
Manufacture of Transport Equipment	135.6	333.3
Manufacture of Petrochemical Products	29.9	26.2
Manufacture of Electronic Products	13.5	5.5
Manufacture of Pharmaceutical & Biological Products	96.8	41.7
Manufacture of Paper Products & Printing	29.4	34.5
Manufacture of Medical & Precision Instruments	42.9	66.7
Water Supply, Sewerage & Waste Management *	112.1	30.3
Logistics & Transport *	31.5	63.3
Services Allied To Transport of Goods *	8.6	-
Hotels & Restaurants	2.6	3.9
Veterinary Activities *	-	-
Landscape Care & Maintenance Service Activities *	-	-
Health Activities	1.5	8.0

Other Sectors		
Repair & Maintenance of Motor Vehicles	Not Available	Not Available

* Estimated Rates. The employment data excludes self-employed persons.

BY TYPE OF OCCUPATIONAL DISEASE

Noise-induced Deafness (NID)

5.3 Noise-induced deafness (NID) remained to be the main bulk (84%) of the total OD cases confirmed in 2010. 358 out of the 364 NID cases (or 98%) were diagnosed at the early stage of the disease while six workers suffered from severe hearing loss. The number of NID cases in Repair & Maintenance of Motor Vehicles sector jumped from 14 in 2009 to 52 in 2010 ([Table 22](#)).

Table 21: Number of Confirmed Occupational Diseases by Type, 2009 and 2010

Type of Occupational Diseases	2010	2009
Total	432	468
Noise- induced Deafness (NID)	364	380
- <i>Early Stage</i>	358	375
- <i>Advanced Stage</i>	6	5
Occupational Skin Diseases	43	56
Excessive Absorption of Chemicals	15	16
Chemical Poisoning	-	-
Compressed Air Illness	2	-
Barotrauma	1	1
Work-related Musculoskeletal Disorders	4	3
Mesothelioma	2	3
Occupational Lung Diseases	1	3
Others	0	6

Table 22: Number of Confirmed NIDs in Selected Industries, 2009 and 2010

Industry	2010	2009
All Sectors	364	380
Construction	12	14
Marine	51	24
Manufacturing	161	256
Metalworking	99	133
Manufacture of Transport Equipment	21	68
Manufacture of Petrochemical Products	12	10
Manufacture of Paper Products & Printing	6	9
Manufacture of Medical & Precision Instruments	5	7
Manufacture of Electronic Products	4	4
Water Supply, Sewerage & Waste Management	8	3
Logistics & Transport	24	54
Services Allied To Transport of Goods	1	-
Hotels & Restaurants	1	-
Veterinary Activities	-	-
Landscape Care & Maintenance Service Activities	-	-
Health Activities	-	1
Other Sectors	107	28
Repair & Maintenance of Motor Vehicles	52	14

Occupational Skin Diseases (OSD)

5.4 43 cases of occupational skin diseases (OSD) were confirmed in 2010, accounting for 10% of total ODs confirmed. Construction registered a 50% drop from 15 cases in 2009 to 7 in 2010. Manufacturing contributing to almost half of the total confirmed OSD, was the largest contributor in 2010. Its sub-sector Manufacture of Electronic Products had increased to 9 cases in 2010 compared to 1 the year before.

5.5 The most common agents resulting in OSD were wetwork and occlusion (9 cases) and solvent (6 cases).

Table 23: Number of Confirmed OSD by Industry, 2009 and 2010

Industry	2010	2009
All Sectors	43	56
Construction	7	15
Marine	1	3
Manufacturing	20	15
Manufacture of Electronic Products	9	1
Metalworking	7	6
Manufacture of Food, Beverages & Tobacco Products	1	3
Manufacture of Transport Equipment	1	2
Manufacture of Petrochemical Products	1	2
Manufacture of Medical & Precision Instruments	1	1
Water Supply, Sewerage & Waste Management	-	-
Logistics & Transport	3	-
Services Allied To Transport of Goods	1	-
Hotels & Restaurants	3	5
Veterinary Activities	-	-
Landscape Care & Maintenance Service Activities	-	-
Health Activities	1	2
Other Sectors	8	16

Table 24: Top 5 Causative Agents of OSD, 2010

Causative Agents	No. of Cases
Wetwork and Occlusion	9
Solvent (includes Alcohol)	6
Resin	5
Cement	4
Coolant	3

Other Occupational Diseases

5.6 There were 15 cases of excessive absorption of chemicals in 2010.

5.7 7 out of the 15 excessive absorption cases involved excessive Trichloroethylene (TCE) absorption. They were from a pharmaceutical & biological products manufacturer where TCE was used for degreasing purposes.

Table 1-1: Accident Frequency Rate (AFR) and Accident Severity Rate (ASR) in Selected Sectors, 2009 and 2010

Industry	Per million man-hours worked			
	AFR		ASR	
	2010	2009	2010	2009
All Sectors	1.7	1.8	87	112
Construction	2.2	2.7	223	247
Marine¹⁶	1.3	1.4	146	274
Manufacturing (excluding Marine)	1.9	2.4	90	115
Metalworking	2.9	4.0	146	208
Manufacture of Petrochemical Products	0.8	0.6	170	64
Manufacture of Food, Beverages & Tobacco Products	2.9	3.6	117	84
Manufacture of Furniture	3.3	3.6	130	92
Water Supply, Sewerage & Waste Management	3.5	2.9	291	317
Logistics & Transport¹⁷	2.3	2.4	158	138
Services Allied To Transport of Goods	1.4	1.2	24	29
Hotels & Restaurants	1.7	2.0	28	58
Veterinary Activities	S	S	S	S
Landscape Care & Maintenance Service Activities	2.0	S	27	S
Health Activities	2.0	1.5	25	33

S: Suppressed because the injury numbers are too small (i.e. less than 10) for meaningful analysis.

¹⁶ The Marine sector covers the following activities :

- Shipbuilding and ship repair
- Marine surveying services (other than classification societies)
- Salvaging of distressed vessels and cargo

Works carried out at the anchorage are also included.

¹⁷ The Logistics & Transport sector covers the following activities :

- Storage and Warehousing
- Supporting Services To Land Transport (excludes car management services, services allied to transport of passengers and towing services)
- Supporting Services To Water Transport (excludes marine surveying services and salvaging of distressed vessels and cargo)
- Supporting Services To Air Transport
- Services Allied To Transport of Goods
- Services Allied To Transport of Goods Not Elsewhere Classified.

Table 1-2: Number of Man-days Lost To Workplace Incidents¹⁸ in Selected Sectors, 2009 and 2010

Industry	2010	2009
All Sectors	532,769	663,657
Construction	239,137	258,421
Marine	43,691	91,077
Manufacturing	99,330	125,837
Metalworking	48,080	62,187
Manufacture of Petrochemical Products	20,596	7,663
Manufacture of Food, Beverages & Tobacco Products	11,230	7,345
Manufacture of Furniture	4,048	2,635
Water Supply, Sewerage and Waste Management	7,579	7,430
Logistics & Transport	32,544	29,307
Services Allied To Transport of Goods	1,412	1,796
Hotels & Restaurants	11,342	22,351
Veterinary Activities	S	S
Landscape Care & Maintenance Service Activities	609	6,160
Health Activities	3,597	4,429

S: Suppressed because the numbers are too small (i.e. less than 10) for meaningful analysis.

¹⁸ According to the U.S National Institute of Occupational Safety and Health (NIOSH)'s table of scheduled charges, a fatality is equivalent to the loss of 6000 man-days. The Ministry of Manpower adopts a similar coding schedule.

SOURCE OF DATA

Data on workplace injuries and occupational diseases were collected from incident reports made by employers, occupiers and medical practitioners in the fulfilment of their obligations under the Workplace Safety and Health (Incident Reporting) Regulations.

Employment data used for the computation of workplace fatality and injury rates are from the administrative records maintained by the Central Provident Fund (CPF) Board and Work Pass Division, Ministry of the Manpower.

Average weekly hours worked data used for the estimation of man-hours worked are from the Quarterly Labour Market Survey conducted by the Ministry of Manpower.

DATA COVERAGE

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

- Workplace injuries sustained by employees and resulting in more than 3 consecutive days of medical leave;
- Workplace injuries sustained by employees and resulting in at least 24 hours of hospitalisation;
- Workplace incidents resulting in the death of employees, self-employed persons and persons not at work;
- Workplace incidents resulting in the injury of self-employed persons and persons not at work who have to be taken to the hospital for treatment; and
- Occupational diseases listed in the Third Schedule of the Workplace Safety and Health Act.

CONCEPTS AND DEFINITIONS

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

Incident Agency 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.

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