



WORKPLACE



A Guide to the Workplace Safety and Health Act

SAFETY + HEALTH



Health Guidelines
Healthcare



PROFILE



WSH 2015
A STRATEGY FOR
WORKPLACE
SAFETY AND
HEALTH IN
SINGAPORE



MINISTRY OF
MANPOWER

SINGAPORE

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1. Workplace Safety and Health Framework

Singapore has a framework to guide the management of workplace safety and health (WSH) by all stakeholders – the government, industry, as well as employees. The framework was designed to engender a paradigm shift and ingrain good WSH habits in all individuals at the workplace. This is enshrined in the three key principles of the framework, with risk management being the cornerstone.

PRINCIPLE 1

Reduce risk at source by requiring all stakeholders to eliminate or minimise the risks they create

The underpinning principle under the new framework is to eliminate or mitigate risks before they are created and not to merely accept or endure existing risks. All stakeholders in workplaces thus need to conduct risk assessments to help identify the risks and their sources, measures that should be taken to eliminate or reduce the risks and parties responsible for doing so.

In line with this principle, the parties that create risks would be held accountable for eliminating or reducing those risks. This includes occupiers, employers, suppliers, manufacturers, designers and persons at work. For instance, employers have the responsibility to put in place effective WSH management systems. Top management are expected to appoint personnel with the right skills and experience to manage WSH as well as provide them with adequate resources, training and powers to carry out their duties effectively. Architects and engineers are responsible for designing structures and buildings in construction projects that are safe to build and maintain. Manufacturers and suppliers are responsible for ensuring that the machinery they supply or maintain is safe for use in all workplaces. Workers have a responsibility to adhere to safe work practices. Every person at work has to accept responsibility for his own safety and health and for those under his charge or affected by his work.

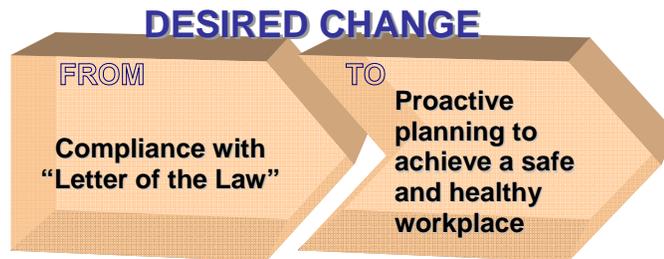


PRINCIPLE 2
Greater industry ownership of WSH outcomes

The second principle of the new framework calls for greater industry ownership of WSH outcome. Industry must take greater ownership of WSH standards and outcomes to effect a cultural change in WSH from reactive to proactive in accident prevention at the workplace. Government cannot mandate improvement in safety and health. Industry must take responsibility for raising WSH standards at a practical and reasonable pace. For example, the former legislation was more

prescriptive, with WSH requirements spelt out in detail. This encouraged a mindset amongst the management and its employees to simply follow the “letter of the law” and not address issues that fell beyond the legislation. Given the fast pace of technological change and differing work processes across industries, legislation would inevitably lag behind the emergence of new WSH risks. This was an unsatisfactory situation.

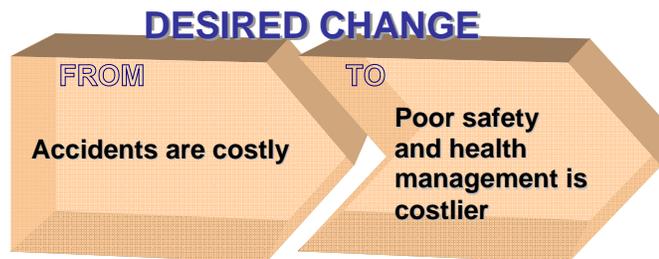
Under the new framework, the legislation and enforcement moved from a prescriptive orientation to a performance-based one. Nonetheless, some prescriptive measures for hazardous sectors and activities are retained. In general, the new framework will make it the responsibility of managers and workers to develop work and WSH procedures suited to their particular situations in order to achieve the desired WSH outcomes.



PRINCIPLE 3
Prevent accidents through higher penalties for poor safety and health management

Under the former legislative regime, WSH lapses resulting in deaths and serious injuries were severely penalised but the penalties for offences were much lower in the absence of such mishaps.¹ Such a regime tends to encourage the industry to tolerate sub-optimal WSH practices until accidents occur. Hence, the new WSH framework seeks to effect greater financial disincentives

and penalties on workplaces with unsafe practices and systems, even if accidents did not occur. This is to create an environment where all workplaces find it more cost effective to improve their WSH management systems.

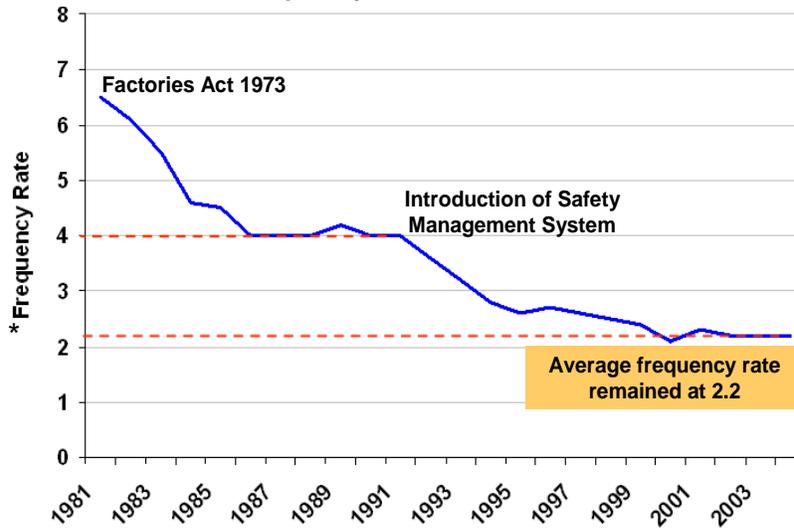


¹ The former legislative regime comprised a stepped penalty regime where the maximum punishment would increase with the harm done (the penalty ranged from a \$2,000 fine where no injury was caused, to a \$200,000 fine with 12 months’ imprisonment where the accident resulted in 2 or more fatalities).

A Target for Workplace Safety and Health

The WSH framework is an outcome of a reform undertaken by the government in 2005 to achieve quantum improvements in the safety and health of our workers. With our accident rates stagnating at 2.2 industrial accidents per million man-hours worked since 2001, we recognised that we would not progress if we were to only make incremental changes to the framework. Whilst driven by the need to address the stagnation in our WSH performance, major workplace accidents in 2004 added further impetus for a fundamental reform.

Chart 1: Accident Frequency Rate, 1981 - 2003



* Accident Frequency Rate = No. of accidents per million man-hours worked

Table 1:

Comparison of Occupational Death Rates, 2002	
Country / Region	Occupational Fatality Rate #
Sweden	1.2
United Kingdom	1.3
Australia	2.0
USA (2000)	2.2
EU15 Average	2.5
Japan	2.6
Singapore (2004)	4.9
# Occupational Death per 100,000 workers	

In terms of accident statistics, Singapore ranks below leading countries in WSH and most of the countries in the European Union. The target was then set to halve the occupational fatality rate from 4.9 fatalities per 100,000 workers in 2004 to 2.5 in 2015, and attain standards of the top ten developed countries with good WSH records.

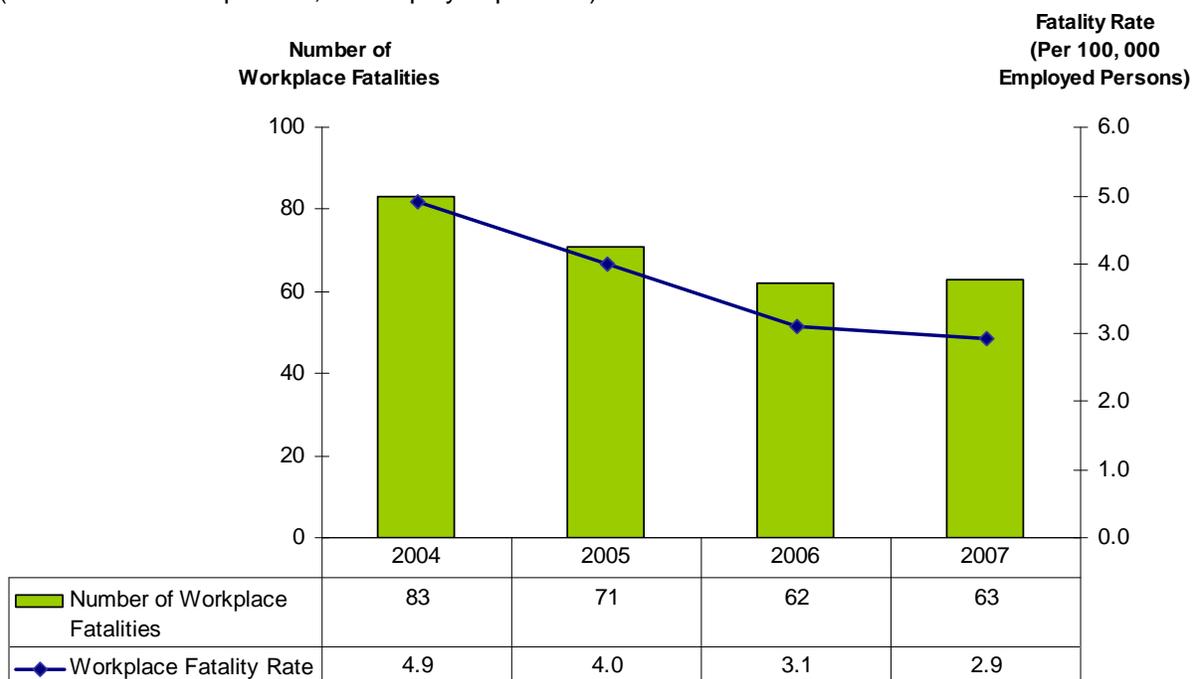
Three years after the implementation of the WSH framework however, the initial target to halve the workplace fatality rate to 2.5 by 2015 looks well within reach. The fatality rates dropped from 4.9 in 2004, to 4.0 in 2005, 3.1 in 2006 and 2.9 in 2007. A more ambitious target was thus set by Singapore's Prime Minister Lee Hsien Loong on 29 April 2008 - to reduce our workplace fatality rate to 1.8 per 100,000 employed persons by 2018.

2. Workplace Safety and Health Statistics

2.1 Workplace Fatalities, 2004 – 2007

Since the launch of the new framework in 2005, we have made good progress towards achieving the target to halve workplace fatality rate from 4.9 in 2004 to 2.5 in 2015. More will have to done to achieve a more ambitious goal of less than 1.8 fatalities per 100,000 employed persons by 2018. The number of workplace fatalities reduced significantly from 83 in 2004 to 63 in 2007 (Chart 2). In 2007, the workplace fatality rate stood at 2.9 deaths per 100,000 employed persons.

Chart 2: Workplace Fatalities, 2004 – 2007
(Number and Rate per 100,000 employed persons)



Source: Ministry of Manpower, Singapore.

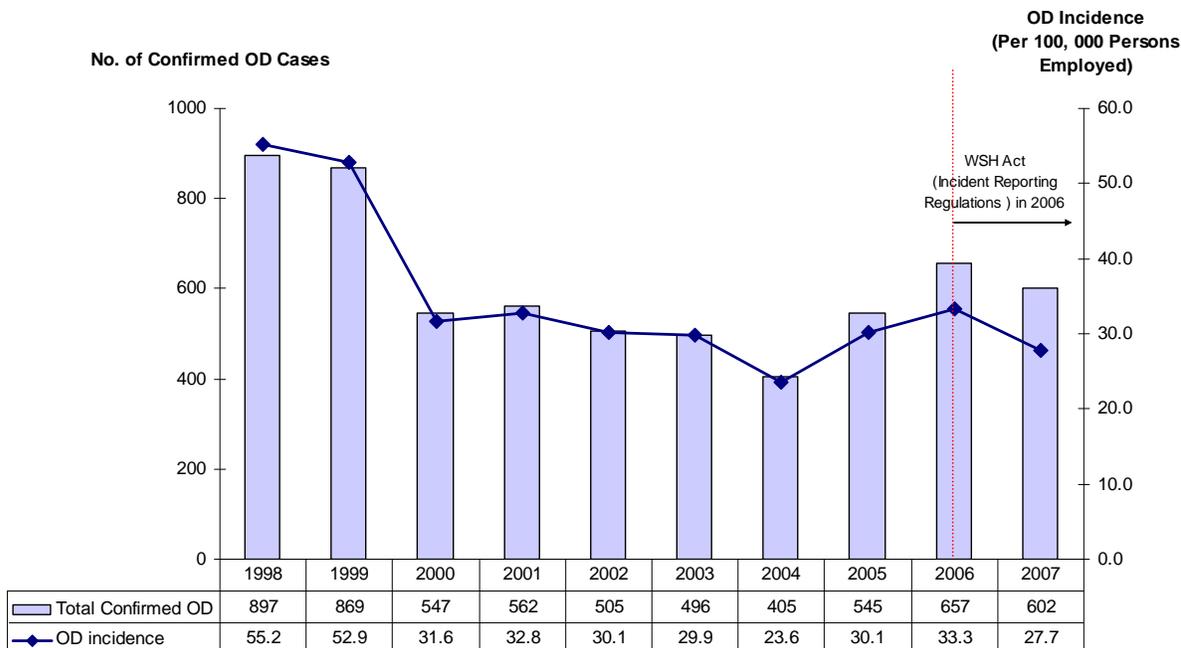
Note:

The WSH (Incident Reporting Regulations) was enacted in 2006. Prior to 2006, the Factories Act was in force and covered only industrial accidents. For comparison purposes, statistics pertaining to workplace fatalities before 2006 were estimated using work injury compensation data.

2.2 Occupational Diseases, 1998 – 2007

For Occupational Diseases (OD), the number of cases confirmed saw a downward trend during the period between 1998 and 2007 (Chart 3). In 2007, 602 cases of OD were confirmed - this was an 8.5% decline as compared to the previous year. The overall OD incidence stood at 27.7 confirmed cases per 100,000 employed persons in 2007, down from 33.3 a year ago.

Chart 3: Occupational Diseases, 1998 – 2007
(Number and Incidence per 100,000 employed persons)



Source: Ministry of Manpower, Singapore.

Noise Induced Deafness (NID) and Industrial Dermatitis (ID) continued to be the leading types of OD. In 2007, NID and ID accounted for 81% and 10% of all confirmed OD cases respectively. Nevertheless, these 2 OD types saw a significant reduction in the numbers confirmed in 2007 as compared to the year before.

Table 2: Number of Confirmed ODs by Type, 2006 and 2007

Type of OD	2007	2006
Total	602	657
Noise Induced Deafness	490	535
Industrial Dermatitis	59	89
Work-related Musculoskeletal Disorder	25	8
Barotraumas	17	5
Excessive Absorption of Chemicals	3	5
Occupational Lung Diseases	3	2
Compressed Air Illness	2	3
Others	3	10

2.3 Work Injury Compensation, 2007

Close to 15,000 work injury claims were awarded compensation in 2007. Two-third of the claims were made up of temporary incapacity cases (Table 3). A total of about S\$71 million was the amount of compensation awarded.

Table 3: Number of Work Injury Compensation Claims and Amount Awarded by Degree of Incapacity, 2007

	Total	Temporary Incapacity ¹	Partial Permanent Incapacity ²	Total Permanent Incapacity ³	Fatal
Number of Cases Awarded Compensation	14,927	9,602	5,214	13	98 ⁴
Amount of Compensation Awarded (S\$m)	71.0	3.8	56.6	2.0	8.6

Source: Ministry of Manpower, Singapore

Note:

The above work injury compensation claims were made under the previous Workmen's Compensation Act, which was replaced by the Work Injury Compensation Act on 1 April 2008 (refer to Section 3.3 for details).

¹ Refers to injury where the incapacity is of temporary nature. Such incapacity reduces the earnings of the employee in any employment in which he was engaged at the time of his accident resulting in his temporary incapacity. The compensation covers medical costs and medical leave wages.

² Refers to injury where the incapacity is of permanent nature. Such incapacity reduces the earnings of the employee in every employment which he was able to undertake at the time of his accident. The compensation covers medical costs, medical leave wages and percentage of permanent incapacity.

³ Refers to injury where the incapacity is of permanent nature and it incapacitates an employee for all work which he was capable of undertaking at the time of the accident resulting in such total incapacity.

⁴ The 98 fatal cases awarded compensation in 2007 include fatal cases that occurred in earlier years and fatalities resulting from work outside Singapore (for example, death of crew on board Singapore registered ships).

3. Workplace Safety and Health Legal Framework

This section outlines the various legal instruments governing WSH in Singapore.

3.1 Workplace Safety and Health Act

In Singapore, the key legislation on WSH is provided for by the WSH Act which is administered by the Commissioner for WSH, Ministry of Manpower. Replacing the former Factories Act, the WSH Act came into effect on 1 March 2006 as the key legal instrument to effect the new WSH framework.



The Act is designed to protect employees as well as any other persons who may be affected by the work carried out at all workplaces. In its first phase of implementation, coverage of the Act was limited to high-risk workplaces such as construction worksites, shipyards and other factories i.e. those formerly covered under the former Factories Act. The WSH Act has been extended to cover six new sectors² since 1 March 2008 and will be progressively expanded to cover all workplaces.

The Act departs from taking a prescriptive stance under the former legislation and introduces a performance-based regime. It emphasizes the importance of managing WSH proactively by requiring stakeholders to take *reasonably practicable measures* to ensure the safety and health of workers and other persons that may be affected by the work being carried out. The WSH Act also assigns liability to those who create and have management and control over WSH risks. The stakeholders include the occupiers, employers, principals, employees, manufacturers and suppliers as well as persons who erect, install or maintain equipment and machinery.

3.2 Workplace Safety and Health Subsidiary Legislation

Under the WSH Act, there are a total of 24 subsidiary legislation. 13 of them were Regulations made under the new Act. The remaining 11 subsidiary legislation made under the former Factories Act continue to be in force. Together, they constitute the legislative framework for the management of WSH in Singapore. The subsidiary legislation made under the Factories Act will be reviewed and updated before being re-enacted under the WSH Act. This is to ensure that they are in-line with the new WSH framework. The subsidiary legislation are listed and summarized in **Annex A**.

One of the key subsidiary legislation is the WSH (Risk Management) Regulations, which require employers to conduct risk assessment on the work they are undertaking and take steps to eliminate or reduce the risks that workers are exposed to. The intention of the legislation is to enshrine risk assessment as an integral part of business operations so that WSH risks are proactively reduced.

² Healthcare Activities, Hotels and Restaurants, Landscape Care and Maintenance Service Activities, Services Allied to Transportation of Goods, Veterinary Activities, as well as Water Supply, Sewerage and Waste Management.

3.3 Other Relevant Legislation

Other relevant legislations that have an impact on WSH include the Environmental Protection and Management Act, Environmental Public Health Act, Radiation Protection Act and Fire Safety Act. These are administered by other government agencies. The purposes of these legislations are described in **Annex B**.

3.4 Codes of Practice & Other Guidelines

Besides legislation, Codes of Practice provide practical safety and health guidance for specific work areas. These are jointly developed by the industry and regulatory agencies under the auspices of the Standards, Productivity and Innovation Board (SPRING Singapore).

When the WSH Act came into effect on 1 March 2006, the Commissioner for WSH was authorised to approve Codes of Practice for the purpose of providing the industry with practical guidance with regard to the upkeep of safety and health standards at the workplace. With the formation of the WSH Council on 1 April 2008, the WSH Act was amended to transfer the power to issue, approve, amend, or revoke Codes of Practice to the WSH Council. The WSH Council works in close collaboration with the industry to identify areas where practical guidance is required to address improvements in WSH standards. The WSH Council will then set industry standards for these areas, which may include standards for WSH management systems, specific trades and operation of specific equipment.

The Ministry of Manpower and the WSH Council also issue guidelines on specific subject matters such as handling and removal of asbestos to complement regulations on the subject.

A list containing the Approved Codes of Practices (ACOP) as well as other relevant legislation and guidelines pertaining to WSH can be found in **Annex B**.

Codes of Practice

SINGAPORE STANDARD
CP 79 : 1999
(PCS 13.100.91.010.01)

CODE OF PRACTICE FOR
Safety management system
for construction worksites
(Incorporating Erratum No. 1, November 1999)

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Productivity and Standards Board

A Guide to the
Workplace Safety and Health Act

MINISTRY OF
MANPOWER

Risk Compendium

COMPENDIUM OF TYPICAL HAZARDS ASSOCIATED WITH ERECTION OF SCAFFOLDS AND THEIR CONTROL MEASURES IN THE CONSTRUCTION INDUSTRY

ERECTION OF SCAFFOLDS

[Refer to Technical Advisory for Scaffolds¹](#)

Hazards	Possible Control Measures	Useful Tips/Links
Hit by falling materials from lorry/truck	<ul style="list-style-type: none"> Assign a competent person to receive materials Supervise securing, packing/unpacking work Check on lorry/truck capacity Use proper certified lifting equipment Employ competent personnel Conduct briefing for suppliers on precautionary measures Employ qualified personnel Ensure that vehicle is parked on firm and level ground Conduct briefing to supplier on delivery route and precautionary measures 	See Appendix Figure 1
Crushed by overturning vehicle	<ul style="list-style-type: none"> Use designated access Assign a competent person to supervise 	

Guidelines

3.5 International Labour Organizations Conventions

As a member state of the International Labour Organisation (ILO), Singapore is committed to aligning our WSH framework with internationally recognised core labour standards. Periodic reviews of our workplace policies and laws are done to ensure alignment with observed international standards.



International Labour Organization
Promoting Decent Work for All

3.6 Work Injury Compensation Act

The government also regulates the right of employees to compensation in the event of work-related injury, death or occupational disease under the Work Injury Compensation (WIC) Act.

The WIC Act took effect on 1 April 2008 following amendments to the former Workmen's Compensation Act. The amendments extended coverage of the Act to almost all employees³. Covering about 2.1 million employees, the WIC Act provides access to a simple and quick way of settling claims for work-related injuries. An employee claiming under the WIC Act is not required to prove that his employer was at fault for the accident. He only needs to show that he was injured in the course of work. The injured employee can claim from his employer medical leave wages, medical expenses incurred within one year from the date of the accident or up to a cap on \$25,000, whichever is lower, and a lump-sum payment for permanent incapacity, if any⁴. A lump-sum payment is also payable to the dependants of an employee who met with a fatal accident at work.⁵



The work injury compensation insurance is provided by the private sector and the premiums are market-driven. It is mandatory for their employers to purchase work injury compensation injury insurance for employees who work in sectors that face higher workplace risks. For the remainder, employers have the option of buying insurance or being self-insured. Employers will be required to pay compensation in the event of a valid claim, even if they do not have insurance.

³ Officers from the Singapore Armed Forces, Home Team and domestic workers are excluded from coverage of the WIC Act.

⁴ The compensation amount payable is subjected to a maximum and minimum limit as follows: Maximum limit = \$180,000 x [% loss of earning capacity]; and Minimum limit = \$60,000 x [% loss of earning capacity].

⁵ The compensation amount payable to the dependents of a deceased employee is subjected to a maximum limit of \$140,000 and minimum limit of \$47,000.

4. Authorities or Bodies Responsible for Workplace Safety and Health

This section describes the regulatory agencies and industry bodies that are responsible for WSH in Singapore.

4.1 Ministry of Manpower

Legislation relating to WSH is administered by the Commissioner for Workplace Safety and Health under the Ministry of Manpower (MOM). MOM's mission is to work with employers and employees to achieve a globally competitive workforce and great workplace, for a cohesive society and a secure economic future for all Singaporeans. Ensuring that our workplaces are safe and healthy for the workforce contributes to the overall mission of creating a great workplace.

The Occupational Safety & Health Division (OSHD) is the division within MOM primarily responsible for ensuring the safety, health and welfare of the workforce.

Occupational Safety & Health Division



The Division promotes WSH at the national level. It works with employers, employees and all other stakeholders including the Workplace Safety and Health Council to identify, assess, and manage WSH risks so as to eliminate death, injury and ill health.

The Division is headed by the Commissioner for WSH and is staffed by approximately 240 officers with about 151-gazetted inspectors across four departments performing various functions.



- **OSH Inspectorate**

The Inspectorate focuses on reducing safety and health risks at workplaces by conducting inspections and surveillance of workplaces to ensure that workplaces maintain an acceptable level of WSH standards. The Inspectorate also investigates accidents and shares lessons learnt from the accidents with the industry.

- **OSH Policy, Information and Corporate Services Department**

The Department drives the divisional efforts through sound policies & strategic planning while striving for organization excellence, and analyses and identifies emerging WSH trends and risks by leveraging on effective information systems, quality resources and astute business intelligence. The Department also supports the Division in the areas of financial management, registry and day-to-day office administration as well as ensures continuous improvement in customer responsiveness through monitoring of customer service standards.

- **OSH Specialists Department**

The Department provides specialist support in the development of WSH standards and best practices, as well as the investigation into complex accidents and occupational diseases. The Department conducts technical and scientific research, develops and implements strategies and targeted programmes for specific WSH hazards and industries. The Department also collaborates with international organisations and national institutes in projects, information exchange, visits and training.

- **Work Injury Compensation Department**

This Department administers the Work Injury Compensation system to assist injured employees and dependants of deceased employees in claiming work injury compensation. It also administers the Incident Reporting system for workplace accident, dangerous occurrence and occupational disease.

4.2 Workplace Safety and Health Council

To drive strong industry ownership of WSH outcomes, the WSH Advisory Committee (WSHAC) was formed in September 2005, comprising 14 eminent individuals, with wide industry representation, appointed by the Minister for Manpower. The role of the WSHAC was to advise MOM on WSH standards, promotion and training, as well as address the unique challenges of key industry sectors. In November 2006, the International Advisory Panel on WSH recommended an expanded scope for the WSHAC. To do this, the WSHAC would have to be evolved into a full-fledged Council with executive functions. MOM accepted the recommendation and announced in October 2007 that the WSH Council would be formed by April 2008.



On 1 April 2008, the WSH Council was formed to take on executive powers to spearhead WSH initiatives, through the WSH (Amendment) Act 2008. The WSH Council comprises 16 leaders from the key industry sectors (such as construction, manufacturing, petrochemical, and logistics), the Government, unions and professionals from the legal, insurance and academic fields.

The WSH Council's main functions are to:

- Build the capabilities of industry to better manage WSH
- Promote safety and health at work and recognise companies with good WSH records
- Set acceptable WSH practices

The WSH Council's mission is to lead industry efforts in strengthening capabilities and building a progressive culture in WSH, in order to achieve the national WSH vision. The WSH Council works closely with MOM and other government agencies, industries, unions and professional associations to develop strategies to raise WSH standards and reduce the workplace fatality and injury rates in Singapore.

Table 4: Five Industry and Two Functional Committees Formed Under the WSH Council

Industry Committees	Functional Committees
<ul style="list-style-type: none"> • Construction and Landscaping • Healthcare • Logistics and Transportation • Marine Industries • Metalworking and Manufacturing 	<ul style="list-style-type: none"> • Engagement and Outreach • Industry Capability Building

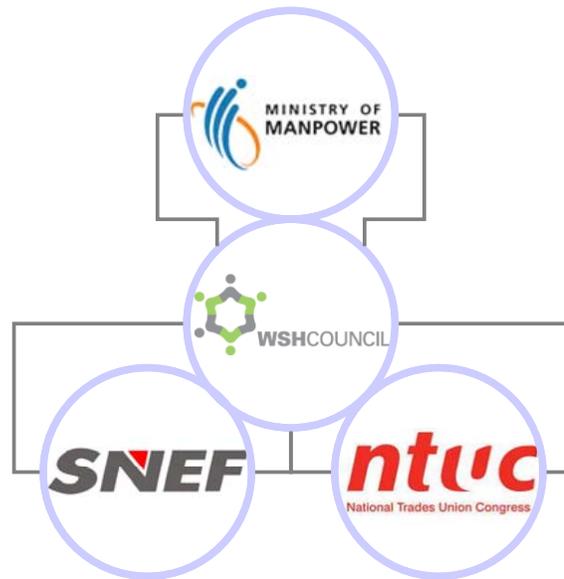
A summary of the WSH Council's key initiatives under each of its main functions can be found in **Annex C**. More information on the WSH Council can be found at wshc.gov.sg.

4.3 Industry Associations and Professional Bodies

Besides the tripartite partners, various industry associations and professional bodies are regularly consulted in the formulation of policies or legislation. All proposed legislations are also posted on the internet via an e-consultation portal to solicit industry and public feedback.

These associations and professional bodies are also regularly involved in co-organising various outreach programmes, seminars and workshops for the industry. A list of our regular partners can be found in **Annex D**.

4.4 Tripartite Coordination and Collaboration



A unique, co-operative tripartite mechanism amongst workers, employers and the government is long practised in Singapore. This approach has been successful in cultivating constructive workplace relations in Singapore. It has helped companies and the economy to grow, as well as create jobs for the workforce.

This mechanism has also proven useful in advancing WSH in Singapore. The tripartite partnership between MOM, together with Singapore National Employers Federation (SNEF) and National Trades Union Congress (NTUC), has been instrumental in bringing about close consultation and communication avenues between the government and representatives of employers and workforce on WSH issues. The formation of the WSH Council is expected to foster even greater coordination and collaboration between the regulator and the industry stakeholders.

5. Implementation of Workplace Safety and Health Strategy: Means and Tools

To guide the future development of programmes and initiatives, the WSH2015 – A Strategy for WSH was crafted after extensive consultation undertaken by the MOM, the former WSHAC and other industry partners.

Collectively, three Strategic Outcomes were drawn up to guide the achievement of Singapore's desired WSH 2015 landscape and vision. These outcomes set out our national targets for a world-class regime in WSH, articulate the characteristics that Singapore must demonstrate to become a Centre of Excellence for WSH and describe the behaviour that stakeholders must possess for a vibrant WSH culture to be integrated as a way of life.

The WSH 2015 Strategic Roadmap



This section outlines the implementation of the various means and tools to enforce, engage, promote as well as build capability to achieve safe and healthy workplaces. Further details are in the *WSH 2015 Strategy* document.

Strategy 1: Building Strong Capabilities to Better Manage Workplace Safety and Health

5.1 Incident Reporting

The WSH (Incident Reporting) Regulations set the requirement for reporting work-related accidents, occupational diseases and dangerous occurrences to the Ministry. Employers also report accidents and occupational diseases for compensation purposes under the WIC Act.

Reports are submitted to the Ministry via an online incident reporting system (known as iReport). The database of accidents and incidents reported is analysed by OSHD to identify trends in WSH and identify hotspot areas for intervention.

In addition, a WSH Hotline is available for members of the public and workers to report on unsafe work practices and conditions. The hotline is widely publicised and is intended to keep employers on the alert in maintaining a safe and healthy work environment for their workers and members of the public.



5.2 WSH Professional and Personnel Supporting the Industry

The industry is supported by groups of WSH professionals and other personnel providing various WSH services. They include WSH Auditors, WSH Officers, WSH Coordinators, Designated Factory Doctors, Nurses, Industrial Hygienists, as well as other WSH Practitioners working in the industry. The list and estimated number of such personnel is in **Annex E**.

5.3 Competency Building through Training and Education

Under the law, employers are required to provide adequate instructions, information, training and supervision to their employees so that they can carry out their work safely. Thus, all employers should ensure that their workers, supervisors and managers demonstrate basic competencies in WSH. They should possess sufficient knowledge to enable them to recognise potentially hazardous situations, be aware of their responsibilities under the WSH Act and know their roles in ensuring safe working conditions. Such knowledge could be imparted through formal courses or through on-the-job trainings.

Training Courses Required for Specific Personnel

At present specific categories of personnel such as Forklift Operators, Lifting Supervisors, Scaffold Supervisors are required by law to undergo training for the purpose of ensuring that the work they perform or supervise can be carried out safely. There are 41 such courses spanning various trades and occupation. The list of these courses is in **Annex F**. These courses are conducted by more than 100 external training providers

accredited by MOM. Each year more than 100,000 workers, supervisors and other personnel undergo training in these training centres.

Building Generic WSH Competencies

To assist the industry, MOM works with WSH Council and the Workforce Development Agency (WDA) to develop generic competency standards expected for employees at the operations, supervisory and managerial levels. The generic WSH competency standards have been co-developed with WDA as a module under WDA's Employability Skills System (ESS) which is part of the National Workforce Skills Qualification (WSQ) System.

Starting from May 2007, generic WSH competency modules were incorporated in the training of workers, supervisors and managers to ensure that WSH practices remain one of the key elements in any skills development.

Table 5: Competency Elements Identified for Three Levels

COMPETENCY ELEMENTS		
Operations Level (Workers)	Supervisory Level (Line supervisors and middle management)	Managerial Level (Senior Management)
<ul style="list-style-type: none"> ▪ Identify responsibilities under WSH Act ▪ Observe hazard identification and risk control procedures ▪ Contribute through consultation and participation for the management of WSH 	<ul style="list-style-type: none"> ▪ Identify responsibilities under WSH Act ▪ Interpret WSH policies, procedures and programmes ▪ Educate workers on WSH policies, procedures and programmes ▪ Implement and monitor participation and consultation for the management of WSH ▪ Implement and monitor organisation risk management procedures 	<ul style="list-style-type: none"> ▪ Identify responsibilities under WSH Act ▪ Establish and maintain the framework for the WSH system ▪ Establish and maintain participation and consultation for the management of WSH ▪ Establish and maintain organisation's risk management procedures ▪ Evaluate organisation's WSH system, policies, procedures and programmes

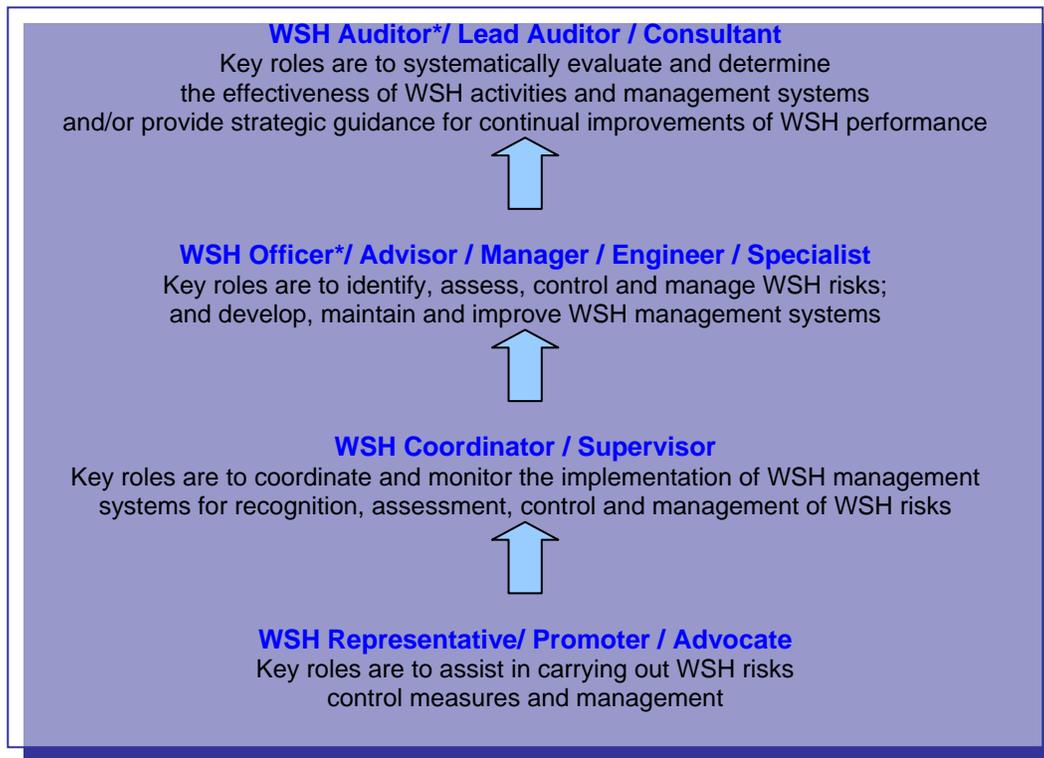
Trade-Specific Training

A similar WSH competency training approach was adopted in the conduct of the trade-specific training. Commencing with the marine sector, 13 trades were identified. In the first phase, 3 trades (forklift, metal scaffolding and rigger & signalman) were selected for the development of training programmes for the workers and supervisors. The training programmes for the remaining 10 trades are currently being developed and are expected to be completed by early 2009. With the experience gained from the marine sector, the development of 19 competency-based trade-specific training for the construction sector is expected to commence in the third quarter of 2009.

WSH Professional Framework

The development of this framework was completed in December 2007. It details four levels of occupations in the WSH profession, namely, WSH Representative, WSH Coordinator, WSH Officer and WSH Auditor. Encompassing the full spectrum of the WSH profession, it supports career progression at the different levels.

Table 6: WSH Professionals Career Pathway



More details on competency building can be found in the strategy document on “Building WSH Competencies in Singapore”.

Strategy 2: Implementing an Effective Regulatory Framework

5.4 Key Enforcement Thrusts

OSHD is guided by five key enforcement thrusts, which are summarized below.



Programme-Based Engagement

The National Programme-Based Engagement (ProBE) is an intelligence-led and targeted approach towards tackling WSH problems in “hotspots” areas. These “hotspots” were identified from an analysis of past accidents trends, particularly those that contribute to workplace fatalities and serious incidents. The objective of the ProBE programme is to reduce the number of fatalities and injuries in the targeted areas through a systematic process of engagement which is complemented by enforcement.

During the early phases of the programme, workplaces that fall within the scope of the “hotspots”, particularly those with high accident records, will be identified for the purposes of outreach and engagement. As part of the process, technical advisories are developed by OSHD’s specialists and seminars are conducted in partnership with the WSH Council and other industry stakeholders to reach out to the affected stakeholders. Thereafter, OSHD’s inspectors will conduct their enforcement exercises on the selected workplaces. The key learning points and outcomes from the enforcement actions are shared with the industry so as to further engage them in the effort to build up their capability to manage the safety and health risks of their workplaces.

Business under Surveillance

Workplaces with higher risks and those with poor safety and health performance (such as those with fatal or serious accidents) are monitored under the Business under Surveillance (BUS) programme. Under the scheme, OSHD's inspectors would closely monitor these establishments and where appropriate, assist them to improve the management of safety and health at their respective workplaces. Members of top management of these businesses are also required to develop action plans to improve their WSH performance. Such workplaces are given specific WSH outcomes to achieve before they are allowed to exit from the programme.

Major Hazardous Installations

Factories that undertake work activities that have the potential for catastrophic accidents such as the shipyards and petrochemical plants are placed under the Major Hazardous Installations (MHI) programme. These workplaces may not necessarily be deemed as "hotspots" and some may even have exemplary WSH systems in place and good WSH performance. Nonetheless, due to the high-risk nature of their work operations, any dangerous occurrences at such workplaces can endanger the public and cause widespread damages. Therefore, OSHD works closely with these establishments to help supplement their WSH protocols and prevent complacency from setting in.

Reactive-Based Enforcement

OSHD's inspectors attend to complaints raised by the industry or members of the public concerned over unsafe work practices or conditions. The Ministry has a hotline which is widely publicised and provides an avenue for valuable ground intelligence from whistle-blowers and concerned members of public. All complaints are assessed and responded to in accordance with the severity of the WSH lapses being reported.

Best Practices Workplaces



OSHD also conducts visits to workplaces that have demonstrated outstanding safety and health practices. In line with the strategy to recognise best practices, the intent of such visits is to build up the capabilities of OSHD's inspectors and provide them with a first hand experience of how best practices in WSH are implemented. OSHD's inspectors can in-turn provide more practical guidance to other workplaces in achieving better WSH standards.

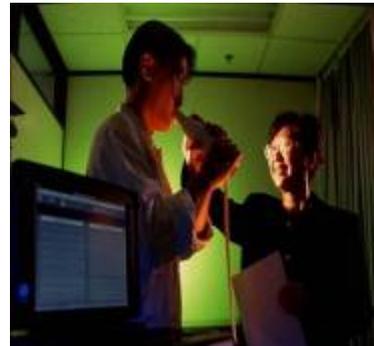
5.5 Hygiene and Medical Surveillance of High Risk Workplaces

Exposure levels of workplace health hazards provide a good indicator of the conditions in the work environment. Workplaces with specific hazards are required to have regular industrial hygiene monitoring and medical surveillance, including biological monitoring of exposed workers. Factories with 10 or more workers exposed to excessive noise are required to monitor the environmental noise level at least once every three years. Regular workplace monitoring of air contaminants by a competent person is also required if there is exposure to toxic substances. Factory occupiers or employers must ensure that employees are not exposed to toxic substances above the Permissible Exposure Levels (PEL).

Industrial hygiene data from MOM's assessments of high-risk workplaces, as well as from MOM workplaces with in-plant industrial hygiene monitoring, is maintained in a National Database for Noise and Chemical Exposure. This enables MOM to identify such workplaces, evaluate trends in exposure levels and advise employers regarding control measures and appropriate monitoring programmes. Overall, the average noise levels in high-risk workplaces remain satisfactory while most workplaces do not exceed the PEL in terms of chemical exposure.

In addition, under the Factories (Medical Examinations) Regulations, workers in occupations involving exposure to 19 prescribed hazards must undergo compulsory medical examinations conducted by Designated Factory Doctors. The medical surveillance programme aims to detect excessive occupational exposure to specific health hazards so as to prevent overt disease. It is an important part of Singapore's integrated surveillance strategy which involves evaluating and monitoring potential health risks, active identification of high-risk factories, biological monitoring of workers' exposure and implementing of measures to control exposure to hazardous substances.

In 2007, over 89,286 employees from 1,663 workplaces were monitored. The overall detection rate of new work-related abnormal medical results remains low, with a decrease from 7.3 per 1,000 workers examined in 2006 to 5.4 in 2007. Detection of abnormal results among workers examined for exposure to noise came mainly from the shipbuilding and metalworking industries. For exposure to chemicals, a total of 17 workers had biological levels exceeding 80% of the recommended biological threshold limit values (BTLV). This included six workers who were exposed to arsenic in a factory handling industrial waste and five who were exposed to inorganic lead in a lead-stabilizer manufacturing factory.



5.6 Licensing and Notification Requirements

Under the factory notification scheme, employers only have to submit a notification to MOM before they can commence work. The notification will be a one-time effort which is easily done online and is free of charge. Under this scheme, employers will have to declare that they have implemented risk management in the workplaces before they can commence work. This declaration makes it necessary for employers to be even more actively involved in ensuring the implementation of risk management.

Not all factories are included in this factory notification scheme. Higher risk factories such as construction worksites, shipyards, metalworking companies, wafer fabrication, petrochemical, chemical and pharmaceutical plants are required to apply for a Certificate of Registration with the Commissioner for WSH before they can commence their operation. This licensing regime enables MOM to monitor such workplaces through regular inspections and other activities.

Specific personnel such as WSH Officers, Crane Operators, Boiler Attendants, Steam Engineers and specific contractors such as cranes and scaffold contractors are also required by law to seek prior approval from MOM before carrying out such works. Such licensing ensures that basic competency levels are met before undertaking the work as the nature of work can post significant safety and health risks.

Generally, equipment used at work is required to be properly designed, manufactured and safe for their intended use. In particular, pressure vessels and lifting equipment are also registered with MOM and subjected to periodic inspection by law. Equipment are to be used only by persons who have received adequate information, instruction and training, accompanied by suitable safety measures like protective devices, markings and warnings.

5.7 Safety and Health Management System

Under the law, selected workplaces are required to implement safety and health management systems. These workplaces include:

- Construction worksites
- Metalworking factories
- Oil and petrochemical plants
- Semiconductor plants
- Shipyards

The safety and health management system is intended to be a self-regulatory tool so that companies are able to manage WSH systematically. The management systems are required to be periodically audited to ensure that the system is robust and properly implemented.

5.8 Accident Investigation

MOM responds to fatal and serious accidents or dangerous occurrences by conducting investigations, with the objective of determining their cause(s) and identifying gaps and lapses in WSH management.

A case management approach has been adopted when responding to the accidents. At the onset of an accident, a case management team would convene to first identify and strategise the scope of response actions before formulating comprehensive corrective plans and programmes. The case management provides a systemic and expeditious approach towards case resolution. Through such an approach, MOM is able to intervene strategically to bring about an improvement in the WSH standards across the industry which is not limited to localised improvements.

Upon the conclusion of the investigation, legal actions would also be initiated against the parties deemed culpable for the cause of the accidents. Selected legal actions would also be publicised.

5.9 Legal Actions

Under the WSH Act, the Commissioner for WSH has the authority to issue Remedial Orders and Stop Work Orders when required.

A Stop Work Order may be issued to require a workplace to cease all work in the workplace or a specified work activity or process until appropriate corrective measures have been taken to ensure that work can be carried out safely. It is issued in instances where there are severe lapses in safety and health conditions in the workplace which may cause imminent danger to the workers.



A Remedial Order is issued in cases where there are serious lapses and deficiencies in the implementation of safety and health management systems or safe work practices. The Remedial Order is a regulatory tool that is designed to improve safety and health at workplaces, whether or not there is an imminent danger to workers.

The Commissioner may also issue Notices of Non-Compliance, compound the offences or take prosecutorial actions against offenders for violations under the WSH Act or its subsidiary legislations.

Strategy 3: Promoting the Benefits of WSH and Recognising Best Practices

5.10 Research, Benchmarking and Setting Acceptable WSH Practices

Research and Benchmarking

The WSH Council conducts research and environment scanning to keep abreast of both local and international WSH developments. By analysing and forecasting trends in WSH, the WSH Council helps identify emerging challenges and develop new measures to improve WSH outcomes in Singapore.

Setting Acceptable Practices

The WSH Council drives the adoption of good WSH practices with various stakeholders in the industry. Working in close collaboration with other standard-setting bodies to develop national WSH standards, the WSH Council leads the development of industry guidelines and technical advisories, as well as establishes approved codes of practices for the industry.

5.11 Information Sharing and Dissemination

WSH reports, statistical findings, guidelines, case studies and other relevant documents are jointly published by the WSH Council and MOM to provide the public with an overview of the WSH performance at the industry and company levels, as well as for the purpose of disseminating and promoting WSH awareness.

WSH Bulletin

The WSH Council also utilises a tool known as the “WSH Bulletin”. It is an application that timely disseminates and broadcasts WSH-related messages to its e-mail subscribers in order to create “top of the mind” awareness of WSH. This is an important channel of publicising learning points from selected accident case studies, new legislative and policy changes, WSH conferences, seminars and courses, guidelines and other relevant information. The system enables the profiling of subscribers, the generation of subscriber information reports and the utilization of multi-media content. E-mail alerts are sent out regularly to nearly 12,500 subscribers of the WSH Bulletin.



World Health Organization Global Web Portal

OSHD maintains a database of WSH good practices, safety solutions and health hazards which is made available through the World Health Organization (WHO) Global Web Portal. Most of these case studies were documented from the recipients of the annual WSH Best Practices Award. The indexed database has a search function for

retrieval by industry, hazard or keywords, with digital images of control measures, as well as information on cost of implementation. The current database has 81 case studies comprising noise and chemical control, as well as ergonomic and safety solutions.

5.12 Promotion and Outreach

Promotional activities, seminars, workshops are organized all year round to create interest, promote awareness and share best practices on WSH amongst the management, employees and members of public. With an industry-led promotional and outreach approach being the key strategy, the WSH Council has been very active in engaging the industry to take the lead in these activities.

The annual National Workplace Safety and Health (NWSH) Campaign is the signature WSH event in Singapore. The month-long event aimed to raise awareness of WSH in everyone. Although the CEOs, the human resource community, managers, supervisors, WSH professionals and employees were targeted in many activities, the campaign seeks to promote the WSH culture in all Singaporeans.

The NWSH Campaign 2008 was held from 29 April to 30 May 2008 and featured a 40-foot WSH Container exhibition for the first time at the campaign. Throughout the course of one year, the container would be brought to 200,000 employees at over 100 workplaces such as factories, construction worksites and shipyards. The container exhibition aimed to raise awareness on safety and health at workplaces and make learning more interactive. The container covers areas such as work hazards, ergonomics, protecting one's hearing in a noisy work environment, safe handling of chemicals and working safely at heights. The opening ceremony of the NWSH Campaign 2008 was graced by Singapore's Prime Minister Mr Lee Hsien Loong and marked the official launch of the WSH Council, a significant milestone in the WSH landscape in Singapore.



5.13 Incentives and Awards Schemes

There are no direct monetary incentives for good WSH performance at the national level. Instead, the industry is encouraged to adopt good WSH standards to reap benefits of higher productivity and to gain a competitive advantage.

The government as a major infrastructure developer also places a premium on WSH performance by evaluating construction tenders through a Price-Quality Method (PQM) where safety and health constitute part of the criteria during tender evaluation. This initiative constitutes part of the effort to drive home the message that adopting good WSH practices is also good for business.

Risk Management Assistance Fund

To assist small and medium enterprises (SMEs) in implementing risk assessment, the government set up a \$5 million Risk Management Assistance Fund (RMAF) in April 2006 to help SMEs defray the cost of engaging a consultant to build their internal capability in conducting risk assessments. Successful applicants would be funded up to a maximum of 70% of the cost of hiring the consultant or \$7,500 whichever is lower.

By 31 July 2007, the \$5 million set aside for the RMAF was fully committed. This prompted the former WSHAC to propose a top-up of the fund. The proposal was accepted by MOM and as of November 2007, the RMAF received a top-up of \$8 million to be disbursed over a course of four years, up to 2011. For this second tranche, new sectors which are covered by the WSH Act with effect from 1 March 2008 will also be able to apply for funding.

Whilst the RMAF had previously offered co-funding up to 70% of the consultancy costs with a cap of \$7,500 per company, the cap had been lowered to \$3,500 per company for the second tranche in order to benefit more companies. The second tranche is estimated to benefit more than 1,850 SMEs by the year 2010.

Workplace Safety and Health Awards

The WSH Awards aims to reward both organisations and persons for actively striving to create safer and healthier workplaces. An annual event is organised to feature their effort towards WSH and celebrate their achievements. Award winners are encouraged to share their experiences, best practices and innovative risk control solutions with their industry counterparts as part of the learning and sharing for the industry.

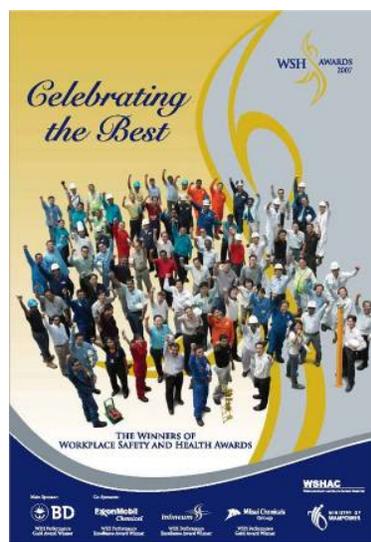


Table 7: WSH Awards Scheme

Award Title	Description
WSH Best Practices Awards	Recognise companies for their efforts in eliminating or controlling WSH hazards.
WSH Developer Awards	Recognise developers who play an active role in ensuring good WSH practices among their contractors.
WSH Innovation Awards	Recognise project teams with innovative solutions which improve safety and health in the workplace.
WSH Officer Awards	Recognise registered WSH Officers who help cultivate safe and healthy workplaces in Singapore.
WSH Performance Awards	Recognises companies or organisations that have performed well in WSH through the implementation of sound safety and health management systems.
WSH Supervisor Awards	Recognise exemplary performance and valuable contributions by supervisors in cultivating safe and healthy workplaces in Singapore.
Safety and Health Award Recognition for Projects	Recognise projects or worksites that have achieved good WSH results through implementation of good safety and health management system.

Strategy 4: Developing Strong Partnerships Locally and Internationally

5.14 International Collaboration

One of the strategic outcomes for Singapore is to be renowned as a Centre of Excellence for WSH. MOM builds and maintains network and collaboration with key international and regional WSH organizations in the areas of information sharing, standards development, research and training.

Singapore has over the years participated actively and engaged our overseas partners and contacts at various international and regional conferences, meetings and training courses as well as during visits. The organizations included the Association of Southeast Asia Nations Occupational Safety and Health Network (ASEAN-OSHNET), World Health Organization (WHO), International Labour Organization (ILO), International Association of Labour Inspection (IALI), Industrial Accident Prevention Association (IAPA), International Commission on Occupational Health (ICOH), European Agency for Safety and Health at Work, Canadian Centre for Occupational Safety and Health (CCOHS), Health and Safety Executive (HSE), US Chemical Safety Board (CSB) and many others.

OSHD regularly conducts WSH training for the region. For example, a one-week workshop was conducted for Cambodia in 2007 under the auspices of ASEAN-OSHNET. From 2005 to 2007, OSHD also conducted training in occupational dermatology for doctors and nurses in Malang, Indonesia under the Singapore International Foundation. Singapore also assisted Cambodia in developing capability in chemical management through a WHO consultative project in August and September 2007.

Singapore also participates actively in international WSH collaborations. For example, Singapore hosted a policy dialogue on National OSH Frameworks among ASEAN countries in January 2007. The dialogue concluded with the adoption of an action plan among all ASEAN-OSHNET members to further improve the WSH standards in the region. Other collaborative efforts include attachment and exchange programmes between WSH specialists and civil servants from the other countries. OSHD also contributes to the network of WSH information hosted by WHO and ILO as well as participates in various collaborative projects.

By participating in these collaborations, Singapore hopes to learn from the other countries and contribute to the global effort of achieving safety and health for all.



6. The Way Forward

Since the reform of the WSH framework in Singapore, we have achieved significant milestones each year through the implementation of various programmes and initiatives under the WSH 2015 Plan of Action.



A New Target, A New Goal

**To reduce workplace fatality rate to 1.8
(per 100,000 employed persons) by 2018**

To have one of the best WSH records in the world

To ensure that we are on-track to achieve the more ambitious target set by Singapore's Prime Minister of 1.8 fatalities per 100,000 employed persons by 2018, the Ministry of Manpower and WSH Council are working together with the industry to refine the *WSH2015 Strategy* to put in place a more robust framework to drive WSH improvements. A dedicated *Workplace Health Strategy* and the setting up of a WSH Institute in Singapore would be the two new hallmarks of the WSH reforms in Singapore.

By building on our past successes and driving new initiatives, Singapore hopes to achieve our aim of a safe and healthy workplace for everyone and making Singapore a country renowned for WSH best practices.

7. Annexes

ANNEX A

List of WSH Subsidiary Legislation

	Title of Legislation	Brief Description
1.	WSH (Composition of Offences) Regulations (Cap 354A, Rg 6)	Legislation to allow the Commissioner to compound an offence in lieu of prosecution
2.	WSH (Construction) Regulations 2007	Legislation that regulates safety and health within construction sites
3.	WSH (Exemption) Order (Cap 354A, O 1)	Legislation that exempts the Singapore Armed Forces from the provision of the Act
4.	WSH (First-Aid) Regulations (Cap 354A, Rg 4)	Legislation that mandates the need for selected workplaces to provide first-aid facilities and to appoint first-aiders
5.	WSH (General Provisions) Regulations (Cap 354A, Rg 1)	Legislation governing basic safety and health requirements within factories
6.	WSH (Incident Reporting) Regulations (Cap 354A, Rg 3)	Legislation that mandates the need for employers, occupiers and medical practitioners to report workplace incidents to the Ministry
7.	WSH (Offences and Penalties) (Subsidiary Legislation under Section 67(14)) Regulations 2006	Legislation that allows contravention of any subsidiary legislation made under the repealed Factories Act which is still in force in factories to be fined under the penalties stated in the said legislation.
8.	WSH (Workplace Safety and Health Officers) Regulations (Cap 354A, Rg 9)	Legislation that regulates the qualifications, training, registration, duties of a WSH Officer as well as mandatory appointment of WSH Officers
9.	WSH (Registration of Factories) Regulations (Cap 354A, Rg 2)	Legislation that mandates the requirement for factories (including construction sites and shipyards) to be registered with the Ministry
10.	WSH (Risk Management) Regulations (Cap 354A, Rg 8)	Legislation that mandates the need for employer, self-employed person and principal to conduct risk assessment and to take steps to mitigate the risk
11.	WSH (Workplace Safety and Health Committees) Regulations 2008	Legislation that mandates the need for occupier of factories to form a WSH committee
12.	WSH (Shipbuilding And Ship-Repairing) Regulations 2008	Legislation that regulates safety and health within shipyards and onboard ships in the harbour
13.	WSH (Transitional Provision) Regulations (Cap 354A, Rg 7)	Legislation that allows certain sections of the repealed Factories Act to continue to be in force

	Title of Legislation	Brief Description
14.	Factories (Abrasive Blasting) Regulations	Legislation that regulates safety and health with regard to the use of abrasive blasting
15.	Factories (Asbestos) Regulations	Legislation that regulates safety and health with regard to exposure to asbestos
16.	Factories (Certificate Of Competency — Examinations) Regulations	Legislation that regulates the competency of personnel overseeing and operating steam boilers and internal combustion engines
17.	Factories (Persons-In-Charge) Regulations	
18.	Factories (Explosive Powered Tools) Regulations	Legislation that regulates safety and health with regard to the use of explosive powered tools
19.	Factories (Medical Examinations) Regulations	Legislation that mandates medical examination for persons employed in hazardous occupations
20.	Factories (Noise) Regulations 1996	Legislation that regulates safety and health with regard to exposure to excessive noise
21.	Factories (Operation Of Cranes) Regulations	Legislation that regulates the safe use of cranes, including mobile and tower cranes and the need for qualified operators, riggers, signalmen and lifting supervisors
22.	Factories (Registration and Other Services - Fees and Forms) Regulations	Legislation that regulates fees to be charged for pressure vessel inspections and approval of third party inspection agency, scaffold contractor, crane contractor and authorised examiner
23.	Factories (Safety Training Courses) Order	Legislation that mandates safety and health training courses to be undertaken by specific personnel.
24.	Factories (Scaffolds) Regulations 2004	Legislation that regulates safety and health with regard to the installation, dismantling and use of scaffolds

ANNEX B

Other Legislations, Codes of Practices and Guidelines Relevant to WSH

(1) APPROVED CODES OF PRACTICE

	Title	Reference
1.	Code of Practice for Entry Into and Safe Working in Confined Spaces	CP 84
2.	Code of Practice for Factory Layout - Safety, Health and Welfare Considerations	CP 27
3.	Code of Practice for Formwork	CP 23
4.	Code of Practice for Lockout Procedure	CP 91
5.	Code of Practice for Safe Use of Powered Counterbalanced Forklifts	CP 101
6.	Code of Practice for Safety in Welding and Cutting (and Other Operations Involving the Use of Heat)	SS 510
7.	Code of Practice for Safety Management System for Construction Worksites	CP 79
8.	Code of Practice for Scaffolds	CP 14
9.	Code of Practice for Selection, Use and Maintenance of Respiratory Protection Devices	CP 74
10.	Code of Practice for Suspended Scaffolds	CP 20
11.	Code of Practice for Temporary Electrical Installations – Construction and Building Sites	CP 88 – 1
12.	Code of Practice for Temporary Electrical Installations - Shipbuilding and Ship-repairing Yards	CP 88 – 3
13.	Code of Practice for the Lifting of Persons in Work Platforms Suspended from Cranes	CP 63
14.	Code of Practice for the Safe Use of Mobile Cranes	SS 536
15.	Code of Practice for the Safe Use of Tower Cranes	CP 62
16.	Code of Practice for the Selection, Use, Care and Maintenance of Hearing Protectors	CP 76
17.	Graphical Symbols - Safety Colours and Safety Signs - Design Principles for Safety Signs in Workplaces and Public Areas	SS 508 – 1
18.	Graphical Symbols - Safety Colours and Safety Signs - Safety Signs Used in Workplaces and Public Areas	SS 508 – 3
19.	Industrial Safety Helmets, 2005	SS 98
20.	Personal Eye Protectors - General Requirements	SS 473 – 1
21.	Personal Eye Protectors - Selection, Use and Maintenance	SS 473 – 2
22.	Personal Protective Equipment – Footwear – Safety Footwear	SS 513 – 1
23.	Personal Protective Equipment – Footwear - Test Methods for Footwear	SS 513 – 2

Note: CP - Code of Practice, SS – Singapore Standards

(2) LEGISLATION, CODES OF PRACTICES AND GUIDELINES FOR SPECIFIC WSH ISSUES

	Scope of Coverage	Legislation	Codes of Practice / Guidelines (not exhaustive)
1.	Asbestos	<ul style="list-style-type: none"> Environmental Protection and Management Act (Chapter 94A)¹ Factories (Asbestos) Regulations 	<ul style="list-style-type: none"> Guidelines on the Removal of Asbestos Materials in Buildings Guidelines on the Handling of Asbestos Materials
2.	Biological	<ul style="list-style-type: none"> Infectious Disease Act (Chapter 137)² Private Hospitals and Medical Clinics Act (Chapter 248)³ Biological Agents and Toxins Act (Chapter 24A)⁴ 	<ul style="list-style-type: none"> Singapore Biosafety Guidelines for Research on Genetically Modified Organisms⁵ School Science Laboratory Safety Regulations⁶
3.	Chemical Hazards	<ul style="list-style-type: none"> WSH (General Provisions) Regulations Environmental Protection and Management Act (Chapter 94A)¹ 	<ul style="list-style-type: none"> Guidelines on Prevention and Control of Chemical Hazards Guidelines on Risk Assessment for Occupational Exposure to Harmful Chemicals Guidelines on Solvent Degreasing CP 61 - CP for Packaging and Containers for Hazardous Substances SS 286 - SS on Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods
4.	Confined Space Safety	<ul style="list-style-type: none"> WSH (General Provisions) Regulations 	<ul style="list-style-type: none"> *CP 84 - CP for Entry Into and Safe Working in Confined Spaces
5.	Construction Safety	<ul style="list-style-type: none"> WSH (Construction) Regulations 	<ul style="list-style-type: none"> CP 11 - CP for Demolition *CP 14 - CP for Scaffolds *CP 20 - CP for Suspended Scaffolds *CP 23 - CP for Formwork SS 536 - CP for the Safe Use of Mobile Cranes SS 515 - CP for Supervision of Structural Works CP 62 - CP for the Safe Use of Tower Cranes *CP 63 - CP for the Lifting of Persons in Work Platforms Suspended from Cranes

	Scope of Coverage	Legislation	Codes of Practice / Guidelines (not exhaustive)
			<ul style="list-style-type: none"> *CP 88-1 - CP for Temporary Electrical Installations - Construction and Building Sites *CP 88-3 - CP for Temporary Electrical Installations - Shipbuilding and Ship-repairing Yards
6.	Diving	-	<ul style="list-style-type: none"> SS 511 - CP for Diving at Work
7.	Environmental Health and Pollution	<ul style="list-style-type: none"> Environmental Protection and Management Act (Chapter 94A)¹ Environmental Public Health Act (Chapter 95)⁷ Radiation Protection Act (Chapter 262)⁸ 	<ul style="list-style-type: none"> CP 100 - CP for Hazardous Waste Management
8.	Ergonomics and Lighting	-	<ul style="list-style-type: none"> SS 514 - CP for Office Ergonomics CP 99 - CP for Manual Handling SS 531 - CP for Lighting of Indoor Workplaces
9.	Fire Safety	<ul style="list-style-type: none"> Fire Safety Act (Chapter 109A)⁹ WSH (General Provisions) Regulations 	-
10.	First Aid	<ul style="list-style-type: none"> WSH (First Aid) Regulations 	<ul style="list-style-type: none"> Guidelines on First Aid Requirements
11.	Machinery Safety	-	<ul style="list-style-type: none"> CP 42 - CP for Guarding and Safe Use of Woodworking Machinery *CP 91 - CP for Lockout Procedure *SS 536 - CP for Safe Use of Mobile Cranes *CP 62 - CP for Safe Use of Tower Cranes CP 53 - CP for Safe Use of Industrial Robots *CP 101 - CP for Safe Use of Powered Counterbalanced Forklifts
12.	Medical Examinations	<ul style="list-style-type: none"> Factories (Medical Examinations) Regulations 	<ul style="list-style-type: none"> Guidelines for Designated Factory Doctors
13.	Noise and Vibration	<ul style="list-style-type: none"> Factories (Noise) 	<ul style="list-style-type: none"> Hearing Conservation

	Scope of Coverage	Legislation	Codes of Practice / Guidelines (not exhaustive)
		Regulations	Programme Guidelines <ul style="list-style-type: none"> Guidelines on Noise Labelling *CP 76 - CP for the Selection, Use, Care and Maintenance of Hearing Protectors CP 99 - CP for Industrial Noise Control
14.	WSH Management Systems	-	<ul style="list-style-type: none"> SS506 – 1: Occupational Safety and Health Management System – Specifications SS506 – 2: Occupational Safety and Health Management System – General guidelines for the implementation of OSH management system SS506 – 3: Occupational Safety and Health Management System – Requirements for the chemical industry *CP 79 - CP for Safety Management System for Construction Worksites

Notes:

* refers to Approved Codes of Practice

¹ An Act to consolidate the laws relating to environmental pollution control, to provide for the protection and management of the environment and resource conservation, and for purposes connected therewith. (Administered by the National Environment Agency)

² An Act relating to quarantine and the prevention of infectious diseases. (Administered by the Ministry of Health)

³ An Act to provide for the control, licensing and inspection of private hospitals, medical clinics, clinical laboratories and healthcare establishments, and for purposes connected therewith. (Administered by the Ministry of Health)

⁴ An Act to prohibit or otherwise regulate the possession, use, import, transshipment, transfer and transportation of biological agents, inactivated biological agents and toxins, to provide for safe practices in the handling of such biological agents and toxins. (Administered by the Ministry of Health)

⁵ By the Genetic Modification Advisory Committee, Ministry of Trade and Industry.

⁶ By the Ministry of Education.

⁷ An Act to consolidate the law relating to environmental public health and to provide for matters connected therewith. (Administered by the National Environment Agency, Ministry of the Environment and Water Resources)

⁸ An Act to control and regulate the import, export, manufacture, sale, disposal, transport, storage, possession and use of radioactive materials and irradiating apparatus, to make provision in relation to the non-proliferation of nuclear weapons and to establish a system for the imposition and maintenance of nuclear safeguards, and to provide for matters connected therewith. (Administered by the National Environment Agency, Ministry of the Environment and Water Resources)

⁹ An Act to make provisions for fire safety and for matters connected therewith. (Administered by Civil Defence Force, Ministry of Home Affairs)

Main Functions and Key Initiatives of the WSH Council

Functions	Key Initiatives				
<p>Build industry capabilities in WSH</p>	<p>Manpower and Competency Curriculum The WSH Council works closely with the Singapore Workforce Development Agency and MOM to build WSH competencies in the workforce through the WSH Professionals Workforce Skills Qualifications (WSHP WSQ). The WSH Council also reviews the criteria for and audits accredited training providers to ensure high training standards.</p> <p>Enterprise Effective WSH management will improve a company’s business performance. Thus, the WSH Council has introduced programmes and tools to assist enterprises in building their WSH capabilities:</p> <ol style="list-style-type: none"> 1. bizSAFE - A five-level programme that recognises SMEs for their effort in acquiring capabilities in risk management and WSH management systems. 2. Construction Safety Audit Scoring System (ConSASS) - An independent assessment audit on the WSH management system that enables cross-comparison of worksites and contractors to better manage resources to improve safety and health at the workplace. 3. Risk Management Assistance Funds (RMAF) – A co-funding assistance scheme for SMEs to implement risk management at the workplace. 				
<p>Promote safety and health at work and recognize companies with good WSH records</p>	<p>To build and promote a progressive WSH culture, the WSH Council actively organizes events and programmes to raise industry participation and highlight the importance of WSH.</p> <table border="1" data-bbox="467 1150 1328 1344"> <thead> <tr> <th data-bbox="467 1150 898 1192">Awards and Recognition</th> <th data-bbox="906 1150 1328 1192">Outreach Activities and Events</th> </tr> </thead> <tbody> <tr> <td data-bbox="467 1192 898 1344"> WSH Awards Safety@Work Creative Awards </td> <td data-bbox="906 1192 1328 1344"> National WSH Campaign WSH Council Forums Mobile Container Exhibition Workers’ Dormitory Visits </td> </tr> </tbody> </table> <p>Publications such as statistical reports and compendiums, newsletters, banners, posters, flyers and videos are available for download from our website.</p>	Awards and Recognition	Outreach Activities and Events	WSH Awards Safety@Work Creative Awards	National WSH Campaign WSH Council Forums Mobile Container Exhibition Workers’ Dormitory Visits
Awards and Recognition	Outreach Activities and Events				
WSH Awards Safety@Work Creative Awards	National WSH Campaign WSH Council Forums Mobile Container Exhibition Workers’ Dormitory Visits				
<p>Conduct research and set acceptable WSH practices</p>	<p>Research and Benchmarking The WSH Council conducts research and environment scanning to keep abreast of both local and international WSH developments. By analysing and forecasting trends in WSH, the WSH Council helps identify emerging challenges and develop new measures to improve WSH outcomes in Singapore.</p> <p>Setting Acceptable Practices The WSH Council drives the adoption of good WSH practices with various stakeholders in the industry. The WSH Council also works in close collaboration with other standard-setting bodies to develop national WSH standards, as well as lead the development of industry guidelines, and establish approved codes of practices for the industry.</p>				

List of Regular Partners

Academia

- Nanyang Polytechnic
- National Technological University
- National University of Singapore
- Ngee Ann Polytechnic
- Singapore Polytechnic
- Temasek Polytechnic

Employers' Organizations

- Singapore Business Federation
- Singapore Manufacturers' Federation
- Singapore National Employers Federation

Employees' Organizations

- Building Construction & Timber Industries Employees' Union
- Health Corporation of Singapore Staff Union
- Metal Industries Workers' Union
- National Trades Union Congress
- Shipbuilding and Marine Engineering Employees' Union
- United Workers of Petroleum Industry

Government Ministries and Statutory Boards

- Building and Construction Authority
- Health Promotion Board
- Housing and Development Board
- Jurong Town Corporation
- Land Transport Authority
- Maritime and Port Authority Singapore
- Ministry of Health
- Ministry of National Development
- National Environment Agency
- National Parks Board
- Singapore Workforce Development Agency
- SPRING Singapore (Standards, Productivity and Innovation Board)

Healthcare Institutions

- Home Nursing Foundation
- National Healthcare Group
- Singapore Health Services

Industry / Trade Associations

- Access and Scaffold Industry Association
- Association of Accredited Advertising Agents (Singapore)
- Association of Aerospace Industries (Singapore)

- Association of Process Industry
- Association of Singapore Marine Industries
- Association of Small Medium Enterprises
- Bedok Safety Group
- Designers Association of Singapore
- General Insurance Association of Singapore
- Real Estate Developers' Association of Singapore
- Singapore Association for Environmental Companies
- Singapore Chemical Industry Council
- Singapore Contractors Association Limited
- Singapore Institute of Surveyors and Valuers
- Singapore Logistics Association
- Singapore Shipping Association
- Society of Project Engineers
- Retail Fuels EHSS Industry Workgroup

Professional Bodies

- Association of Consulting Engineers Singapore
- Back Society of Singapore
- College of Family Physicians Singapore
- Ergonomics Society of Singapore
- Institution of Engineers, Singapore
- Metalworking Industry Safety Promotion Committee
- National Safety Council of Singapore
- Occupational and Environmental Health Society
- Pharmaceutical Society of Singapore
- Singapore Association of Occupational Therapists
- Singapore Chemical Industry Council
- Singapore Dental Association
- Singapore Human Resources Institute
- Singapore Institute of Architects
- Singapore Institute of Directors
- Singapore Institute of Surveyors and Valuers
- Singapore Institution of Safety Officers
- Singapore Medical Association
- Singapore Nurse Association
- Singapore Society of Occupational Health Nurses
- Society of Acoustics
- Society of Naval Architects & Marine Engineers Singapore
- The Law Society of Singapore
- The Singapore Physiotherapy Association

WSH Professionals and Competent Persons Supporting the Industry**(1) STATISTICS**

Professional and Competent Persons	Estimated number, 2007
Competent Persons for Management of Hazardous Substances ¹	1855
Competent Persons for Sampling & Monitoring of Airborne Contaminants ²	361
Designated Factory Doctors ¹	670
Noise Control Officers ¹	391
Noise Monitoring Officers ¹	853
Occupational Health Nurses ³	205
Occupational Health Physicians ¹	32
Occupational Hygienists ¹	50
Occupational Physiotherapists ⁴	500
Occupational Therapists ⁵	320
WSH Auditors ¹	135
WSH Coordinators ⁶	2038
WSH Officers ¹	1451

*Sources:*¹ *Ministry of Manpower, Singapore*² *National Environment Agency, Singapore*³ *Singapore Society of Occupational Health Nurses*⁴ *Singapore Physiotherapy Association*⁵ *Singapore Association of Occupational Therapists*⁶ *Ministry of Manpower, Singapore and Building and Construction Authority Academy.*

The figure refers to the accumulated number of participants who passed the Safety Coordinator Course since the course started in 2001.

Note:

The table above is not exhaustive as it does not include supervisors who perform WSH functions.

(2) DEFINITION OF OCCUPATIONAL TITLES

- **Competent Persons for Management of Hazardous Substances**

Under the WSH (General Provisions) Regulations, hazardous substances must be placed under the control of a competent person who has adequate knowledge of the properties and dangers of the substances. Such a person must have attended and passed a training course on Management of Hazardous Substances jointly organized by National Environment Agency and Ministry of Manpower.

- **Competent Persons for Sampling and Monitoring Airborne of Contaminants**

Where toxic or noxious substances are given off from any process or work, regular workplace monitoring must be conducted by a competent person under the WSH (General Provisions) Regulations. Such a person must have attended and passed a training course on Sampling and Monitoring of Airborne Contaminants jointly organized by National Environment Agency and Ministry of Manpower.

- **Designated Factory Doctors**

Under the Factories (Medical Examinations) Regulations, no person can be employed in specified hazardous occupations unless he has been medically examined by a designated factory doctor (DFD). Persons employed in these occupations must also undergo periodic medical examinations conducted by a DFD who is registered with the Ministry of Manpower. A DFD must be a registered medical practitioner under the Medical Registration Act and has passed the Graduate Diploma in Occupational Medicine or holds a Masters degree in Occupational Medicine (or equivalent) organised by the Division of Graduate Medical Studies, National University of Singapore.

- **Noise Control Officers**

Under the Factories (Noise) Regulations, factories with more than 50 persons exposed to excessive noise (equivalent sound pressure level > 85 dBA over an 8-hr workday) must appoint a competent person to advise the management on all noise control measures. Such a person must have undergone a training course on Industrial Noise Control conducted by Accredited Training Providers.

- **Noise Monitoring Officers**

Under the Factories (Noise) Regulations, factories with more than 10 persons exposed to excessive noise (equivalent sound pressure level > 85 dBA over an 8-hr workday) must appoint a competent person to conduct regular noise monitoring. Such a person must have undergone a training course on Noise Monitoring conducted by Accredited Training Providers.

- **Occupational Health Nurses**

An occupational health nurse is a qualified State Registered Nurse with or without additional qualification in occupational health, such as a Certificate or Diploma in Occupational Health Nursing. The numbers given are members of the Singapore Society of Occupational Health Nurses. Their main role is in the clinical nursing practice, disease prevention as well as promoting employee wellness at the workplace.

- **Occupational Health Physicians**

An Occupational Physician is a registered medical practitioner under the Medical Registration Act with a post-graduate degree in Occupational Medicine (Masters or equivalent) and who has passed a specialist training course (or equivalent) recognised by the Joint Commission on Specialist Training. Such doctors are also accredited with the Specialists Accreditation Board of the Ministry of Health, Singapore. They normally work in their own private clinics and on contract basis, in the academia or for the Government.

- **Occupational Hygienists**

An Industrial Hygienist may be defined as a person having a college or university degree or degrees in Engineering, Physics, Chemistry, or related physical and biological sciences who, by virtue of special studies and training, has acquired competence in industrial hygiene.

- **Occupational Physiotherapists**

Individual industries do not employ physiotherapists. The numbers given are members of The Singapore Physiotherapy Association, an organization representing the profession of physiotherapy in Singapore. The majority work in the hospitals, while some are self-employed and in group practices. Their role is mostly in clinical treatment although they can provide consultation services on ergonomics in workplaces.

- **Occupational Therapists**

There are currently about 280 occupational therapists in Singapore, of whom 188 are members of the Singapore Association of Occupational Therapists. The purpose of occupational therapy is the development and maintenance of a person's capacity throughout life and to perform those tasks and roles essential to productive living, including self-care, daily living, leisure and work.

- **WSH Auditors**

Under the WSH Act, WSH auditors are to be appointed at every workplace within the prescribed class or description of workplaces to audit the safety and health management system of the workplace, risk assessments relating to the workplace or work, work process carried out at the workplace or the workplace in order to ensure the safety, health and welfare of persons at work. Such a person must have attended and passed a training course on Workshop for Safety Auditors conducted by Singapore Polytechnic.

- **WSH Coordinators**

Under the WSH (Construction) Regulations, a WSH Coordinator shall be appointed in respect of every worksite where the contract sum of the building operation or works of engineering construction carried out therein is less than \$10 million. Such a person must have attended and passed a training course on Safety Coordinator Training Course conducted by BCA Academy, an accredited training provider.

- **WSH Officers**

These are persons who are registered as WSH officers with the Ministry of Manpower and who are responsible for ensuring the safety and health of persons employed in the workplace. They are employed on a full time or part time basis depending on the operational needs of the companies who are expected to evaluate their workplace safety and health risks and decide for themselves the best measures to control those risks. This includes deciding on the appointment of one or more WSH Officers to assist in managing the risks.

Accredited Training Courses

	Classes or Description of Persons	Training Courses
	Workplace Safety & Health Personnel	
1.	<u>Competent Persons for Management of Hazardous Substances:</u> Any person who control toxic or harmful substances	Management of Hazardous Substances Course
2.	<u>Competent Persons for Sampling and Monitoring Airborne of Contaminants:</u> Any person who tests atmosphere for airborne contaminants in toxic or harmful substances used, handled or given off at a workplace	Sampling and Monitoring of Airborne Contaminants
3.	<u>Confined Space Safety Assessor:</u> Any person who test the atmosphere of a confined space for the purpose of persons entering and working safely in the confined space	Confined Space Safety Assessor Course
4.	<u>First-Aider:</u> Any person who is appointed as a first-aider in a workplace	Occupational First Aid Course
5.	<u>Manhole Safety Assessor:</u> Any person who test the atmosphere of a manhole for the purpose of persons entering and working safely in the manhole	Manhole Safety Assessor Course
6.	<u>Noise Control Officer:</u> Any person who is appointed to advise the occupier of a workplace on noise control measures	Industrial Noise Control Course
7.	<u>Noise Monitoring Officer:</u> Any person who is appointed to conduct noise monitoring at a workplace	Noise Monitoring Course
8.	<u>Shipyards Hotwork Safety Assessor:</u> Any person who is appointed as a hotwork safety assessor in a shipyard or on board a ship in the harbour	Shipyards Safety Assessor (Hot-work certification) Course
9.	<u>Workplace Safety & Health Auditor:</u> Any person who audits and identifies gaps in the WSH management systems to ensure effective implementation of such systems and make recommendations for continual improvement of the systems	Workshop for Safety Auditors
10.	<u>Workplace Safety & Health Coordinator</u> Any person who coordinates and implements WSH programs and management systems for recognition, assessment, elimination, minimisation, control and management of WSH risks and improvement of WSH culture	Safety Coordinator Training Course
11.	<u>Workplace Safety & Health Officer:</u> Any person who wants to be registered as a WSH officer	Specialist Diploma in WSH

	Classes or Description of Persons	Training Courses
	Manager	
12.	<u>Project Manager:</u> Any person who is appointed as a project manager to be in charge of all construction activities in building and engineering construction worksites of a contract sum of \$10 million or more	Construction Safety Course for Project Managers
13.	<u>Shiprepair Manager:</u> Any person who is appointed as a shiprepair manager in a shipyard or on board a ship in the harbour	Safety Instruction Course for Shiprepair Managers
	Supervisor	
14.	<u>Formwork Supervisor:</u> Any person who is appointed as a formwork supervisor to supervise the construction, erection, alteration or dismantling of formwork structures in building and engineering construction worksites	Formwork Safety Course for Supervisors
15.	<u>Lifting Supervisor:</u> Any person who is appointed as a lifting supervisor for any lifting operation by a mobile or tower crane	Lifting Supervisors Safety Course
16.	<u>Manhole Supervisor:</u> Any person who is appointed as a manhole supervisor to supervise work carried out in manholes or confined spaces in building and engineering construction worksites	Safety Instruction Course (Manhole)
17.	<u>Metalworking Industry Supervisor:</u> Any person who supervises any process or work carried out in a factory engaged in the manufacture of basic metals, fabricated metal products, machinery or equipment and electrical machinery and apparatus	Basic Industrial Safety and Health Course for Supervisors
18.	<u>Noise Monitoring Officer:</u> Any person who is appointed to conduct noise monitoring at a workplace	Noise Monitoring Course
19.	<u>Scaffold Supervisor:</u> Any person who is appointed as a scaffold supervisor to supervise the erection, installation, re-positioning, alteration or dismantling of a scaffold	For Marine Sector: Marine Metal Scaffolding Course for Supervisors For other sectors: Supervision of Metal Scaffold Erection Course
20.	<u>Shipyard Supervisor:</u> Any person who supervises any process or work carried out in a shipyard or on board a ship in the harbour	Shipyard Supervisors Safety Course
21.	<u>Supervisors in the Oil and Petrochemical Industry or factories engaged in manufacturing or storage of chemicals:</u> Any person who supervises any process or work carried out in a factory of the oil and petrochemical industry or in a factory engaged in manufacturing or storage of chemicals	Oil and Petrochemical Industry Supervisors Safety Course

	Classes or Description of Persons	Training Courses
22.	<u>Suspended Scaffold Supervisor:</u> Any person who is appointed as a suspended scaffold supervisor to supervise the erection, installation, re-positioning, alteration or dismantling of a suspended scaffold	Suspended Scaffold Supervisors' Course
23.	<u>Tunnelling Supervisor:</u> Any person who supervises any process or work in a tunnel carried out in building and engineering construction worksite	Building Construction Safety Supervisors Course (Tunnelling)
	Worker	
24.	<u>Construction Worker:</u> Any worker employed in manual labour to carry out construction work in building and engineering construction worksites	Suspended Scaffold Riggers' Course
25.	<u>Explosive Powered Tools Operator:</u> Any person who operates an explosive power tool	Explosive Powered Tools Operators' Course
26.	<u>Forklift Operator:</u> Any person who drives or operates a forklift truck	Forklift Driver's Training Course
27.	<u>Manhole Worker:</u> Any worker who is carrying out work in manholes or confined spaces in building and engineering construction worksites	Safety Orientation Course (Manhole) for Workers
28.	<u>Man Lock Attendant:</u> Any worker performing the role of a Man Lock Attendant	Compressed Air Works Course (Man Lock Attendant)
29.	<u>Medical Lock Attendant:</u> Any worker performing the role of a Medical Lock Attendant	Compressed Air Works Course (Medical Lock Attendant)
30.	<u>Metalworking Industry Worker:</u> Any worker employed in manual labour to carry out work in a factory engaged in the manufacture of basic metals, fabricated metal products, machinery or equipment and electrical machinery and apparatus	Safety Orientation Course for Workers (Metalworking)
31.	<u>Rigger:</u> Any person who is appointed as a rigger for any lifting operation by a mobile or tower crane	Rigger Course
32.	<u>Scaffold Erector:</u> Any person who is appointed as a scaffold erector to erect, install, re-position, alter or dismantle a scaffold	For Marine sector: Marine Metal Scaffolding Course for Scaffolders For other sectors: Metal Scaffold Erection Course
33.	<u>Shipyard Workers (General):</u> Any person carrying out hazardous work in a shipyard or on board a ship in the harbour	Shipyard Safety Instruction Course for Workers (General Trade)

	Classes or Description of Persons	Training Courses
34.	<u>Shipyard Workers (Hot-work):</u> Any person carrying out hot work in a shipyard or on board a ship in the harbour	Shipyard Safety Instruction Course for Workers (Hot-work Trade)
35.	<u>Shipyard Worker (Painter):</u> Any person carrying out spraying painting or painting in a confined space, in a shipyard or on board a ship in the harbour	Shipyard Safety Instruction Course for Workers (Painter Trade)
36.	<u>Signalman:</u> Any person who is appointed as a signalman for any lifting operation by a mobile or tower crane	Signalmen Course
37.	<u>Supervisors in the Oil and Petrochemical Industry or factories engaged in manufacturing or storage of chemicals:</u> Any person who supervises any process or work carried out in a factory of the oil and petrochemical industry or in a factory engaged in manufacturing or storage of chemicals	Oil and Petrochemical Industry Supervisors Safety Course
38.	<u>Suspended Scaffold Rigger:</u> Any person who is appointed as a suspended scaffold erector to erect, install, re-position, alter or dismantle a suspended scaffold	Suspended Scaffold Riggers' Course
39.	<u>Tunnelling Worker:</u> Any worker who is carrying out work in a tunnel in building and engineering construction worksites	Safety Orientation Course (Tunnelling) for Workers

Other General Information on Singapore

(1) AREA AND POPULATION

Singapore, with an area of 707.1 km² is home to a population of approximately 4.6 million (population density 6,489 per km²). The official languages are Malay (National Language), English (language of administration), Chinese (Mandarin) and Tamil.

Population Statistics, 2007	Figures
Total Population ¹	4,588,600
Resident Population ²	3,583,100
Resident Labour Force ²	1,918,100
Employed persons ²	1,842,100
Resident Unemployment Rate	3.1%

Source: Department of Statistics, Singapore

Notes:

¹ Total population comprises Singapore citizens and non-residents. The resident population comprises Singapore citizens and permanent residents

² Refers to Singapore residents (citizens and permanent residents) aged 15 years and over as at June

(2) ECONOMY

Selected Economic Indicators, 2007	Figures
Gross Domestic Product (GDP), at current market prices (\$m)	243,168.8
Per Capita GDP (\$)	52,994.0
Exports (\$m)	450,627.7
Imports (\$m)	395,979.7
Growth in Labour Productivity	-0.9%
Inflation rate (%)	2.1%

Source: Department of Statistics, Singapore

Note:

All figures are in Singapore Dollars

(3) MANPOWER STATISTICS BY INDUSTRY

Employment by Industry, 2007	Figures (%)
Manufacturing	20.8
Construction	10.8
Services	67.7
Wholesale and Retail Trade	20.8
Transport and Storage	9.9
Hotels and Restaurants	8.8
Information and Communications	4.3
Financial Services	8.1
Business Services ²	18.2
Community, Social and Personal Services	30.3
Others ²	0.7
Total	100.0³

Source: Ministry of Manpower, Singapore

Notes:

- ¹ Business services comprises real estate & leasing, professional services and administrative & support services
- ² Others comprise agriculture, fishing & mining, quarrying, utilities, sewage & waste management and activities not adequately defined.
- ³ Figures may not add up due to rounding.

4) PUBLIC HEALTH AND HEALTHCARE SYSTEM

Health Statistics, 2007	Figures
Life Expectancy at Birth ¹ (years)	80.6
- Men	78.2
- Women	82.9
Infant Mortality Rate ¹ (per 1000 live births)	2.1
Maternal Mortality Ratio ¹ (per 100,000 live births & still-births)	8
Human Development Index ²	0.922 ³
Total Health Expenditure (% of gross domestic product)	0.9 ⁴
Doctors per 1,000 population	1.6
Dentists per 1,000 population	0.3
Nurses (including midwives) per 1,000 population	4.9

Sources:

- 1) *Ministry of Health, Singapore*
- 2) *Human Development Report*
- 3) *World Health Organization*

Notes:

- ¹ Preliminary Figures. Data for Life Expectancy at Birth and Infant Mortality Rate refers to Singapore Residents only
- ² Measures the average achievements in a country in three basic dimensions of human development: longevity, knowledge and a decent standard of living.
- ³ Figures as of 2005.
- ⁴ Preliminary figures as of FY2007.