



Office of Safety,
Health & Environment

**NUS SERVICE CLASS
OUTSTANDING AWARD FOR
SERVICE EXCELLENCE 2014**



Office of Safety,
Health & Environment

This publication is produced by the Organisational Excellence Office in collaboration with the Office of Safety, Health & Environment, the Outstanding for Service Excellence Award Winner 2014. The Outstanding Service Excellence Award is the highest accolade given to departments in recognition of their attainment as models of excellence for others to emulate. By knowing what others are doing, departments can benchmark their service excellence practices and identify opportunities for continuous improvement.

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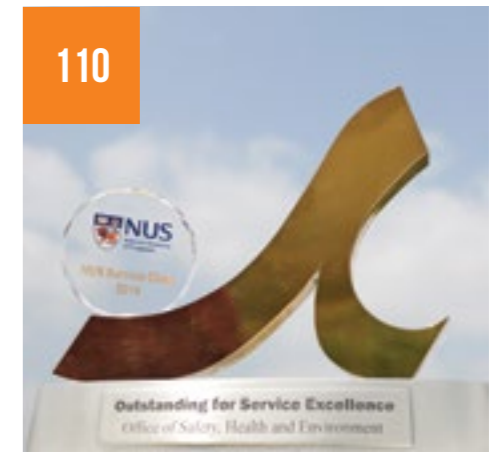
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FOREWORD



'After five years of refining and continual improvement, we were delighted yet humbled that OSHE was conferred the Outstanding for Service Excellence Award in 2014.'

We continued in the second phase of our journey with an unwavering desire to delight our customers. We now endeavour not only to meet but to transcend customers' expectations whenever the opportunity arises.

After five years of refining and continual improvement, we were delighted yet humbled that OSHE was conferred the Outstanding for Service Excellence Award in 2014.

I would like to thank all OSHE staff, especially the OSHE Service Class 2014 Committee, as this award represents your Service Excellence and symbolises your can-do attitude when faced with challenges. We are also grateful to the Organisational Excellence Office (OEO) for their constant encouragement in our journey.

OSHE is also indebted to the NUS Senior Management and UCI Management for their resolute support in all that we do.

Last but not least, we thank all NUS staff and students for your invaluable support. Your partnership is vital in enhancing the University's safety & health culture and making the NUS campus a safer place to live, work and play.

Dr Peck Thian Guan
Director

Embarking on the NUS Service Class was a challenging but rewarding journey. The NUS Service Class provided OSHE with a comprehensive framework for developing our management systems and processes in the areas of leadership, planning, management of information, human resources, customer management as well as the tracking of results. This is especially important for OSHE as the Department has expanded rapidly over the last 12 years, in tandem with the growth of the university.

In our first attempt at the NUS Service Class in 2008, we were presented with the Recognition for Service Excellence Award, which served as a great encouragement to us and affirmed that we were on the right track.



Dr Peck Thian Guan receiving the Outstanding for Service Excellence Award for the NUS Service Class 2014 from NUS Deputy President (Academic Affairs) and Provost, Professor Tan Eng Chye, at the 6th NUS Excellence Day



OSHE Service Class 2014 Committee
From L-R: Mr Saravanan Gunaratnam, Mr Hairulnizam Bin Ishak, Dr Lim Cheh Peng, Dr Peck Thian Guan, Ms Gisela Ho, Ms Oh Siew Kee, Mr Ravindran Sockalingam



Dr Peck Thian Guan
Director
Office of Safety, Health & Environment

You (Dr Peck) have done very well within our NUS community in the promotion of SHE over the last 10 odd years at the helm of OSHE.
Associate Professor Samuel Tay | SHE Conference, 2013



It was good that the audit team was able to unanimously identify specific gaps in safety management by the PIs, and recommend appropriate rectifications to which the auditees were agreeable. Congratulations on a good job!
Associate Professor Lai Poh San | PI Laboratory Safety Management System Audit, 2011



Thank you (Dr Peck, Saravanan, Ravi and Gauri) very much for your kindness, hospitality and generosity in accommodating us and sharing valuable information. It has been a great pleasure to know and work with you all. In such a limited time, you have made the impossible possible.
Mr Hazilan Bin Hj Ramli | Visit by Universiti Brunei Darussalam, 2013



Thank you (Pramothe) very much for your hospitality and support during our visit to NUS. Owing to your kind arrangements and daily care, not only did we have a fruitful training programmes and discussions, but we also got to enjoy different atmosphere in Singapore.
Associate Professor Ning Chen | Visit by Nagoya University, 2012



Mr Ravindran Sockalingam
Senior Associate Director
Emergency Management Division

Thank you for your generous support for the Bizad Charity Run 2013. It was a huge success only because of people like you (Ravi).
Mr Sonny Yuen | Bizad Charity Run in U-town, 2013



Dr Lim Cheh Peng
Senior Safety & Health Manager

Thanks Cheh Peng for being proactive and replying personally to the comments I have made regarding the document. I'm impressed by your attention to detail and great service!
Associate Professor Gan Yunn Hwen | Guidance Slides on Choosing a Disinfectant, 2012



Mr Mohammad Fazulee Bin Abdul Rahman
Manager
Emergency Management Division

We would like to put on record our deepest appreciation to Fazulee for his passion and his effort in putting up a combined training session at short notice. The course was well thought out, and the materials directly relevant to the housing context.
Mr Sng Jin Soon | Trainings for Resident Advisors, Resident Fellows and Masters, etc. at UTown Colleges, Graduate Residences, etc., 2012



Mr Saravanan Gunaratnam
Head
Safety & Health Management Division

I have reviewed the AAALAC pre-assessment documentation that has been completed to date. I wanted to let you (Saravanan) know that the OSHE part was the most well done and timeliest.
Dr Michele Bailey | AAALAC Preparation, 2013



Mr Yam Guan Shyh
Deputy Director
Emergency Management Division

I am particularly impressed with how you (Mr Yam) chose a compact office outfit to reach to internal 'customers' in multiple campuses and thousands of young impressionable students undergoing matriculation yearly. Indeed, NUS has a rare and very creative, dynamic and lively leader in emergency management and safety education.
Mr Wong Soon Lee | Sharing session on OSHE to Health Sciences Authority, 2012



The Safety & Health Improvement Project teams have put in a lot of effort to improving EHS (Environmental Health & Safety), their intent was commendable. The organizing committee has also done a great job in organizing the event.
Ms Veronica Chow (Ministry of Manpower) | Safety & Health Improvement Project (SHIP) Convention 2011



Today's (3/5/11) Fire Warden & Fire Safety Training went exceedingly well. Thanks to our knowledgeable trainers Fazulee & Adam! Because of this session, our staff are now more energised and empowered than ever to do a good job in our critical roles as Fire Wardens.
Mr Terence Lee | Office of Student Affairs (OSA) Fire Warden & Fire Safety Training, 2011

ORGANISATIONAL PROFILE



We would like to express our sincere gratitude on behalf of SMART (Singapore-MIT Alliance for Research and Technology) and MIT (Massachusetts Institute of Technology) for your outstanding service as an observer on the SMART IBC. You (Dr Lim Cheh Peng) have been an invaluable resource to SMART as you consistently provide excellent, timely advice and very important and thoughtful guidance. You are professional, gracious, friendly and kind in all your interactions. It is indeed our good fortune to have the benefit of your expertise and wisdom.

Professor Rohan Abeyaratne | Appreciation from SMART, 2013



Mr Wong Kok Yew
Asistant Manager

On behalf of SCDF (Singapore Civil Defence Force) and my participants from the Fire Safety and Specialist Course, we would like to sincerely thank Mr Adam Wong for hosting this visit. Adam's presentation gave us a very good overview of the divisions that manage the facilities of NUS Campuses.

Lau Heng Hui | SCDF Study Tour in NUS, 2012



Ms Sania Binte Nader
Management Assistant Officer

Thank you very much for your time and patience in drafting the iORC form right from the step of downloading the Office Communicator. It is highly appreciated and you (Sania) are very efficient.

Tamilarasi Jegadeesan | OPRAS, 2013



Ms Zhou Qian
Safety & Health Manager

I just wanted to inform you of her (Zhou Qian) exemplary sense of responsibility and professionalism during the MBI Safety Time-Out exercise. She is a self-starter with minimal need for instruction.

Ms Cynthia Lee | MBI Safety Time-Out Day, 2013



1. ORGANISATION ENVIRONMENT



OSHE celebrating its 10th Anniversary in 2012

The Office of Safety, Health and Environment (OSHE) is the corporate office in charge of workplace safety and health, environment compliance and emergency management in NUS. The OSHE Directorate and the Safety and Health Management (SHM) Division are housed at the Ventus (University Campus Infrastructure) building while the Emergency Management (EM) Division is located at No. 2 Prince George's Park.

OSHE supports the NUS mission, which is to change the way people think and do things through education, research and service. OSHE endeavours to build a positive safety and health culture in NUS by changing staff's and students' mindsets towards safety and health. To do this, OSHE formulates policies and programmes on how research, teaching and administrative activities in the University may be conducted safely to prevent harm, injury or ill health to those performing such activities.

OSHE also supports the management of crisis incidents affecting NUS staff and students. OSHE equips staff and students with the knowledge and skills to manage crises and emergencies in their own respective areas.

While OSHE is responsible for environmental compliance issues, 'green' issues are managed by the Office of Environmental Sustainability (OES). The environmental issues include waste water monitoring, ambient air quality monitoring and disposal of radioactive wastes.



Ventus (University Campus Infrastructure) Opening Day 2014



Ventus (University Campus Infrastructure) Opening Day 2014

Historical Development of OSHE

OSHE was established in August 2002 with two professional staff and one administrative officer. The Office was headed by an interim director seconded from the Department of Anatomy. The staff were sent for safety training and embarked on the development of safety and health programmes.

In 2004, more staff, including a full time director, were recruited. The department grew and by end 2005, OSHE had 10 staff. In 2014, OSHE had 43 staff.

A laboratory certification scheme was introduced in 2006 to encourage greater safety and health ownership among the Principal Investigators (PIs), research staff and students. IT technologies were exploited to support the core services provided, such as in the development of an iPad application for auditors in 2013 and in the development of an online system for Project Risk Assessment submission and review.

An Occupational Health Clinic was established in 2009 to provide services such as medical surveillance and vaccinations. To meet the demand for safety and health training by the rapidly growing NUS staff and student body, some of the classroom training were migrated to online training in 2011.

The Emergency Management (EM) Division was established in July 2005 with the transfer of a counsellor from the Office of Student Affairs (OSA). In 2006, additional staff were recruited to develop the Emergency Management, Fire Safety and Life Safety programmes. The NUS Crisis and Emergency Management (CEM) framework and policy were developed in 2005 and 2006 respectively. Crisis communication and management training were conducted to train each faculty's Incident Commander as well as staff supporting emergency and crisis management.



NUS Senior Management celebrating OSHE's 10th Anniversary, 2012

In 2008, safety and crisis management training for student leaders and staff was introduced to complement events and activities organised to promote safety and crisis management. In 2014, EM Division was given an additional headcount to strengthen the fire safety programme.

OSHE continues to expand as new areas are added to OSHE's portfolio of responsibilities.

Figure 1 below summarises the key milestones of OSHE since its establishment.

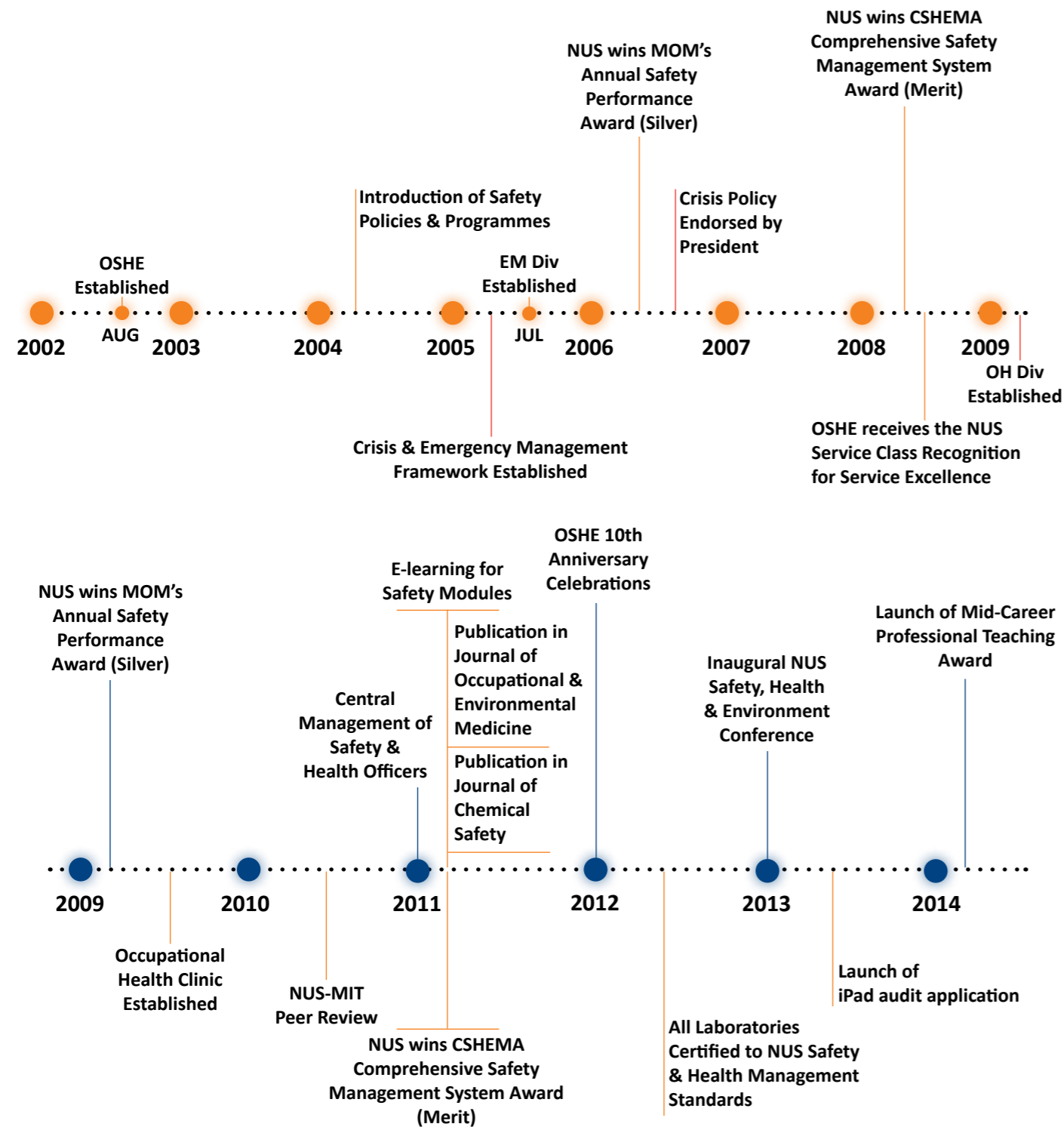


Figure 1 Key milestones of OSHE



a. Nature of Main Products and Services

OSHE provides a range of products and services to meet the needs of its stakeholders. These can be broadly classified as follows: (i) policy formulation, (ii) safety programme development & IT supporting services, (iii) professional & advisory services, and (iv) audits & inspections. Table 1 below shows the examples of products and services from the two OSHE divisions.

Product Service Delivery System

SAFETY & HEALTH MANAGEMENT

The Safety and Health Management (SHM) Division facilitates the building of a positive safety, health and environmental culture and learning experience for all NUS staff & students through the development and adoption of safety and health best practices and systems.

PRODUCTS & SERVICES	EXAMPLES	
	SHM Division	EM Division
Policy Formulation	<ul style="list-style-type: none"> University Safety & Health Policy Biological Safety Policy Chemical Safety Policy Radiation Safety Policy Safety Policy on Tenants BSL3 Directive Directive on Undergraduates Working in Laboratories Directive on Undergraduate Access to Laboratories 	<ul style="list-style-type: none"> Crisis Policy Fire Safety Policy
Safety Programme Development & IT Supporting Service	<ul style="list-style-type: none"> General Laboratory Safety Programme Biological Safety Programme Chemical Safety Programme Radiation Safety Programme Construction Safety Programme Field Research Safety Programme Research Diving Safety Programme First Aid and First Aider Programme Ergonomics Programme Office Safety Programme Physical Safety Programme Occupational Health Programme Animal Biosafety Programme Laboratory Design Review Integrated Online Research Compliance (iORC) Online Regulated Material Identifier (ORMI) Accident / Incident Reporting System (AIRS) Laboratory Sign Board Generator Construction Control Hazard Sign iAudit Application Annual Safety & Health Performance Award (ASHPA) Scheme 	<ul style="list-style-type: none"> Fire Safety Programme Event & Activity Safety Programme Business Continuity Planning (BCP) Crisis Management Emergency Preparedness Company Emergency Response Team (CERT) Temporary Change of Use Permit Application (TPA) Fire Safety Award Cohesion events for incident commanders and fire wardens

PRODUCTS & SERVICES	EXAMPLES	
	SHM Division	EM Division
Professional & Advisory Services	<ul style="list-style-type: none"> Design Reviews Project Risk Assessment Reviews Industrial Hygiene Monitoring Radioactive Waste Collection Institutional Licence Application Accident & Incident Reporting and Investigation <p>Training Courses</p> <ul style="list-style-type: none"> Risk Management for Laboratories General Laboratory Safety Biological Safety Chemical Safety Radiation Safety (Ionizing) Laser Safety Workplace Safety & Health (WSH) Committee Internal Audit for Safety & Health Management System (SHMS) 	<ul style="list-style-type: none"> Events & Activities Safety Advisory & Consultation Fire Safety Consultation Emergency Management Development of Business Continuity Planning Crisis Response
Audits & Inspections	<ul style="list-style-type: none"> PI Laboratory SHMS Certification Audit Inspection of facility registered under the Institutional Licence to Possess Veterinary Biologics (AVA) Inspection of facility registered for Non-Advanced Generation HIV Lentivirus Vector (MOH) Petroleum & Flammable Material (PFM) Inventory Inspection (SCDF) 	<ul style="list-style-type: none"> Annual Fire Safety Inspections

Table 1 Summary of OSHE's products and services

This is achieved through the implementation of a safety and health management system by NUS departments and faculties. The system is based on international standards such as OHSAS 18001:2007 (Occupational Health and Safety Management System Standard) and CWA 15793:2008 (Laboratory Biorisk Management Standard). Due to the diverse nature of activities on campus and their associated hazards and risks, OSHE has developed appropriate policies, a variety of manuals, and diverse programmes to ensure that the range

of hazards that are found in the University are effectively managed. This is illustrated in Figure 2.

EMERGENCY MANAGEMENT

The EM Division imparts knowledge to departments, staff and student groups in emergency preparedness and in life and fire safety. Staff from the EM Division provide advisory services, consultation, training, audits and inspections at both strategic and operational levels (Figure 3).



Figure 2 Safety and Health Management System

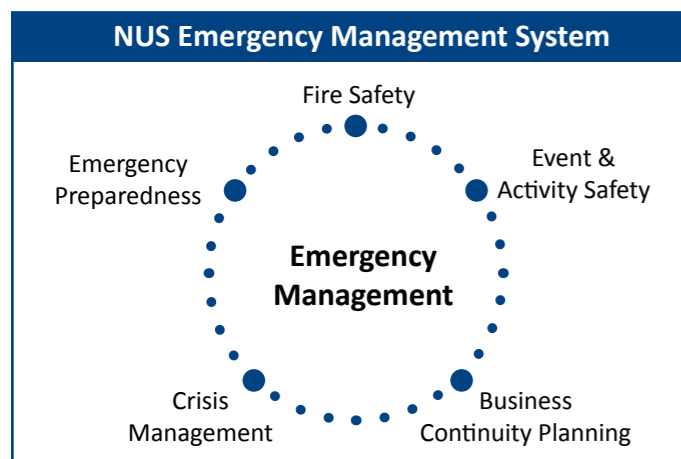


Figure 3 Emergency Management System

Nurturing Potential

OSHE’s key resource is its people. OSHE identifies talents through a stringent recruitment process. But not all staff recruited would have the necessary experience or relevant qualification or credentials - this is expected since safety and crisis management in an academic institution is new in Singapore. OSHE therefore takes great efforts to nurture them to their fullest potential. OSHE invests heavily in training, including sending staff to overseas universities for job exposure and training.

‘All For One & One For All’ Team Spirit

Safety and health and crisis management in Institutions of Higher Learning (IHL) is multi-disciplinary in nature. The Department requires employees with different expertise and talents to come together, being united through the same mind and purpose, to support each other in delivering its mission. OSHE recognises its diversity as its strength, and a team spirit of ‘All For One & One For All’ binds the Department together.

Service Excellence

This value reminds OSHE staff of their service obligations to OSHE stakeholders and team members. OSHE exists because of its customers. As such, OSHE’s programmes are customer-oriented. In designing its programmes and services, OSHE always aims to be efficient and to minimise inconvenience to customers, while providing them with value-added and effective services and advice.

‘I Own & Value All I Do’

OSHE staff take pride and ownership in the quality of their work. Its employees take the initiative to improve customer satisfaction and exhibit professionalism in the discharge of their duties.

+ Transcendence...

OSHE aims to rise above and go beyond its limits.

Figure 4 OSHE Mission, Vision and Values

b. Department’s Purpose, Vision and Values

OSHE’s mission is **saving lives, preventing injuries, ensuring business continuity by transforming mindsets, and facilitating the development and implementation of best practices** (Figure 4).

As NUS strives to be among the best universities in the world, higher safety and health standards are expected of the University. A world-class university should also be equipped to manage crisis situations well. Hence, the vision is for NUS to be a safe and disaster-resilient world-class university where safety and health are embraced as core values.

The **NASI+** values underpin all that OSHE does.

c. Employee Profile, including number, type, education level

OSHE’s staff strength has been increasing steadily since its formation in 2002. This is in response to the growing need for better safety and health and crisis management standards in NUS. OSHE currently has a staff strength of 43. The Organisation Chart is in

Figure 5. OSHE believes that its employees are its greatest assets. Many of its staff have postgraduate degree qualifications and relevant certification from regulators (Table 2).

OSHE staff possess diverse academic backgrounds and work experience e.g. engineers, scientists, IT professionals and fire safety specialists, just to

Educational Level	MAO	EPS	Total No.
PhD	0	7	7
Master’s Degree	0	10	10
Bachelor’s Degree	0	19	19
Diploma	3	2	5
Others	2	0	2
GRAND TOTAL	5	38	43

Table 2 Educational level of OSHE staff

name a few. OSHE believes that this diversity is its strength. OSHE grooms and nurtures each and every one of its staff and deploys them to specialised areas based on their skill sets and competencies. The Department has programmes to cross-train staff in different subject areas. Table 3 below shows the deployment of staff based on their academic training and work experience.

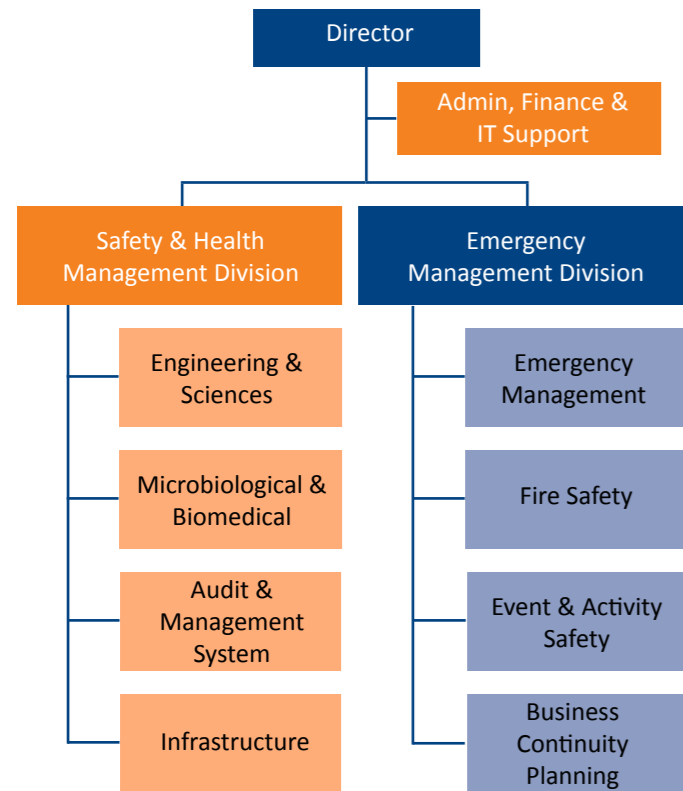


Figure 5 OSHE's Organisation Chart

d. Major Equipment, Facilities and Technologies Used

OSHE invests in the latest equipment related to safety and health so that it can serve its customers better. Geiger Muller counters, noise monitoring meters and industrial hygiene monitoring kits are used by the SHM Division for on-site industrial hygiene monitoring.

The EM Division has thermal scanners, Automated External Defibrillator (AED), fire extinguishers, fire simulators, smoke machines, fire alarm training panel, rescue training mannequins and CPR training mannequins. These are used to inject realism in its training.

The Department also uses IT to enhance the delivery of its products and services. The Accident and Incident Reporting System (AIRS) facilitates the reporting of accidents & incidents to OSHE in a timely fashion. Through the Online Project Risk Assessment System (OPRAS) and integrated Online Research Compliance (iORC) System (introduced in Nov 2012), risk assessments are submitted to OSHE for review with ease. Event safety plans are submitted through the online Event Risk Assessment Form which was subsequently upgraded and renamed to Temporary Change of Use Permit

Academic Background and Experience	Deployment
Engineers	Management of General Laboratory SHM programmes
Scientists	Management of Biosafety and Animal Biosafety programmes
Former Military Officers	Crisis & Emergency Management
Former SCDF Officers	Management of Fire Safety and Life Safety programmes
IT Professionals	IT application development

Table 3 Examples of deployment of OSHE staff based on their academic background and experience

Application (TPA). The Laboratory Safety Data System (LSDS) is an online database of relevant laboratory safety and health related documents that facilitates hazard rating of laboratories. There are designated web pages on the staff and student portals where OSHE's forms and training slides are posted for staff and students to access easily.

e. Regulatory Environment

As a responsible corporate citizen, NUS is committed to complying with all applicable safety and health legislation. OSHE helps the faculties, schools,

departments and corporate offices to comply with relevant safety and health legislations by providing advice and obtaining the appropriate licences.

For the convenience of the university community, OSHE serves as the single point of contact between regulators and the University. In certain cases, where only one licence is issued to the University, OSHE Director serves as the licence holder.

The list of safety and health regulations applicable to NUS is given in Figure 6.

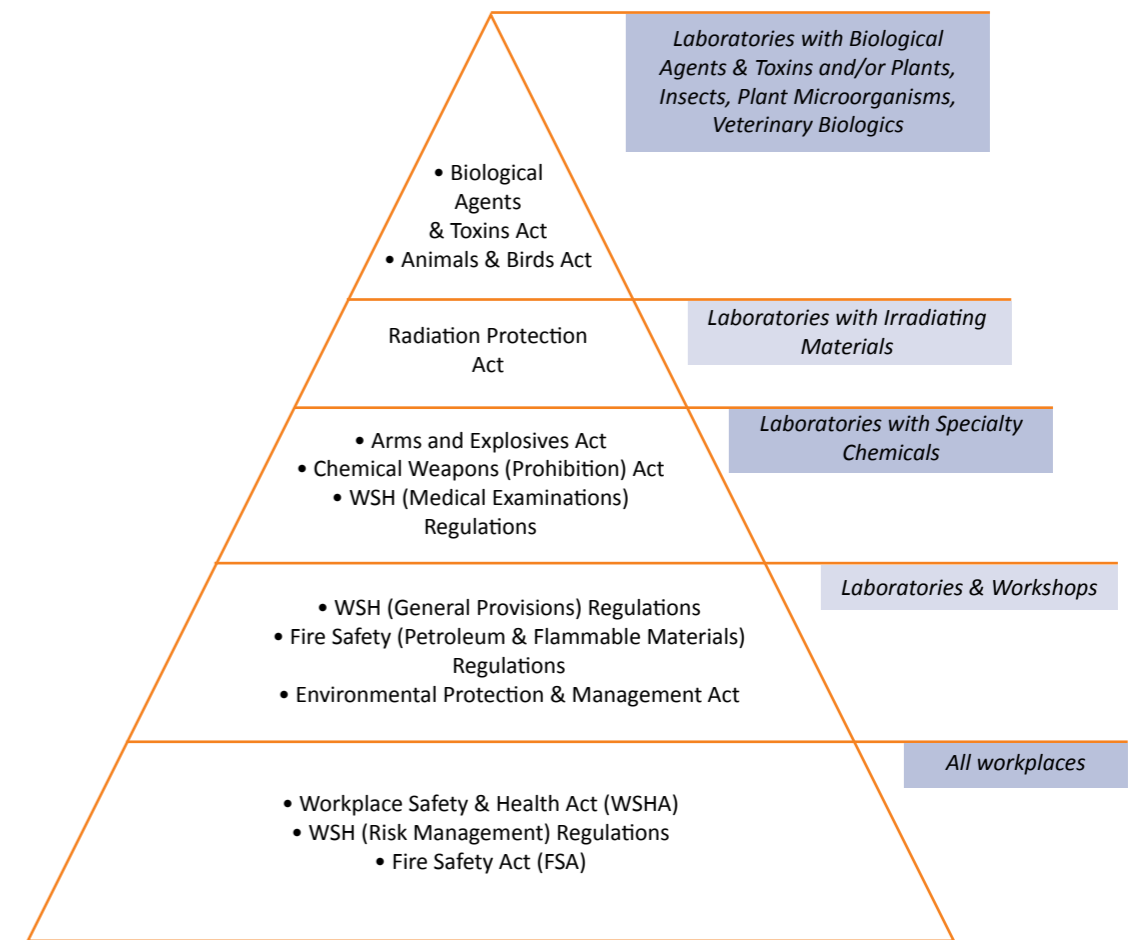


Figure 6 List of safety and health regulations applicable to NUS

2. ORGANISATIONAL RELATIONSHIP

a. Relationship with Parent Organisation

OSHE is positioned strategically within the University Administration to effectively deliver its programme (Figure 7). OSHE belongs to the University Campus Infrastructure Cluster and reports to the Vice President (Campus Infrastructure). Other Offices in the UCI Cluster are Office of Campus Amenities (OCA), Office of Estate Development (OED), Office of Facilities Management (OFM), Office of Campus Security (OCS), University Town Development (UTD) and Yale-NUS College Design & Construction Office (YNC-DCO).

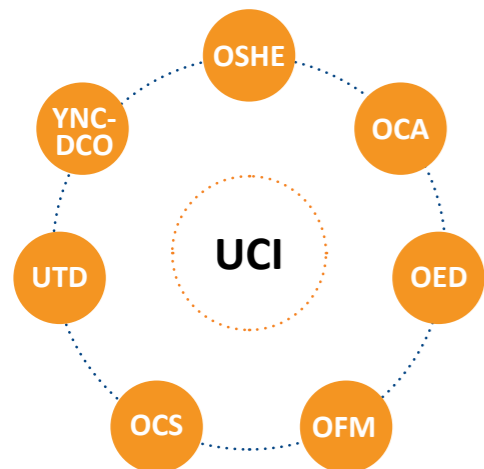


Figure 7 University Campus Infrastructure (UCI) Cluster

OSHE is advised by three institutional safety committees in specialised areas of safety management. These committees are the Institutional Biosafety Committee (IBC), Institutional Construction Safety Committee (ICSC), and Institutional Laboratory Safety Committee (ILSC) (Table 4). The former two committees report to Deputy President (Research & Technology) while the latter reports to Deputy President (Administration). The Risk Management Steering Committee (RMSC), chaired by the NUS President, monitors the overall key risk indicators, including safety and health compliance risks.

The safety and health organisational structure of NUS is shown in Figure 8. The corporate office of OSHE formulates policies and is involved in programme development. OSHE provides secretarial support to the three institutional committees, which in turn advise NUS Senior Management on strategic safety and health issues.

OSHE deploys its Safety & Health Officers to the faculties and research institutes. These officers report operationally to the Deanery or Directorate of these departments. The Safety & Health Coordinators are staff from the departments and

Institutional Committee	Chairman	Scope
Risk Management Steering Committee (RMSC)	Prof Tan Chorh Chuan NUS President	University's overall key risk indicators, which include safety and health compliance risks
Institutional Biosafety Committee (IBC)	A/Prof Gan Yunn Hwen Associate Professor Department of Biochemistry	Biosafety and animal biosafety
Institutional Construction Safety Committee (ICSC)	A/Prof Florence Ling Vice Dean School of Design and Environment	Construction safety
Institutional Laboratory Safety Committee (ILSC)	Prof Lee Jim Yang Head Department of Chemical and Biomolecular Engineering	Chemical and radiation safety & health

Table 4 Institutional Safety & Health Committees

they are assigned safety duties as part of their job scope. They work closely with the Safety & Health Officers. The Safety & Health Leads appointed by the Principal Investigator or laboratory supervisor to oversee safety in their respective laboratory groups are either research staff or graduate students. This structure promotes communication both bottom up and top down.

b. Relationship with Customers

OSHE recognises that each customer segment has its own unique needs. The Department has identified

its customer segments as shown in Figure 9.

c. Relationship with Suppliers and Partners

KEY SUPPLIERS

OSHE engages external consultants to serve its customers in critical areas where OSHE lacks the resources or expertise.

Suppliers are carefully selected to ensure product quality, service quality and professionalism. They are used in areas listed in Table 5.



Figure 8 The NUS Safety and Health Organisational Structure

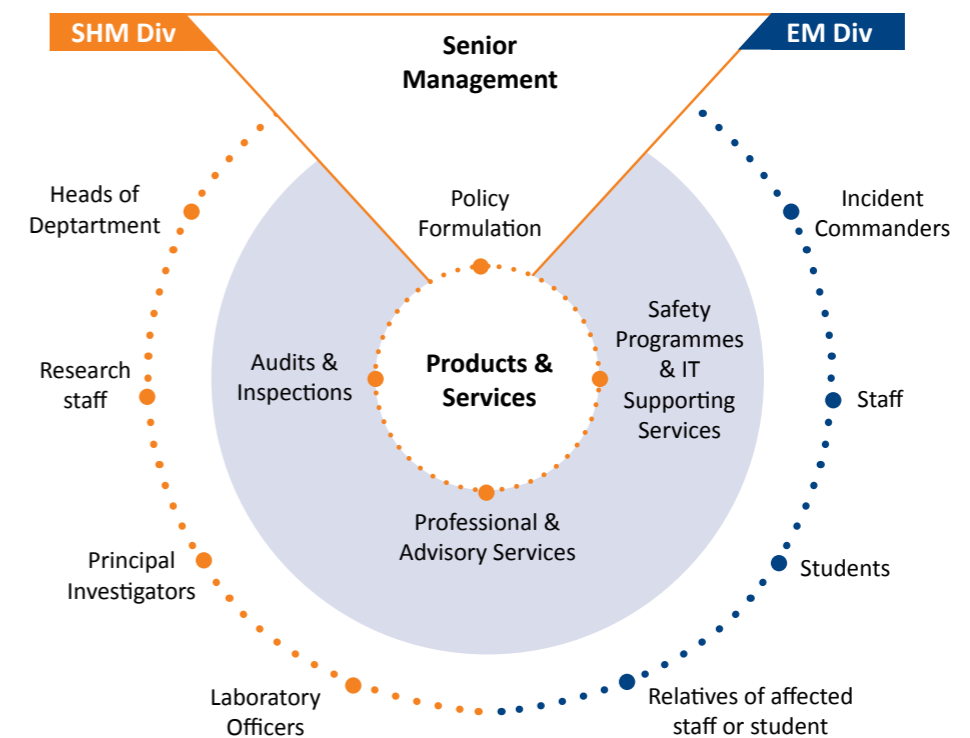


Figure 9 OSHE's products & services and customer segments

S/N	Areas	Expected Quality
1	Audits	<ul style="list-style-type: none"> Compliance audits Management system audits
2	Services - Industrial Hygiene Monitoring	<ul style="list-style-type: none"> Air quality monitoring Waste water quality monitoring
3	Services - Toxic Waste Disposal	<ul style="list-style-type: none"> Radiation waste collection

Table 5 Key suppliers and expected quality from their products and services

KEY PARTNERS (INTERNAL)

OSHE works closely with its internal partners i.e. other NUS Departments to deliver its mission. The list of internal partners is given in Table 6.



Internal partners from Office of the Vice President (Campus Infrastructure)

KEY PARTNERS (EXTERNAL)

OSHE works closely with external partners to improve the quality of its products and services. OSHE is a key member of the national Safety and Health Working Group (WG) for the Higher Education and Research (HER) Sector. The Director of OSHE is the Chairman of this WG. The list of external partners in HER WG is shown in Table 7.

OSHE has also established good working relationships with leading overseas universities, especially with those institutions that have strategic alliances with NUS.



Dr Peck Thian Guan chairing the Safety and Health Working Group for the Higher Education and Research (HER) Sector meeting



Visit by Environment, Health & Safety Office of the Massachusetts Institute of Technology (MIT) in 2013



OSHE sent a team to Duke University's Occupational and Environmental Safety Office in 2011 to learn about Duke University's Safety Management System

NUS Offices	Areas of working relationship
NUS Senior Management	
Office of the President	Development of University policies on safety & health
Office of the Provost	Development of University policies on safety & health, in particular in areas affecting the faculties
Office of the Deputy President (Research & Technology)	Development of University policies on safety & health, in particular in areas affecting the research institutes and centres
Office of the Deputy President (Administration)	Development of University policies on safety & health, in particular affecting administrative departments
Office of the Vice President (Campus Infrastructure)	Development of University policies on safety & health, in particular those which impact space and physical infrastructure
Academic Cluster	
Office of Admissions	Distribution of Emergency Preparedness packs to new students
Registrar's Office	Crisis and emergency management
Faculties & Schools	Safety & Health audits & inspections and roll out of safety & health programmes
Administration Cluster	
Centre for Counselling & Psychological Services	Staff and student counselling & psychological matters
Computer Centre	IT matters
Enterprise Office (Industry Liaison Office)	Material Transfer Agreements
International Relations Office	Crisis management involving international students or NUS students overseas
Office of Campus Amenities	Dining and transportation
Office of Campus Security	Safety and security matters
Office of Corporate Relations	Communication and media matters
Office of Environmental Sustainability	Environmental interests
Office of Estate Development	New capital and Alteration & Addition (A&A) Projects
Office of Facilities Management	Facilities matters
Office of Financial Services	Financial matters
Office of Housing Services	Safety & health management in Residences
Office of Human Resource	Staff matters
Office of Legal Affairs	Legal advice
Office of Resource Planning	Financial resource
Office of Risk Management	Business Continuity Planning & Enterprise Risk Management
Office of Student Affairs	Student matters
Organisational Excellence Office	Quality improvement and six sigma projects
University Health Centre	Staff & student's health and student insurance matters
University Town Management Office	UTown facilities

Table 6 OSHE's internal partners

National Institutions	
Universities	National Technological University (NTU)
	Singapore Institute of Management (UniSIM)
	Singapore Institute of Technology (SIT)
	Singapore Management University (SMU)
	Singapore University of Technology and Design (SUTD)
Polytechnics	Nanyang Polytechnic (NYP)
	Ngee Ann Polytechnic (NP)
	Republic Polytechnic (RP)
	Singapore Polytechnic (SP)
	Temasek Polytechnic (TP)
Research Institutions	Agency of Science, Technology & Research (A*STAR)
	National Research Foundation (NRF)
Hospital Clusters	National University Health System (NUHS)
	Singapore General Hospital - SingHealth (SGH-SingHealth)
Government agencies	Workplace Safety & Health Council (WSHC)
	Ministry of Manpower (MOM)

Table 7 External partners - Safety & Health WG for Higher Education and Research Sector

3. ORGANISATIONAL CHALLENGES

a. Competitive Environment

Newly introduced safety and health regulations have resulted in a demand for safety and health professionals across various industry sectors. Moreover, safety and health is a relatively new profession in Singapore, especially in academic institutions. OSHE faces stiff competition in attracting talented individuals to join its ranks.

b. Organisation Directions

Implementing high safety and health standards in NUS is not without its challenges. NUS has grown rapidly since its move to the Kent Ridge Campus in the 1970s. The physical infrastructure, which was designed more than 40 years ago, is challenged to meet today's safety standards and research interests. Safety management programmes then were voluntary and developed piece-meal to address the safety needs of individual departments.

Safety awareness of staff and students was not high. Government agencies imposed some safety regulations on NUS but they were limited.

Since the corporatisation of NUS in 2005, safety and health regulations have been applicable to the University. OSHE's programmes ensure that the University, as a good corporate citizen, is in legal **compliance with applicable safety & health laws and regulations.**

OSHE and its programmes have grown in tandem with the University. Since the inception of OSHE in 2002, NUS has built many new research facilities, upgraded its education and student spaces, and embarked on an aggressive facilities renewal programme. OSHE must continue to work closely with the offices in the UCI cluster to integrate safety and health considerations in the areas of campus development and facilities renewal.

OSHE has adopted a structured approach to improving the standard of safety and health in NUS.

Since 2004, OSHE has been promoting the adoption of **safety and health management system (SHMS)**. To date, more than 98% of all laboratory-based Principal Investigators (PIs) have implemented the SHMS and had their management systems audited. Moving forward, OSHE will be encouraging departments to develop their departmental-level SHMS.

To reduce accidents and incidents, the **safety and health culture** of the organisation also needs to change. NUS has adopted safety and health as one of its core values, and OSHE, with the support of NUS Senior Management, will continue to facilitate this initiative of culture change.

The organisation's direction for Crisis & Emergency Management is **crisis prevention** first, then adequate and effective **crisis response** should a crisis occur. OSHE works closely with the Office of Risk Management, who is in charge of Business Continuity Management, to help faculties, research institutes and administrative departments develop their business continuity plans.

The Strategic Directions for OSHE

To discharge its mission and attain its vision, OSHE has adopted the following strategies:

- Stakeholder engagement: To help OSHE secure the buy-in needed for its programmes.
- System approach to problem solving: To ensure root causes are identified and addressed in safety and health as well as crisis and emergency situations, which are often complex and multi-faceted.
- Service excellence: To best serve OSHE's customers.

- Adoption or adaptation of best practices from other industries, universities and research institutes: To accelerate safety and health improvements in the University.

c. Key Challenges

OSHE faces challenges in three main areas as shown in Table 8.

OSHE is supporting a growing university with rapidly expanding research and academic programmes and with collaborations across institutions. At the operational level, the diversity of activities and the porous nature of the University have made safety and emergency management even more challenging, especially in research, which by nature involves risks. In some cases where new materials are being synthesised, safety and health standards have yet to be established.

These challenges are compounded by the introduction of several new safety and health regulations which affect many organisations. Such regulations, while putting a check on safety practices, are designed primarily for industry. However, as the academic environment differs significantly from those of industry, education and research organisations face challenges in trying to comply with these standards.

The introduction of many new safety and health regulations has resulted in a shortage of good safety & health professionals in the market as companies actively seek out safety and health professionals to help them raise safety standards and meet statutory compliance requirements. Qualified and competent staff is key to the Department's ability to deliver services of a high standard.

OSHE continually reviews its scope of work, products and services to ensure that they are relevant.

<p>Business Challenges</p>	<ol style="list-style-type: none"> 1. Emerging research areas with unclear / unknown risks 2. Research involving collaborations across institutions 3. New regulations affecting IHLs
<p>Operational Challenges</p>	<ol style="list-style-type: none"> 1. Diversity of activities & porous nature of campus 2. Growing University / campus with increasing staff and students 3. Rapid and expanding research and academic programmes
<p>People Challenges</p>	<ol style="list-style-type: none"> 1. Ability to attract and retain staff 2. Varying safety & health culture amongst staff and students

Table 8 Key challenges

Several new programmes have been introduced in response to increasing demand by the Department’s stakeholders. New products and services are introduced where gaps have been identified. Programmes which do not effectively serve their functions are discontinued.



1.1 SENIOR LEADERSHIP

1 Senior leaders develop department's values that focus on customers

The Senior Management team of OSHE comprises the Director, Head of Emergency Management (EM) Division, and Head of Safety & Health Management (SHM) Division (Figure 1.1.1).

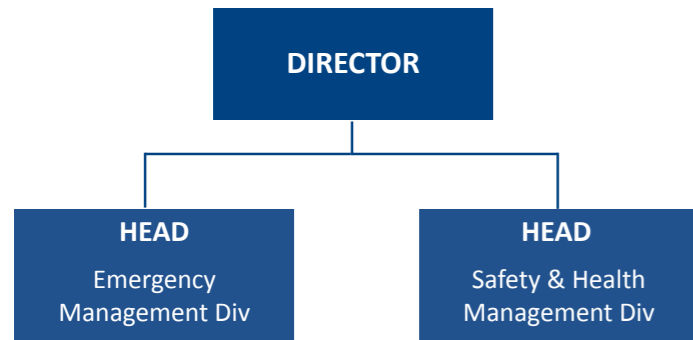


Figure 1.1.1 OSHE Senior Management team

The OSHE Senior Management team sets the pace and direction to create a customer-centric culture undergirded by clear mission, vision and values (MVV), along with strategic directions and programmes (Figure 1.1.2).



Head of Emergency Management (EM) Division, Mr Yam Guan Shyh, with EM Group Leader, Mr Ravindran Sockalingam

Assisting the OSHE Senior Management are six Group Leaders, comprising one from EM Division and five from SHM Division. The OSHE Senior Management and Group Leaders form the senior leadership team at OSHE.

OSHE's MVV have evolved over the years. They were first developed in 2005, and are reviewed regularly to ensure that OSHE stays relevant and effective amidst the changing external environment.

OSHE's current MVV were developed in 2013, arising from a strategic planning exercise that reviewed OSHE's services, new developments in NUS, customer and stakeholder expectations, and output from VP(CI)'s strategic retreat. The MVV were revised against a backdrop of rising safety standards and expectation of stakeholders for a positive safety, health and environment culture and emergency preparedness for the campus. Senior Management of OSHE discussed the Department's MVV and sought further input from staff on how to make OSHE a great organisation. The MVV replaced the previous statements which were established in 2008.



Head of Safety & Health Management (SHM) Division, Mr Saravanan Gunaratnam, with SHM Group Leaders From L-R: Mr Pramoth Chandrikamohan, Dr Lim Cheh Peng, Mr Saravanan Gunaratnam, Dr Tessy Joseph, Mr Danny Toh, Ms Gisela Ho

Figure 1.1.2 OSHE's Mission, Vision & Core Values

2 Senior leaders communicate department’s vision, mission and customer-focused values to employees and stakeholder

Through the various communication channels, the senior leaders explain, discuss and seek feedback on issues concerning OSHE’s MVV to specific groups of employees and external stakeholders. The communication channels are summarised in Table 1.1.1.



Dr Peck Thian Guan’s sharing of OSHE’s Mission, Vision and Values at a Department meeting

Stakeholder	Communication platform	Senior leaders’ involvement	Frequency
NUS Staff	<ul style="list-style-type: none"> OSHE’s website S&H award ceremonies Publicity materials Collaterals (e.g. mugs) 	<ul style="list-style-type: none"> Vetting of web and other publicity materials Delivery of speeches at award ceremonies 	<ul style="list-style-type: none"> As and when required
OSHE Staff	<ul style="list-style-type: none"> New staff orientation NUS performance management system Department meetings S&H Award ceremonies Publicity materials 	<ul style="list-style-type: none"> Briefing on Mission, Vision and Values for all new staff Orientation of new staff On-the-job training Department meetings 	<ul style="list-style-type: none"> As and when required Quarterly department meetings
Customers	<ul style="list-style-type: none"> OSHE’s website S&H award ceremonies Publicity materials 	<ul style="list-style-type: none"> Vetting of web and publicity materials Deliver of speeches at ceremonies 	<ul style="list-style-type: none"> As and when required
Students			
Partners			
Suppliers			
Other stakeholders			

Table 1.1.1 Channels of communication by senior leaders

3 Senior leaders demonstrate and reinforce their commitment to customers

Specific activities are undertaken by the senior leaders to reinforce the customer focus. There is a broad range of activities with participation by members of the Senior Management team.

Some examples of the activities undertaken by OSHE Senior Management to demonstrate its commitment to its key stakeholders are listed in Table 1.1.2.

Channel for personal involvement of senior leaders	How they are personally involved	Target Audience
Leading in key projects/ improvement programmes	<ul style="list-style-type: none"> Act as business sponsor for EHS IT system implementation 	<ul style="list-style-type: none"> Group Leaders Staff from NUS Computer Centre
	<ul style="list-style-type: none"> Participate in night inspections Review all policies, directive and programmes 	<ul style="list-style-type: none"> OSHE Group Leaders Faculties Audit Partners from UCI clusters
	<ul style="list-style-type: none"> Conduct briefing on BCM for research projects & laboratories 	<ul style="list-style-type: none"> Faculties Departments
Audits	<ul style="list-style-type: none"> Participate in campus-wide audits 	<ul style="list-style-type: none"> OSHE auditors Deans and HoDs Principal Investigators
Inspections	<ul style="list-style-type: none"> Participate in campus-wide inspections 	<ul style="list-style-type: none"> OSHE auditors Deans HoDs Principal Investigators
Design & development of training packages, services & products	<ul style="list-style-type: none"> Participate in development of programmes such as ASHPA criteria, fire safety award, safety checklist, CERT, etc. Review of training materials 	<ul style="list-style-type: none"> OSHE staff
Feedback Management	<ul style="list-style-type: none"> Senior leaders take a personal interest & response to customer complaints, enquiries or feedback 	<ul style="list-style-type: none"> NUS staff/students
After action review / post event debrief	<ul style="list-style-type: none"> Evaluate programmes with staff & customers to identify areas for improvement 	<ul style="list-style-type: none"> OSHE staff
Monitoring programme execution	<ul style="list-style-type: none"> Qualification of safety auditors 	<ul style="list-style-type: none"> OSHE Auditors
	<ul style="list-style-type: none"> Monthly reporting Monitoring via VPCI report 	<ul style="list-style-type: none"> OSHE Group Leaders & representatives
Supporting staff in securing resources to further improve customer service	<ul style="list-style-type: none"> Benchmarking of safety officer headcount against leading research universities Increase in manpower approved by NUS Senior Management 	<ul style="list-style-type: none"> NUS Senior Management OSHE staff
	<ul style="list-style-type: none"> Reinstatement of ASHPA prize money 	<ul style="list-style-type: none"> HoDs Faculty Safety & Health Officers Department Safety Committees

Table 1.1.2 Activities reinforced by senior leaders

Senior leaders are also involved in the design of services and programmes to ensure they are customer focused. For example, the Director and Head of Safety and Health Management Division were involved in the design of the Online Project Risk Assessment System (OPRAS), and subsequently with the enhanced system, which is called the integrated Online Research Compliance (iORC) system. The Director and Head of Emergency Management Division were involved in the planning and development of the Fire Safety Training Course for staff and students.

Feedback results from training courses, road shows, and major events organised and conducted by OSHE are reviewed by Heads of Division. Based on these results, senior leaders direct respective officers to refine their programmes or services. It is a Standard Operating Procedure (SOP) for a post-event debrief session to be conducted after all major events.

OSHE’s senior leaders are members of institutional committees such as the Institutional Biosafety Committee and the Institutional Laboratory Safety Committee. New programmes, services or manuals by OSHE concerning laboratory safety are presented to and subjected to review by these committees prior to launch. The feedback is used to refine and improve these services.

Senior leaders participate in After Action Review committees and meetings. Improvements and suggestions presented at these meetings can be endorsed by OSHE Senior Management for implementation.

4 *Senior leaders evaluate and improve the effectiveness of their customer-focused leadership*

In the spirit of continual improvement, OSHE senior leaders regularly and systematically seek feedback on the effectiveness of their leadership at three levels: individual, departmental and organisational (Table 1.1.3).

Levels	Evaluation & Improvement Mechanisms
Individual	<ul style="list-style-type: none"> • 360° feedback • 180° feedback • Professional individual coaching • Performance appraisal exercise
Departmental	<ul style="list-style-type: none"> • Comprehensive programme & KPI review
Organisational	<ul style="list-style-type: none"> • Performance reporting in VP(CI) report • Presentation of NUS Senior Management • Organisational Climate Survey

Table 1.1.3 Personal leadership effectiveness evaluation & improvement mechanisms

Individual Level

180°/360° Feedback

OSHE Divisional Heads undertake 180°/360° appraisals conducted by OHR and UCI HR. Follow-up individual coaching sessions are arranged to provide personal guidance and leadership behaviour modification to achieve greater effectiveness.

Performance Appraisal Exercise

The Senior Management of OSHE is appraised once every six months according to OHR’s performance appraisal cycle.

Departmental Level

Comprehensive Programme & KPI Review

Heads submit monthly progress reports to the Director, who in turn discusses the progress of programmes with Vice President (Campus Infrastructure).

Organisational Level

Performance Reporting

One critical consideration in leadership evaluation is how well the Department has performed. OSHE compiles and presents quarterly reports on the University’s safety and health performance to the NUS President at the Risk Management Steering Committee meetings. At the end of each year, OSHE presents its achievements to the University’s Senior Management through the publication of an annual report.

Organisational Climate Survey (OrgCS)

The OrgCS is another source of input for senior leaders to assess the effectiveness of their personal leadership and involvement. Senior leaders review the OrgCS results and identify their strengths and areas for improvement.

To address these areas needing improvement, senior leaders attend a range of workshops, short and long term courses and conferences both locally and overseas.

Senior leaders also lead study trips abroad to learn about best practices and to identify new areas of growth for the Department. They occasionally present papers at international conferences on safety and health and network with the world’s best in the field. Table 1.1.4 shows some areas where improvements in customer-focused leadership have been made.

An improvement in the OrgCS scoring between 2012 and 2014 (Table 1.1.5) and the international accreditations given to OSHE (e.g. national and international accolades, programmes winning international awards such as CSHEMA award, etc.) are further testimony to the effectiveness of the improvement mechanisms in place for senior leaders.

Overall leadership ratings from the latest three OrgCS also show a consistent upward trend (Figure 1.1.3).

Findings from Organisational Climate Survey	Improvements Made
Leadership was the weakest amongst the NUSSC award winners	<ul style="list-style-type: none"> • Mentoring of selected OSHE Senior Management staff • Book club for OSHE Senior Management staff
Lack of recreational activities	<ul style="list-style-type: none"> • Formation of OSHE social committee and organising more team bonding events
Teamwork was found to be weak	<ul style="list-style-type: none"> • Emphasize teamwork in MVV
Career progression and promotion not transparent	<ul style="list-style-type: none"> • Appraisal of staff conducted by entire senior leadership team
Dissemination of information was lowest amongst NUSSC winners	<ul style="list-style-type: none"> • ISHP meeting, monthly Group Leaders meetings and quarterly department meeting
Staff engagement	<ul style="list-style-type: none"> • Formation of groups led by Group Leaders • Team-based improvement projects

Table 1.1.4 Improvements made to customer-focused leadership

Rating	Director	Division Head	Group Leader
OrgCS 2012	5.27	4.69	5.05
OrgCS 2014	5.60	5.14	5.56
Change (+/-)	+0.33	+0.45	+0.51

Table 1.1.5 OCS results on senior leaders' leadership effectiveness

Organisational Climate Survey Results
2009, 2012 and 2014

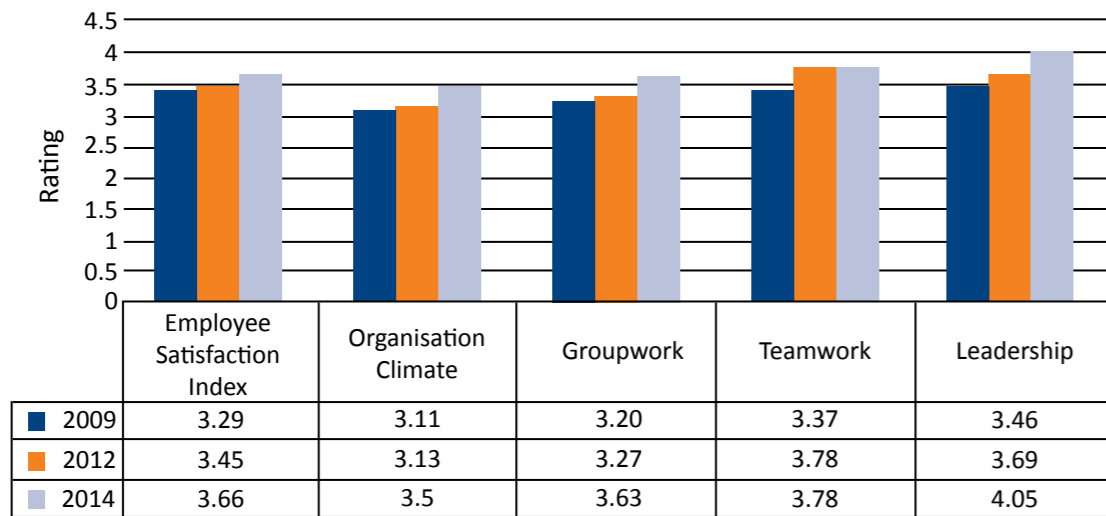


Figure 1.1.3 Summary of OrgCS results over the last three surveys (2009 to 2014)

1.2 ORGANISATIONAL CULTURE

5 Department translates its values into desired employee behaviours that focus on customers

6 Department adopts customer-focused policies and practices that support values

OSHE has a strong culture of achieving work and service excellence. This culture is anchored on the NASI+ values (Figure 1.1.2), which define what the Department believes in. They guide the staff's interaction with one another, and also with OSHE's service partners and customers. These values are continually reinforced through policies, programmes and practices that OSHE has put in place.

7 Department has programmes to promote customer-focused culture

To nurture our staff, the following practices and programmes are in place:

- A competency matrix for safety and health professionals.
- The opportunity for junior staff to attend Senior Management meetings, which give them exposure to the decision making process at senior management levels.
- A Book Club for Groups Leaders (GLs) to hone their management skills.

- Scholarships for young promising staff to further their studies.
- Professional Development Group (PDG) sessions to facilitate peer learning.

8 Department closes gaps between current and desired customer-focused culture

Since its introduction in 2008, the OrgCS is carried out once every two years. The OrgCS helps reveal the differences between current and desired culture. After each OrgCS, focus groups and discussions are conducted to help senior leaders analyse the results of the survey and develop an action plan, with proposed interventions aimed at addressing cultural gaps. The action plan is endorsed by the OSHE Senior Management before implementation.

Some of the gap-closing interventions that had been carried out were:

- Reviewing work plans and processes during the annual Strategic Planning Day and to determine if current resources are adequate.
- Organising more team bonding and social activities e.g. departmental outing to Gardens by the Bay and weekly running club.
- Improving communication of rationale behind certain policy changes.
- Introducing a more transparent and fairer performance appraisal by having group appraisal carried out by OSHE's Senior Management team.
- Doing personality profiling for staff to help them understand their bosses and each other better.
- Organising a welcome lunch for new staff.
- Organising monthly birthday celebrations of staff at ISHP meeting.



Team bonding at Gardens by the Bay, 2012



Professional Development Group training on Accident Investigation Kit, 2014



Training safety officers on nanomaterials, 2012



Auditors SHMS training for new staff, 2014



After Action Review on Mid-Career Professional Training Award Information Night, 2014

PLANNING



2.1 STRATEGY DEVELOPMENT & DEPLOYMENT

9 Department has strategies that focus on customers

OSHE’s planning paradigm is mission-directed. It preserves the Department’s core practices while driving progress and allowing OSHE to be more agile and proactive in anticipating trends and changes.

Each strategic planning cycle comprises two key stages (Figure 2.1.1):

- 1) Strategy Development
- 2) Strategy Execution

Strategy Development	Strategy Execution
<ul style="list-style-type: none"> Environmental scan Analysis of internal & external inputs Identify strategic focus for the coming year Recommendations Strategy map 	<ul style="list-style-type: none"> Work plans Initiatives & targets Resource allocation Communication & buy-in Track performance & progress

Figure 2.1.1 OSHE strategic planning process

Strategy Development

The strategic planning cycle starts with a stock-take of the present situation, determining the critical successful factors for raising safety and health standards in NUS, and identifying the key expectations and requirements of OSHE’s customers, namely NUS Senior Management, staff, faculty members and students.

Next, an environmental scan is carried out that helps the Department to identify its challenges. A comprehensive range of internal and external influencing factors is considered, including the NUS mission, vision and strategy, customer expectations, collaborations and partnerships with other departments, staff recruitment, retention

and development, stakeholder expectations, best practices, and technological development. Consequently, the scan helps OSHE Senior Management identify the strategic focus for the coming year.

In view of current challenges, OSHE has mapped out three underpinning strategies:

- Stakeholder Engagement
- System Approach
- Adopt or Adapt Best Practices

The strategies are conceptualised in the OSHE’s Strategy Map in Figure 2.1.2.

OSHE’s service excellence strategies are encapsulated in the 3Ts Model (Figure 2.1.3).

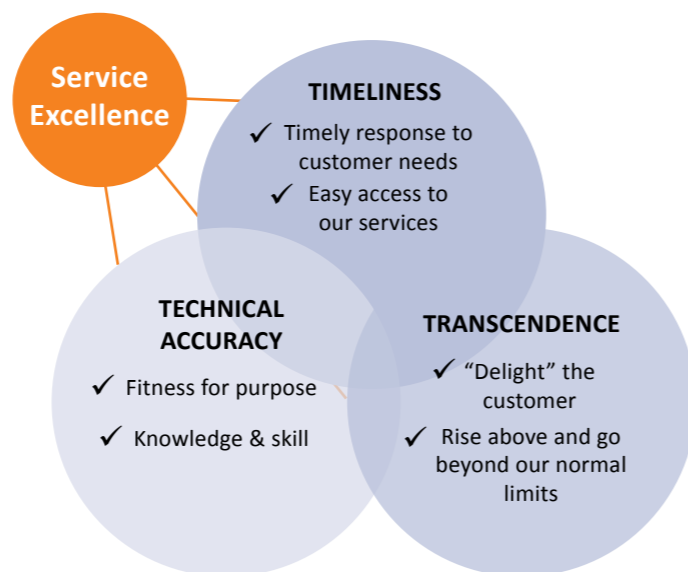


Figure 2.1.3 OSHE 3Ts service excellence strategies

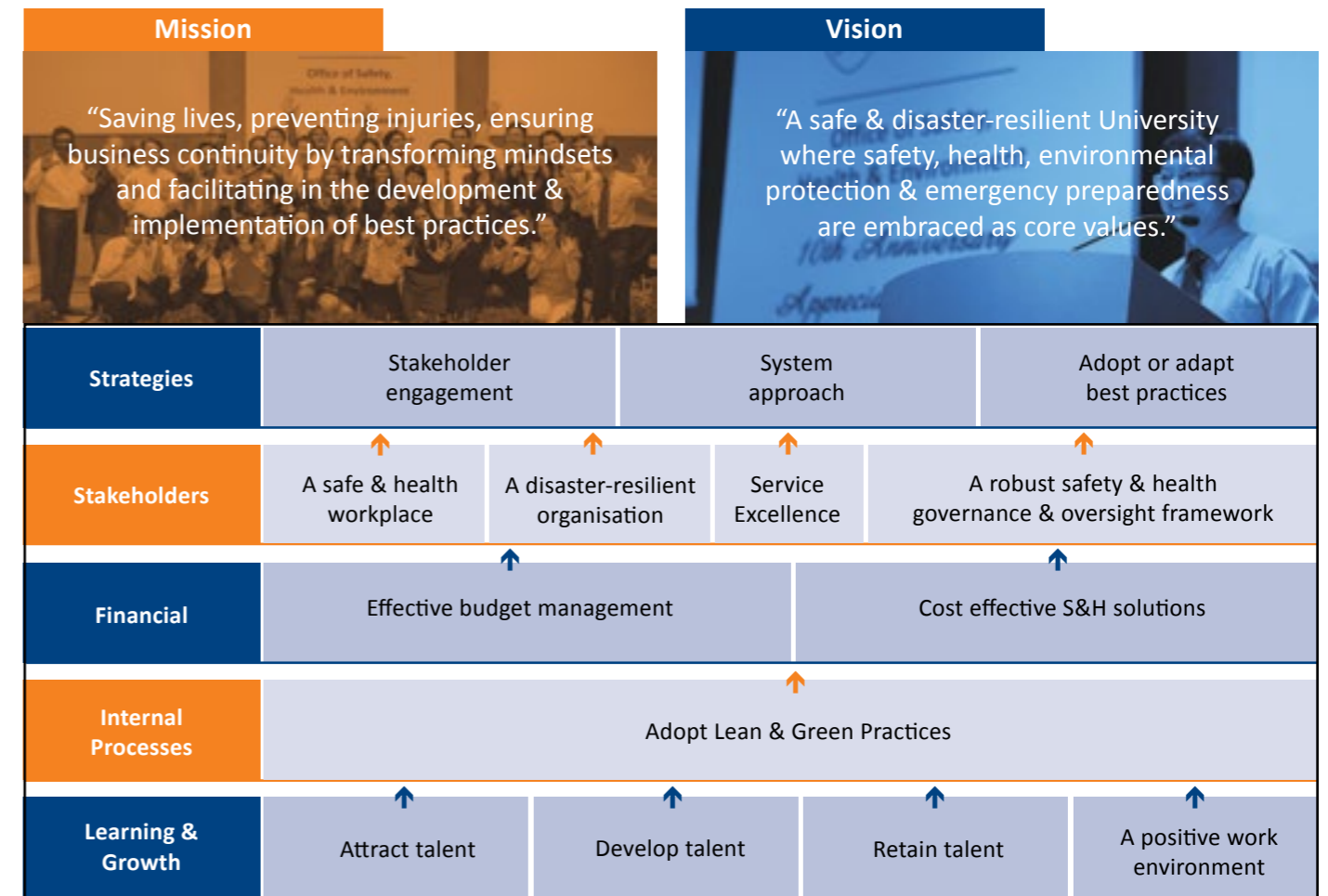


Figure 2.1.2 OSHE Strategy Map

Strategy Execution

Strategy execution is spearheaded by the senior leaders, whose portfolios oversee the respective strategies. Once the key areas of focus are identified, the two Divisions translate management-approved recommendations from the strategic retreat into initiatives in their work plans. The Divisions also review and prioritise annual recurrent work, taking into consideration the targets set.

Thereafter, the strategic plan is reviewed every year in preparation for the yearly budget submission, work plan targets and deliverables required by the NUS Performance Management System. During the review, the Department analyses human and financial resources and identifies the training needed to bridge staff competency gaps.

At the end of the year, performance is reviewed against the stated objectives and targets.

10 Customer-focused strategies are aligned to the department’s objectives and goals

11 Department establishes short-term and long-term customer-focused goals

OSHE has adopted 11 strategic goals in 4 key areas: (i) stakeholders, (ii) financial, (iii) internal processes, (iv) learning & growth, listed in Table 2.1.1. The details of the strategic goals are listed in Table 2.1.2.

Examples of how OSHE’s service excellence initiatives are aligned to the Department’s strategic goals are shown in Table 2.1.3.

Strategic Goals			
Stakeholders	Financial	Internal Processes	Learning & Growth
A safe & healthy workplace	Effective budget management	Lean & green processes	Attract talent
A disaster-resilient organisation	Cost effective safety & health solutions		Develop talent
A robust safety & health compliance & governance framework			Retain talent
Service excellence			A positive work environment

Table 2.1.1 OSHE strategic goals

Stakeholders				
Strategic Goals	Measures	Short-term targets	Long-term plans	Initiatives
A safe & healthy workplace	% safety and health programmes implemented compared to relevant safety & health programmes in CSHEMA Comprehensive Safety Programme Award List	>90%	>95%	Safety & Health Programmes
	TWSH Framework	>50% implementation of elements of WSHC's TWSH programme	>95% implementation of elements of WSHC's TWSH programme	Total Workplace Safety & Health framework
A disaster-resilient organisation	Number and quality of proactive measures taken in emergency preparedness	<u>Set up and maintenance of CEM framework</u>	<u>Continual maintenance of CEM framework</u>	CEM Framework
		>90% of faculty Unit Incident Commanders (UICs) to be briefed within 6 months of appointment	>90% of faculty UICs to be briefed within 3 months of appointment	
		>70% of faculty UICs to attend relevant crisis management training within 12 months	>80% of faculty UICs to attend relevant crisis management training within 12 months	
		>5/7 rating on usefulness of consultation sessions, workshop and training courses	>6/7 rating on usefulness of consultation sessions, workshop and training courses	
	% of NUS entities participating in fire prevention and emergency response programmes	>90% of NUS buildings completed annual fire drills and exercises	>95% of NUS buildings completed annual fire drills and exercises	Fire Safety Programme
		>70% of buildings receiving fire safety excellence awards	>85% of buildings receiving fire safety excellence awards	
% of NUS faculties, admin departments and research institutes and centres with BCPs	>95%	All admin, research and teaching units to maintain their BCP, including conducting table-top exercises and review	BCM Framework	

Stakeholders				
Strategic Goals	Measures	Short-term targets	Long-term plans	Initiatives
A safe & healthy workplace	Percentage (%) of new capital projects undergoing Design for Safety (DfS)	Set up DfS framework by Dec 2015 All NUS laboratories to be regularised by 2016, so that all NUS laboratories can obtain the PFM licence by 2016	DfS for all capital projects To enhance physical infrastructure beyond code compliance for identified high risk laboratories and buildings	Design for Safety Programme
	No. of worksites given demerit points >5 by NUS for safety non-conformances noted during internal inspections	Zero	Work injury rate in NUS worksites to be 50% below national average for construction sector	Construction Safety Programme
	No. of MOM reportable incidents at worksites	≤2		
	No. of dangerous occurrence at worksites	Zero		
	No. of fatality	Zero		
	No. of stop work orders issued by the authority at worksites	Zero		
	% of departments with SHMS	100% of high risk laboratory-based departments have implemented their department SHMS	100% of laboratory-based departments maintain their SHMS certification	Department Safety & Health Management System Programme
	% of PIs with SHMS	>99% of laboratory-based PIs maintain their laboratory SHMS certification	Laboratory SHMS certification to be merged with departmental SHMS certification	PI Laboratory certification scheme

Stakeholders				
Strategic Goals	Measures	Short-term targets	Long-term plans	Initiatives
A robust safety & health compliance and governance framework	% of applicable legal updates identified	100% identified	100% identified	SOP for ensuring legal updates
	% of applicable legal updates communicated	100% communicated	Implement IT system to facilitate self-governance and compliance	SHAPE newsletter EHS 360
	No. of compliance inspections	1x PFM inspection annually	Implement IT-based hazardous material inventory system	Hazardous Material Management System
		Conduct unannounced inspections of departments	Implement integrated multi-(purpose) inspection system to reduce the number of inspections	Streamlining inspection and audit programme
	1 x Department SHMS audit every three years			
	% of PIs audited with non-compliance/non conformance found during audits	<20%	<10%	Safety & Health Management Systems for Departments
Customer service survey rating	>5 points out of 7	>5.5 points out of 7	Customer service programme	
Service Excellence	Supplier & partner performance	>4 points out of 5	> 4.5 points out of 5	Supplier management programme

Financial				
Strategic Goals	Measures	Short-term targets	Long-term plans	Initiatives
Effective budget management	Budget utilisation	>95%	>95%	Expenditure Monitoring Programme
Cost effective safety and health solutions	Cost savings achieved in IQT projects	5% cost reduction over business as usual	10% cost reduction over business as usual	IQT projects

Internal Processes				
Strategic Goals	Measures	Short-term targets	Long-term plans	Initiatives
Lean and green processes	No. of lean and green projects	1 per year	>1 per year	EHS 360 IT system
	VOICE participation rate for staff	>60%	>90%	Quarterly VOICE report card
	% of Project Risk Assessment (PRA) reviewed within 30 days	>70%	NA	Animal work to come under PI laboratory certification
	% of Project Risk Assessment (PRA) reviewed within 14 days	NA	>70% to be reviewed within 14 days	Animal work to come under PI laboratory certification

Internal Processes				
Strategic Goals	Measures	Short-term targets	Long-term plans	Initiatives
Lean and green processes	% of audit reports issued within 30 days	NA	>80%	EHS 360 IT system
	% of AIRS investigation conducted within 14 days	NA	>80%	EHS 360 IT system

Learning & Growth				
Strategic Goals	Measures	Short-term targets	Long-term plans	Initiatives
Attract talent	Quality of hire (QOH) assessment	QOH >65%	QOH >67%	Training of officers involved in interviews and candidate selection
Develop talent	Training budget	Utilisation >90%	Utilisation >90%	Competency framework and monitoring of training plan implementation
	No. of training places	Fulfilment of no. of planned training places >85%	Fulfilment of no. of planned training places >85%	
Retain talent	Staff attrition rate	<24%	<13%	Book Club for all staff
Create a positive work environment	Scores in Organisational Climate Survey	Staff response rate >85%	Staff response rate >90%	Active HR monitoring programme
		Employee satisfaction index >3.6	Employee satisfaction index >4	Wellness programme

Table 2.1.2 Short-term and long-term customer-focused targets



OSHE Customer Service Day 2013



OSHE Strategic Planning Day 2014

Safety & Health Management Division			
Strategic Goals	Customer Focused Service Excellence Initiatives		
	Technical Accuracy	Timeliness	Transcendence
A safe & healthy workplace	<ul style="list-style-type: none"> OSHE in partnership with OFM & OED published a laboratory design standard to ensure newly renovated or constructed laboratories meet international standards. 	<ul style="list-style-type: none"> OSHE participates in all design reviews for newly constructed or renovated laboratories. This ensures there is an instant response to safety concerns during design reviews and projects are on-time. 	<ul style="list-style-type: none"> OSHE is developing an environmental hazard impact standard to ensure design reviews are not taken in isolation. To ensure designs match the needs of users, OSHE developed Room Data Sheet forms for the comprehensive listing of safety issues for each area being renovated.
	<ul style="list-style-type: none"> OSHE has developed a comprehensive array of safety and health training courses. These provide NUS staff and students the necessary skills to do their work safely on campus. 	<ul style="list-style-type: none"> OSHE has migrated the majority of its training courses online. This has ensured staff and students are able to access the training 24/7, are quickly trained and can start working sooner. OSHE has purchased for the NUS community a library of safety videos on the best practices, which is accessible 24/7 on the staff and student portal. 	<ul style="list-style-type: none"> OSHE now issues certificates online instead of hardcopy. This saves paper and reduces waiting time to demonstrate compliance to regulators.
	<ul style="list-style-type: none"> To encourage the adoption of positive safety culture, OSHE has rolled out a number of safety promotional programmes – ASHPA, STAR, Safetymation, fire safety awards, etc. 	<ul style="list-style-type: none"> The awards are given at key safety events on a yearly basis by NUS Senior Management. 	<ul style="list-style-type: none"> In year 2013, OSHE organised the first NUS safety and health conference with no conference fees for NUS staff and students. The conference provided the platform for the sharing of best practices.
	<ul style="list-style-type: none"> Safety is a core value of NUS. 	<ul style="list-style-type: none"> Assistance is provided by Safety & Health Officers to guide Deans and Directors in setting their safety KPIs during their appraisal cycle. 	<ul style="list-style-type: none"> Safety & Health Officers provide value-added advice to faculties, departments and research institutes on how to structure their safety and health programmes to bring about a positive safety mindset.
A robust safety and health compliance and governance framework	<ul style="list-style-type: none"> OSHE created a listing of regulations that are applicable for NUS activities. Staff and students can refer to this list on which regulations are applicable and what is required to ensure compliance. 	<ul style="list-style-type: none"> OSHE has published this list on the staff and student portals so that it is accessible 24/7. 	<ul style="list-style-type: none"> OSHE has developed an online application that allows staff and students to identify what regulation is applicable to the chemical they are using. OSHE has also developed an online application that reminds departments when their licence is up for renewal.

Safety & Health Management Division			
Strategic Goals	Customer Focused Service Excellence Initiatives		
	Technical Accuracy	Timeliness	Transcendence
A robust safety and health compliance and governance framework	<ul style="list-style-type: none"> OSHE developed a chemical safety manual to educate researchers on how to implement correct practices in laboratory when handling/storing chemicals. 	<ul style="list-style-type: none"> Chemical safety manual is available online (24/7) and enquiries on the chemical safety manual are handled promptly by OSHE staff. 	<ul style="list-style-type: none"> OSHE designed a chemical waste trolley to be used university-wide and convinced NUS Senior Management to fund 50% of the cost of purchasing this trolley for departments.
	<ul style="list-style-type: none"> Risk assessments are reviewed by competent OSHE staff. The quality of the first review is further ensured by a more experienced master reviewer. 	<ul style="list-style-type: none"> Instead of hard copy submissions, risks assessments are submitted via an online system. OSHE has enhanced the process of risk assessment from project level to activity level to be aligned to national standards. 	<ul style="list-style-type: none"> OSHE has jointly developed an enhanced online system in partnership with other compliance offices (iORC). This has resulted in a reduction of different systems a researcher needs to access to apply for research approvals.
Emergency Management Division			
Strategic Goals	Customer Focused Service Excellence Initiatives		
	Technical Accuracy	Timeliness	Transcendence
A disaster-resilient organisation	<ul style="list-style-type: none"> OSHE has developed policies, frameworks that are appropriate and effective in preparing staff in NUS for crisis and emergency management. 	<ul style="list-style-type: none"> Emergency management framework and SOPs are posted on the intranet to facilitate easy access. 	<ul style="list-style-type: none"> OSHE provides training with role play in the training of incident commanders and unit incident committee members to provide them with hands-on experience in handling a crisis.
	<ul style="list-style-type: none"> Staff are competent in fire safety matters and advise departments on meeting SCDF's fire safety regulations. 	<ul style="list-style-type: none"> Fire drills for halls are conducted in the evening or weekends to allow maximum participation by the students. 	<ul style="list-style-type: none"> Even though ownership lies with the affected unit, key OSHE staff are connected 24/7 via mobile phone with succession plans to respond to an emergency and provide guidance and support to the UIC.
	<ul style="list-style-type: none"> OSHE staff have the necessary training, skills, experience and qualifications to help staff and students to be prepared for emergencies and to manage crisis situations. 	<ul style="list-style-type: none"> The crisis and emergency management team members are issued with blackberry phones so that they stay connected via phone and e-mail even during out-of-office hours. UICs are updated regularly on emerging crisis situations around the world so that they can take appropriate actions to limit the exposure of their staff and students to high risk situations. 	<ul style="list-style-type: none"> Even though ownership lies with the affected unit, key OSHE staff are connected 24/7 via mobile phone with succession plans to respond to an emergency and provide guidance and support to the UIC.

Emergency Management Division			
Strategic Goals	Customer Focused Service Excellence Initiatives		
	Technical Accuracy	Timeliness	Transcendence
A disaster-resilient organisation	<ul style="list-style-type: none"> OSHE staff responsible for the BCP programme have gained professional qualifications and are certified as Business Continuity Certified Experts (BCCE) and Crisis Management Certified Experts (CMCE) by Business Continuity Management Institute (BCMI). 	<ul style="list-style-type: none"> After obtaining training and obtaining national accreditation of competency, OSHE staff then provide on-site training and guidance to UICs and BCP coordinators on developing their Department's BCP. 	<ul style="list-style-type: none"> OSHE assists Departments in their table top exercises for testing their BCP. Head (EM Div) represents NUS in SPRING Singapore's BCM standards committee, giving prominence to NUS' BCP efforts.

Table 2.1.3 Examples of alignment of customer-focused initiatives with strategic goals

12 Department develops action plans to achieve its customer-focused strategies and goals

OSHE's yearly work plan is developed from discussions held during the annual strategic retreat (Figure 2.1.5). Input from the biennial Organisational Climate Survey and Customer Service Day is taken into consideration.

At the end of each strategic retreat, the Divisions would be able to:

- Determine whether the Department should introduce new programmes, remove obsolete ones or refine existing programmes and/or services to make them more user-friendly to customers.
- Determine whether new IT applications or services are needed to reduce the administrative workload for customers e.g. online applications and forms.
- Identify additional training needs and competency requirements of OSHE staff.

Work plans in the form of Gantt Charts, which address the "Who, What, Where, When and How", are then formulated for each Programme Leader. Both the work plan and master listing of roles and responsibilities are accessible through an online SharePoint (Figure 2.1.4).



Figure 2.1.4 OSHE online SharePoint

13 Department sets targets for employees linked to customer-focused strategies and goals

Key Result Areas (KRAs) and KPIs are clearly defined in the staff performance plans using the OHR system. Besides operational indicators, customer-focused KPIs & targets are also set for each staff.

The NASI+ value is included as one of the staff's KRAs. Table 2.1.4 shows an example of staff's KRAs and corresponding KPIs.

14 Department allocates resources for customer-focused activities

The Divisions work out the resources required – financial, manpower, and equipment and tools (e.g. information systems) – to support the implementation of their work initiatives. The Group Leaders identify risk control and mitigation measures as well as workforce competencies required to carry out the work plans. If resources do not exist within OSHE, position papers may be tabled to NUS Senior Management requesting additional funding or manpower.

Major Annual Milestones (OSHE vis-à-vis Corporate)

	DO			CHECK		ACT / PLAN	Plan					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NUS Requirements		Submission of Performance Plans		Interim budget	Actual budget	IT Project PPM (off cycle)		Mid year review	IT project PPM	1) Final PM review 2) Submission of new budget		1) Submission of Training & Development Plans 2) Compile AR report
OSHE's Timeline (Strategic planning)	Annual report draft ready	Issue of Annual Report				Planning for strategic plans / retreat / Methodology for Retreat (mid June)			OSHE Strategic Planning 1a) Management retreat (Dir, Heads & GLs) 1b) Briefing by VPCI HR on Competency matrix	1) Submission of OSHE budget to ORP 2) Submission of IT Projects		Gp Targets ↓ Individual targets ↓ Individual Workplans ↓ Training plans & populate PMS
OSHE's Timeline (Operations)				Service class discussion with Mgmt team + VPCI HR	Org Climate Survey (biennial) Briefing by OQM (end June) Stakeholder Analysis with GLs (end June) 0.5 day	Customer Service Day	Review of KPIs - Operational Service	Review Survey results Review benchmarking Review suppliers performance			Self Assessment	1 st draft of Service Class report to be ready

Figure 2.1.5 Development of OSHE's work plan

KRAs	KPIs
Assistance on Regulatory Compliance Issues	To provide assistance and liaison with the following regulators: <ul style="list-style-type: none"> a. MOH – Use of lentivirus vectors (>30) b. AVA – Use of veterinary biologics (>9 applications) c. SCDF – Issuance of PFM permits (>1,000 laboratories) d. NA(CWC) – Issuance of CWC permits (>4 users) e. SPF – Explosive precursors licences (>10 licences) f. NEA – Application of Hazardous Substance licence (>10 licences) g. NEA – Application of radiation licences and permits (>1,300 applications) <p>Stretched goal: to eliminate the need for licences by convincing regulators that NUS is capable of self-regulation.</p>
Safety Training	To conduct 11 different types of safety & health training courses (>100 sessions). To conduct talks, workshops and events upon request for faculties, departments and administrative units. <p>Stretched goal: to reduce the number of classroom training sessions by introducing e-learning modules.</p>
Industrial Hygiene & Environment monitoring	To provide the following services to the NUS Community: <ul style="list-style-type: none"> • Conduct industry hygiene monitoring in laboratories (on a need basis). • Conduct waste water monitoring exercise to ensure compliance to NEA’s waste water discharge limits (2 times per year). • Conduct radiation waste collection (4 times per year).

Table 2.1.4 Staff KRAs & KPIs

Finance and manpower requests are assessed holistically, taking into consideration OSHE strategic priorities to ensure optimal resource allocation. As the University has expanded over the years, OSHE uses benchmarking data on safety manpower of leading research universities to secure additional headcount for the department.

Resources are allocated to the following service activities:

IT resources

- OSHE supports IT resources and systems that track customer feedback at multiple touchpoints

(e.g. online feedback portal which is displayed in all e-mails).

- OSHE has developed an in-house iPad application, iAudit, to assist auditors in executing their activities.
- OSHE has partnered with other compliance offices to develop an online application system, iORC, for the submission of project risk assessment.
- OSHE has secured funding for a holistic and comprehensive IT system to meet all of its EHS needs.

Purchase of equipment and training aids

- OSHE has purchased state-of-the-art industrial hygiene equipment to improve indoor air quality monitoring and identify unknown chemicals.
- OSHE has created its own accident investigation toolkit to support investigations involving hazardous environments.
- OSHE ensures its trainers have the necessary resources to conduct its workshops on spill response.

Human resources and development

- OSHE ensures its staffing is adequate for serving each department, school and research centre, by defining the number of Safety & Health Officers needed to serve each faculty.
- OSHE sends staff for conferences and technical and professional training courses.

Purchase of reference materials

- OSHE has a comprehensive listing of safety and health standards and codes of practice, as well as a sizable collection of books to help Safety & Health Officers keep abreast of best practices and standards, so that they can advise staff and students adequately and correctly.

Physical infrastructure

- When OSHE moved to its new premises at Ventus, it secured a training room for conducting its safety training courses.

15 Department measures its performance against customer-focused plans and reviews them regularly

OSHE measures its performance relative to plans and involves its key staff and stakeholders in reviewing the programmes regularly through the platforms shown in Table 2.1.5.

Division Heads conduct regular reviews with their staff and discuss with them feedback given by colleagues and OSHE’s customers. Staff are formally assessed during the half-yearly and yearly performance management reviews.

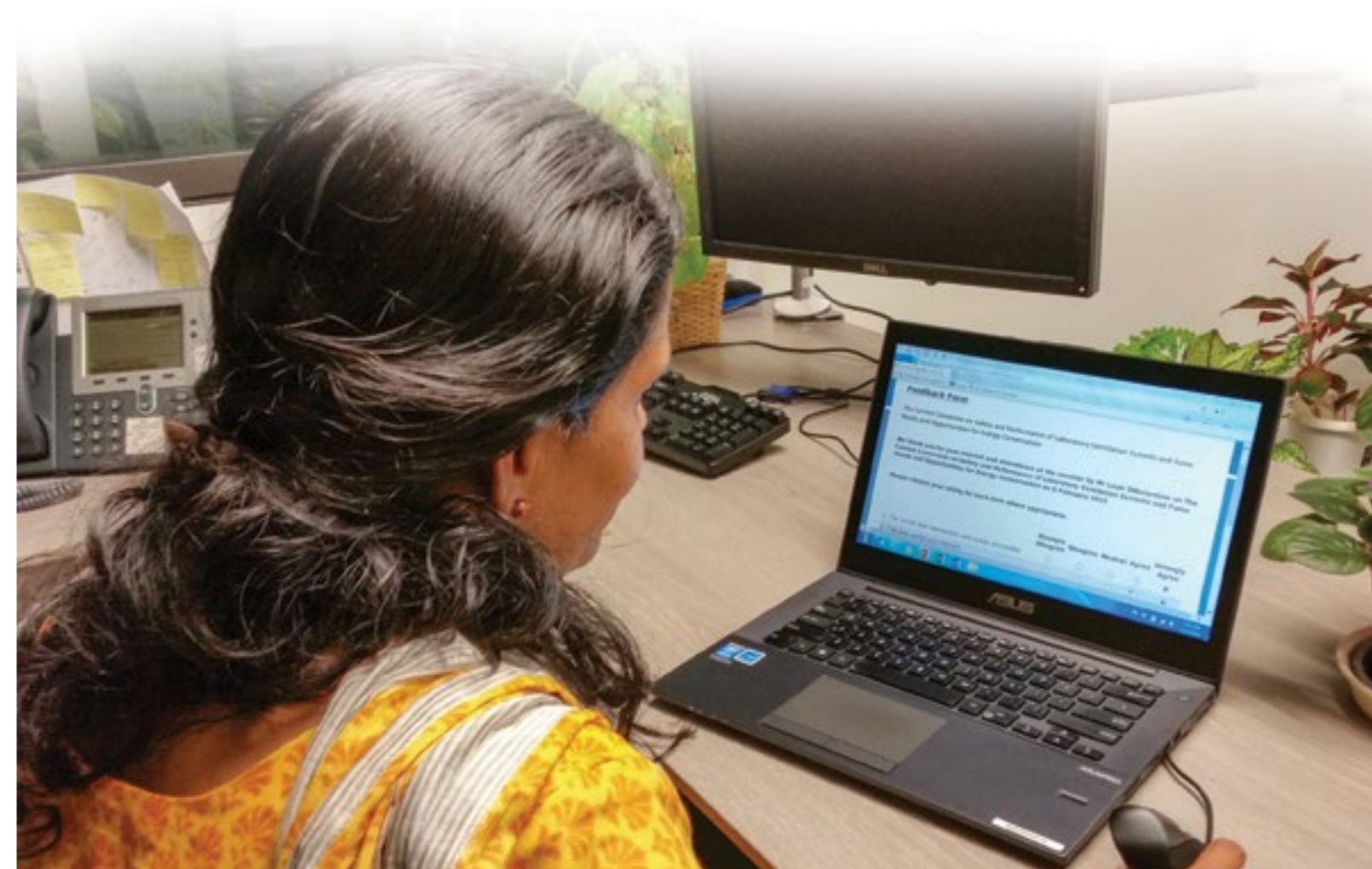
Participants of OSHE’s training courses evaluate the courses via OHR website or hardcopy forms. Customer satisfaction at these courses is monitored closely by the Heads of Division. Further, a debrief is carried out after every training course and event to identify areas for improvement and gaps in the system. Every year, OSHE presents the progress of the various programmes to NUS Senior Management, who will then provide feedback and input on new programmes for the following year. These feedback have resulted in new initiatives such as online training programmes for PIs and unannounced fire drills.

There is also regular monitoring of OSHE’s performance. Monthly reports are prepared and reviewed by the Director, who then reports to VP(CI). Through this reporting structure, performance issues are highlighted to NUS Senior Management.

Frequency	Platforms	Areas of Review	Review By
Fortnightly	Project Risk Assessment Reviews	To ensure appropriate risk controls are identified in laboratory & animal protocols	Master Reviewer for PRAs
Monthly	Report to VP(CI)	<ul style="list-style-type: none"> Tracking of quality, process KPIs Complaints, compliments, feedback 	Director and Head of Divisions
	GL meeting	Performance KPIs	Director
	SHM Div meeting	Performance KPIs	Head (SHM)
Quarterly	RMSC	NUS safety performance KPIs	Head of Division
	Departmental Staff Meeting	<ul style="list-style-type: none"> Tracking of quality, process KPIs Complaints, compliments, feedback 	Director
Annually	Customer Service Day + Strategic Planning Day	Complaints, compliments, feedback	Director and Head of Divisions
	Strategic Review	Review of OSHE's operational and NUS safety performance KPIs	Director and Head of Divisions
	Mid-year and end-of-the-year review	Review of individual's KPIs	Reporting Officer and Countersigning Officer
Biennially	Faculty Perception Survey	Customer perception	Strategic review by Senior Management
Others	AAALAC Review	Review of safety and health programmes related to animal research	Animal Biosafety Programme Lead
	Review by Internal Audit Department	Review OSHE operational performance	Director and Head of Divisions

Table 2.1.5 Platforms for review of performance

INFORMATION



3.1 MANAGEMENT OF INFORMATION AND KNOWLEDGE

16 Department selects, collects and captures information on customers

OSHE’s management of information involves the identification of customer needs; acquisition, collation and organisation of information; analysis and interpretation; and sharing, dissemination and storage for current and future reference. OSHE’s information management cycle is shown in Figure 3.1.1.

The information management framework facilitates both day-to-day operations and strategic planning, providing data that is critical to improving OSHE’s systems and work processes. OSHE’s planning, operations and performance review stay relevant to stakeholders and customers by drawing extensively from the information sources listed in Table 3.1.1.

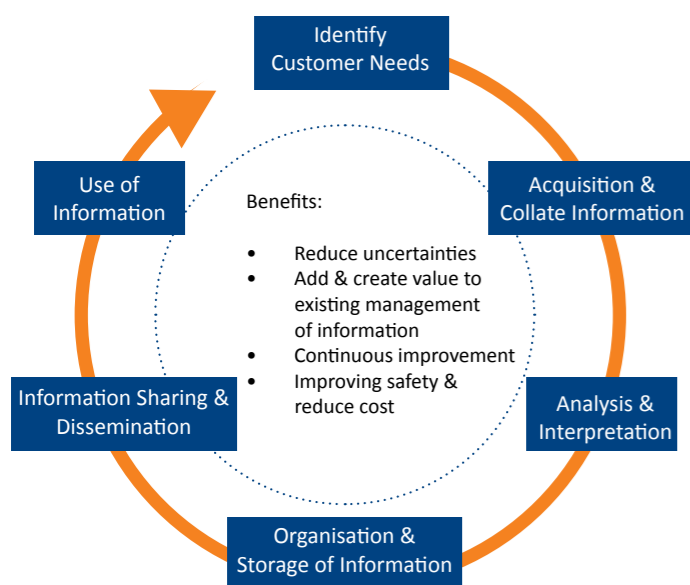


Figure 3.1.1 OSHE information management cycle

17 Department analyses and uses information on customers from various sources

OSHE analyses and uses information from customers, OSHE staff and partners/suppliers to improve its products and services. Feedback is obtained prior to designing a new process or product, during implementation and post-implementation review.

Customer Intelligence

Regular meetings with NUS Senior Management, UCI Management, and various Institutional Safety Committees are held to understand customers’ needs and priorities. In 2013, OSHE introduced a customer e-survey to obtain feedback on four of its core services: advisory services, fire safety inspections, laboratory inspections and audits. Feedback is also sought from customers on both classroom training and online IVLE training.

Staff Intelligence

To understand the needs of OSHE’s staff, information on staff performance is collected through periodic meetings with secondary Reporting Officers (ROs) and monthly Group Leaders’ meetings. Training and development needs of staff are identified yearly when the ROs discuss the following year’s work plan with their direct reports. In 2013, a Competency Assessment framework was launched to streamline the review and assessment of training needs for each of its staff. Organisational Climate Survey (OrgCS) is conducted periodically to obtain employee’s feedback on the organisation and identify gaps.

Regulators Intelligence

Information and updates on acts and regulations from regulators are received through e-mail correspondences and announcements. OSHE also subscribes to a Safety & Health legal updating service

by a commercial vendor. Senior OSHE staff are represented at the national Working Group on WSH in Higher Education and Research Sector where exchanges with regulators take place. Legal updates are communicated to stakeholders through various means including an e-newsletter and the Safety & Health Officers.

Partner/Supplier Intelligence

OSHE engages vendors to conduct services such as radioactive waste disposal, Industrial Hygiene (IH) and Indoor Air Quality (IAQ) monitoring, and testing of trade effluent discharge. In recent years, the Occupational Health (OH) Clinic has become an outsourced service. The quality of service from partners/suppliers is monitored periodically, and performance reviews are carried out to help them improve and to justify renewal of service contracts.

Information Source	Data Acquisition System	Type of Data Acquired	Purpose of Data Acquisition
Customer Information	<ul style="list-style-type: none"> Annual meeting with a member of NUS Senior Management UCI Management Meeting Quarterly meeting with Institutional Safety Committees Customer e-surveys Feedback on training 	<ul style="list-style-type: none"> Concerns and strategic directions from NUS Senior Management and UCI Management Comments and suggestions from review of proposed policies and guidelines Findings from surveys e.g. compliments and complaints, suggestions for improvement, staff performance etc. 	<ul style="list-style-type: none"> Identify gaps and opportunities for improvement Refine proposed policies and guidelines for approval and implementation
Staff Information	<ul style="list-style-type: none"> Organisation Climate Survey Monthly VP(CI) Report Competency Assessment Periodic meeting with secondary ROs Customer Service Day 	<ul style="list-style-type: none"> Findings from survey e.g. employee satisfaction index, organisation climate, leadership, teamwork, etc. Staff performance reviews / appraisals Training needs 	<ul style="list-style-type: none"> Identify gaps and opportunities for improvement Review staff performance e.g. compliments and complaints Identify competency gaps and career advancement opportunities
Regulators Information	<ul style="list-style-type: none"> Acts & Regulations Websites of regulators E-mail announcements from regulators 	<ul style="list-style-type: none"> Changes or updates in legislations that affect the stakeholders 	<ul style="list-style-type: none"> Identify relevant updates, communicate to the stakeholders, and facilitate legal compliance
Partner/Supplier Information	<ul style="list-style-type: none"> Partner / supplier survey 	<ul style="list-style-type: none"> Partner / supplier performance 	<ul style="list-style-type: none"> Review performance of partner/supplier

Information Source	Data Acquisition System	Type of Data Acquired	Purpose of Data Acquisition
Operational Information	<ul style="list-style-type: none"> Laboratory Safety Data System (LSDS) 	<ul style="list-style-type: none"> PI's Safety Management System and database of OSHE safety training completed by staff and students 	<ul style="list-style-type: none"> LSDS stores safety information about the laboratory, its activities and safety management system documentation. System is updated by the PI or his/her staff.
	<ul style="list-style-type: none"> Accident & Incident Reporting System (AIRS) 	<ul style="list-style-type: none"> Database on accident/incident 	<ul style="list-style-type: none"> AIRS is an online system for the reporting of accidents and incidents. Information will be used to generate accident/incident statistics, analysis of trends etc.
	<ul style="list-style-type: none"> Integrated Online Research Compliance (iORC) 	<ul style="list-style-type: none"> Database on PI's research activities 	<ul style="list-style-type: none"> iORC allows staff to submit risk assessment for laboratory research/field research activities for review
	<ul style="list-style-type: none"> Faculty/Institute Safety and Health Licensing (FISHL) 	<ul style="list-style-type: none"> Database on licences and permits 	<ul style="list-style-type: none"> FISHL is a database of licences and permits which provides information on the types of hazardous substances held in NUS and the list of licence/permit holders
	<ul style="list-style-type: none"> Temporary Change of Use Permit Application (TPA) 	<ul style="list-style-type: none"> Database on events and activities 	<ul style="list-style-type: none"> TPA is an online system that allows staff / students to submit applications conveniently for their supervisors' and OSHE's approval
Benchmarking Information	<ul style="list-style-type: none"> Local and overseas conferences and seminars International collaborations Visits by experts Websites Working Group on WSH in Higher Education and Research Sector 	<ul style="list-style-type: none"> Safety and health products, services, systems and best practices of other universities and IHLs that could enhance customer experience 	<ul style="list-style-type: none"> Evaluate and identify relevant safety and health products, services, systems and best practices that NUS can adopt Share information and harmonise applicable safety and health management systems across IHLs in Singapore

Table 3.1.1 Information sources used by OSHE

Operational Intelligence

OSHE uses the following online services to capture operational information about its customers:

- Laboratory Safety Data System (LSDS), which stores information on PIs' safety management system.
- Accidents & Incident Reporting System (AIRS), which records information on accidents and incidents reported by NUS staff and students.
- Integrated Online Research Compliance (iORC), which captures project risk assessments for review and tracking of research activities.

- Faculty/Institute Safety & Health Licensing (FISHL), which stores information on licences and permits.
- Temporary Change of Use Permit Application (TPA), which allows OSHE to review and provide advisory on the events and activities of NUS staff and students.

Table 3.1.2 shows some examples on how data and information are used to enhance customer satisfaction.

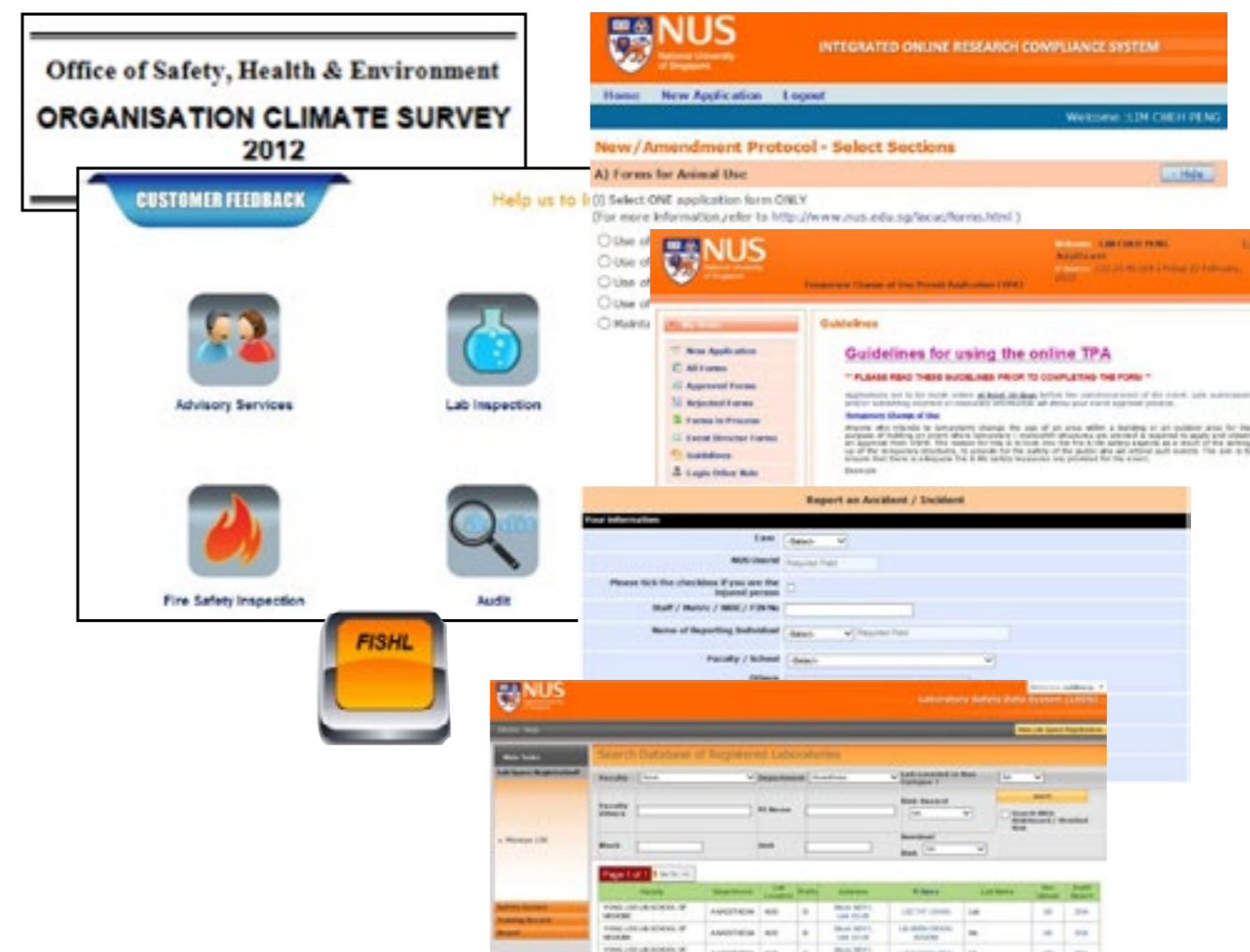


Figure 3.1.2 Examples of Data Acquisition Systems

Information Source	Data Acquisition System	Analysis & Use	Outcome
Customer Information	<ul style="list-style-type: none"> Meeting with NUS Senior Management <ol style="list-style-type: none"> Risk Management Safety Committee (RMSC) Safety & Health and Data Steering Committee (SHDSC) UCI Management Meeting 	<ul style="list-style-type: none"> Identify gaps and opportunities for improvement in the safety management system in NUS. Review and gather feedback on OSHE services and programmes from VP(CI) and offices in UCI cluster. 	<ul style="list-style-type: none"> Introduction of unannounced inspections and night inspections. Revised process on laboratory design review where OSHE's involvement will be upstream in the process during space management.
	<ul style="list-style-type: none"> Quarterly meeting with Institutional Safety Committees <ol style="list-style-type: none"> Institutional Biosafety Committee (IBC) Institutional Laboratory Safety Committee (ILSC) Institutional Construction Safety Committee (ICSC) Institutional Safety & Health Professionals (ISHP) 	<ul style="list-style-type: none"> Obtain feedback and approval on proposed policies, guidelines and standards. 	<ul style="list-style-type: none"> Deliberations on a proposed new risk assessments for the use of cytotoxic drugs. A special committee comprising members of ILSC and IBC approved the guidelines developed by OSHE.
	<ul style="list-style-type: none"> Crisis Prevention Information Exchange (CrisPIE) Meetings 	<ul style="list-style-type: none"> Allow OSHE to understand staff / student needs and expectations. 	<ul style="list-style-type: none"> Accelerated action to close the gaps, propose policy changes and follow-up with any actions deemed necessary to effect a positive and favourable outcome for NUS.
	<ul style="list-style-type: none"> Customer e-survey 	<ul style="list-style-type: none"> Obtain feedback from the customers on services rendered in the areas of advisory services, inspections and audits for further improvement. 	<ul style="list-style-type: none"> Some PIs expressed that the PI Laboratory Safety Management System has been useful. Some PIs expressed that there were too many audits / inspections. As a result of this feedback, combined audits / inspections were conducted whenever possible (e.g. PI SHMS audit with inspection of 2nd generation lentivirus facility).
	<ul style="list-style-type: none"> Feedback on training 	<ul style="list-style-type: none"> Obtain feedback from the customers on services rendered in the training. 	<ul style="list-style-type: none"> Migration of classroom training to online IVLE training to meet the demand for training places. The online IVLE training can now be completed anytime by staff and students.

Information Source	Data Acquisition System	Analysis & Use	Outcome
Staff Information	<ul style="list-style-type: none"> Organisational Climate Survey Group Leaders' Meeting 	<ul style="list-style-type: none"> Obtain feedback from staff on the organisation. Monitor progress of safety programmes, quality KPIs and staff performance e.g. ratio of compliments to complaints, and allow management to track workload of staff and progress of projects and analyse areas of the University's Safety & Health Management system which require strengthening. 	<ul style="list-style-type: none"> OSHE Social Committee was formed to improve staff welfare and bonding. Prompt resolution of complaints.
	<ul style="list-style-type: none"> Competency Assessment 	<ul style="list-style-type: none"> Review staff performance and identify gaps and training needs. 	<ul style="list-style-type: none"> Systematic and efficient approach to training needs analysis, to increase competency of staff.
	<ul style="list-style-type: none"> Periodic meeting with secondary RO 	<ul style="list-style-type: none"> Review and gather feedback on FSHO performance and OSHE programme. 	<ul style="list-style-type: none"> Provided focused on-the-job training to FSHOs for identified areas of improvement.
	<ul style="list-style-type: none"> Customer Service Day 	<ul style="list-style-type: none"> Review customers' needs. 	<ul style="list-style-type: none"> Customer segmentation and customer service touch points. 3T's of Service Excellence.
Regulators Information	<ul style="list-style-type: none"> Acts & Regulations Websites of regulators E-mail announcements from regulators Working Group on WSH in Higher Education and Research Sector 	<ul style="list-style-type: none"> To review the relevance of Acts & Regulations, identify updates, communicate to our stakeholders and customers, and facilitate legal compliance. 	<ul style="list-style-type: none"> E.g. legal updates are checked weekly and communicated to FSHOs during monthly ISHP meeting for further dissemination to respective faculties/institutes/centres.
Partner/Supplier Information	<ul style="list-style-type: none"> Partner/Supplier survey 	<ul style="list-style-type: none"> To review supplier performance. 	<ul style="list-style-type: none"> E.g. provide feedback to suppliers on their performance.

Information Source	Data Acquisition System	Analysis & Use	Outcome
Operational Information	<ul style="list-style-type: none"> Laboratory Safety Data System (LSDS) Accident & Incident Reporting System (AIRS) Integrated Online Research Compliance (iORC) Faculty/Institute Safety and Health licensing (FISHL) Temporary Change of Use Permit Application (TPA) Students' Events / Activities Safety and Crisis Management advisory and consultations Post Emergency & Crisis Management After Action Review Fire Safety Audits and tracking of incidents 	<ul style="list-style-type: none"> Enable auditors to retrieve and analyse data on PI's safety management system before carrying out the audits Track and analyse accidents/incidents reported for trends. Enable reviewers to understand, through the risk assessment submitted via iORC, the operations of laboratory-based customers and hazards and risks of their activities. Enable OSHE to advise the customers on whether adequate control measures are in place. Track and monitor the types of research activities. Provide information on the expiry of the licences/permits. A licence renewal e-mail reminder is sent to hazardous substance licence holders, Assist in reviewing plans, provide advisory, understand changes in demand and track events and activities. Understand customer needs and level of understanding of safety management. Review and analyse lessons learnt from an incident. Identify areas of improvement to reduce the number of incidents or recurring fire safety concerns. 	<ul style="list-style-type: none"> System gaps identified in the PI's laboratory safety management system will be highlighted as audit findings for the PI to rectify. Sharing of incidents and advisories with the NUS community via OSHE Alert / SHAPE newsletter. System gaps which resulted in accidents or incidents are addressed. Tracking of emerging types of research activities such as nanoparticles, and providing relevant advisories. Ensuring timely renewal of licences and permits and legal compliance. Providing timely advisory and approval of TPA. Nurturing safety culture among students. Developing immediate and long term follow-up actions so as to prevent recurrence and improve processes. Using false alarm tracking to reduce the number of cases.

Information Source	Data Acquisition System	Analysis & Use	Outcome
Benchmarking Information	<ul style="list-style-type: none"> Peer reviews International collaborations, local and overseas conferences and seminars CSHEMA award application Working Group on WSH in Higher Education and Research Sector 	<ul style="list-style-type: none"> Benchmark the safety & health management system against other universities. Evaluate and identify relevant products, services, systems and best practices. Review the comprehensiveness of OSHE's safety & health programmes against the US-based CSHEMA. Share safety information and harmonise relevant products, services, systems or best practices amongst IHLs in Singapore. 	<ul style="list-style-type: none"> Recommendations from peer review with MIT resulted in enhancement of Institutional Committee's structure and activities, and specific programmes such as biosafety and radiation safety. Visit to The University of Tokyo, Nagoya University and Kyoto University to study their Chemical Safety Management System. OSHE was awarded the Complete Safety Award of Commendation in 2011 and 2012. Harmonisation of chemical safety training across IHLs in Singapore.

Table 3.1.2 Analysis and use of information to enhance customer satisfaction

Examples of how OSHE has applied its knowledge management to arrive at workable and cost-effective solutions to address customers' safety and health challenges are given below.

Example 1: Reduction of jay walking along Lower Kent Ridge Road

The Accident & Incident Reporting System (AIRS) provided feedback that jaywalking was taking place at various locations on campus. OSHE recorded pedestrians crossing the street on video to analyse their jaywalking patterns. After studying various options, OSHE in consultation with UCI departments, decided to put up road dividers and re-position the zebra crossings to make it more convenient for pedestrians to use the zebra crossings (Figure 3.1.3).

Example 2: Slip, Trip and Fall Injuries

The number of slip, trip and fall (STF) injuries has been on a rising trend since 2010. OSHE acquired data from the AIRS, and identified and analysed the nature of the STF, root causes, and hotspots. It then collaborated with OFM to implement short-term, mid-term and long-term action plans to reduce STF incidents (Figure 3.1.4).

Example 3: Reducing False Fire Alarms

A study revealed that many false fire alarms were caused by accidental breakage of the manual call point. Subsequently OSHE advocated that all manual call points be fitted with a plastic cover to protect them against accidental activation.

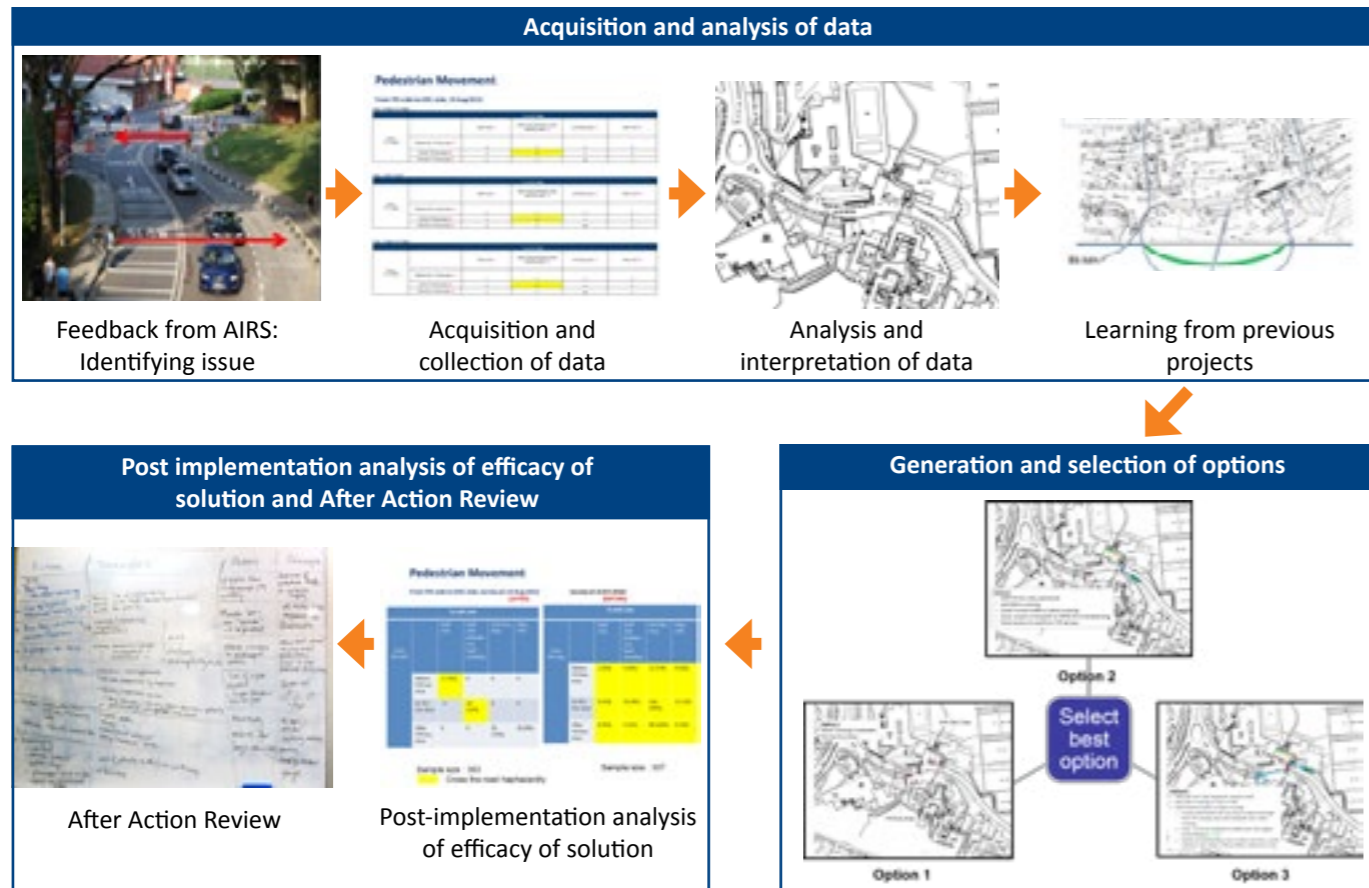


Figure 3.1.3 Application of knowledge management in solving jaywalking

Example 4: Identification of high risk laboratories for retrofitting of fire suppression system

OSHE used data from the Petroleum and Flammable Materials (PFM) inspection to classify laboratories into different hazard categories, which led to OSHE’s recommendation to install enhanced fire suppression systems in high risk laboratories.

Example 5: CrisPIE (Crisis Prevention Information Exchange)

The Crisis Prevention Information Exchange (CrisPIE) meetings provide OSHE with information to improve its processes and policies affecting crisis prevention.

Example 6: Conducting Risk Assessment Reviews

After receiving feedback from several focus groups, OSHE launched OPRAS, a paperless risk assessment system, in 2007. OPRAS improved customers’ safety awareness, provided them a safer working environment, and saved time for PIs, who could submit project risk assessments at any time using the online system. Figure 3.1.5 shows the evolution of the Online Project Risk Assessment System (OPRAS).

The system was further enhanced with the launch of iORC in 2013, which is integrated with animal protocol reviews carried out by the NUS Institutional Animal Care and Use Committee (IACUC). The iORC relieves PIs from keying in the same information twice – once for the OSHE and another time for the IACUC. Furthermore, information on the Project Risk Assessment and



Figure 3.1.4 Application of knowledge management in reducing slip, trip and fall incidents: identification of problem, data acquisition and analysis, working with partners to resolve the issues, and strategising action plans to reduce STF incidents

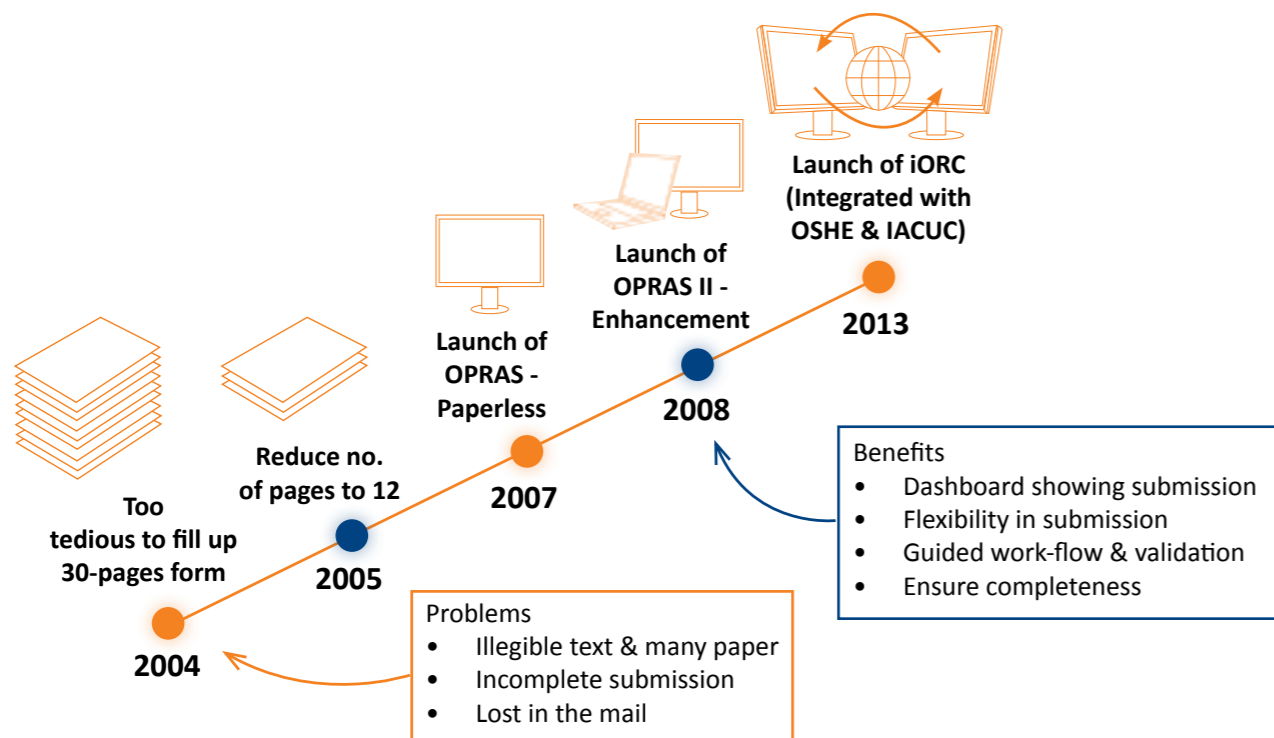


Figure 3.1.5 Improvements made to Project Risk Assessment System

animal protocols are now accessible to both OSHE and IACUC staff from the same online system. This accelerates the reviewing process, the approval of Project Risk Assessments and the release of research grants to PIs, allowing them to commence their research projects at an earlier date.

Example 7: Development of the Laboratory Design Review

OSHE staff started the Laboratory Design Review in 2008, and since that time, several improvements have been introduced (Figure 3.1.6):

- Use of Room Data Sheet to capture the intended use of the space.
- Environmental hazard impact assessment to determine the impact of new developments on the neighbouring facilities and vice versa.
- Knowledge management framework.
- Sharing of lessons learnt from the design review and post implementation reviews.

Example 8: Development and improvement of OSHE’s safety training courses

In 2008, safety training was conducted by consultants in a classroom setting. In 2009, safety training was introduced into the academic modules. In 2011, OSHE started purchasing safety videos and making them available on its website to enhance the learning experience of staff and students.

Based on customer feedback concerning the long waitlist for OSHE’s classroom-based safety training, OSHE migrated its safety training to the online IVLE system in 2012, which enabled customers to complete the required safety training anytime and anywhere. The evolution of the OSHE safety training programme is illustrated in Figure 3.1.7a. The number of trainees almost doubled the following year (Figure 3.1.7b). With the increasing volume of certificates to be issued, OSHE moved from issuing hardcopy certificates to issuing e-certificates in 2012.

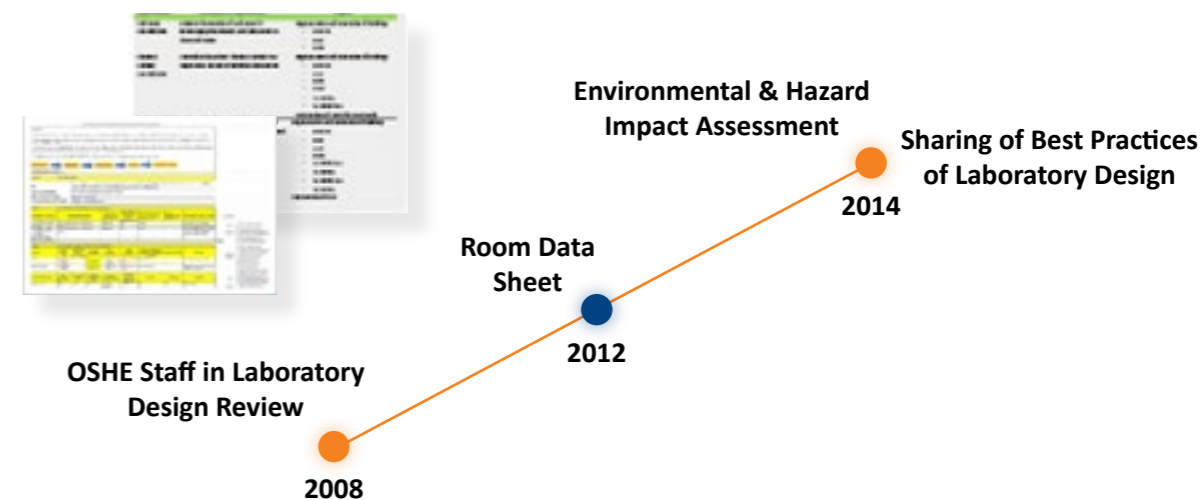


Figure 3.1.6 Development and improvement of the Laboratory Design review

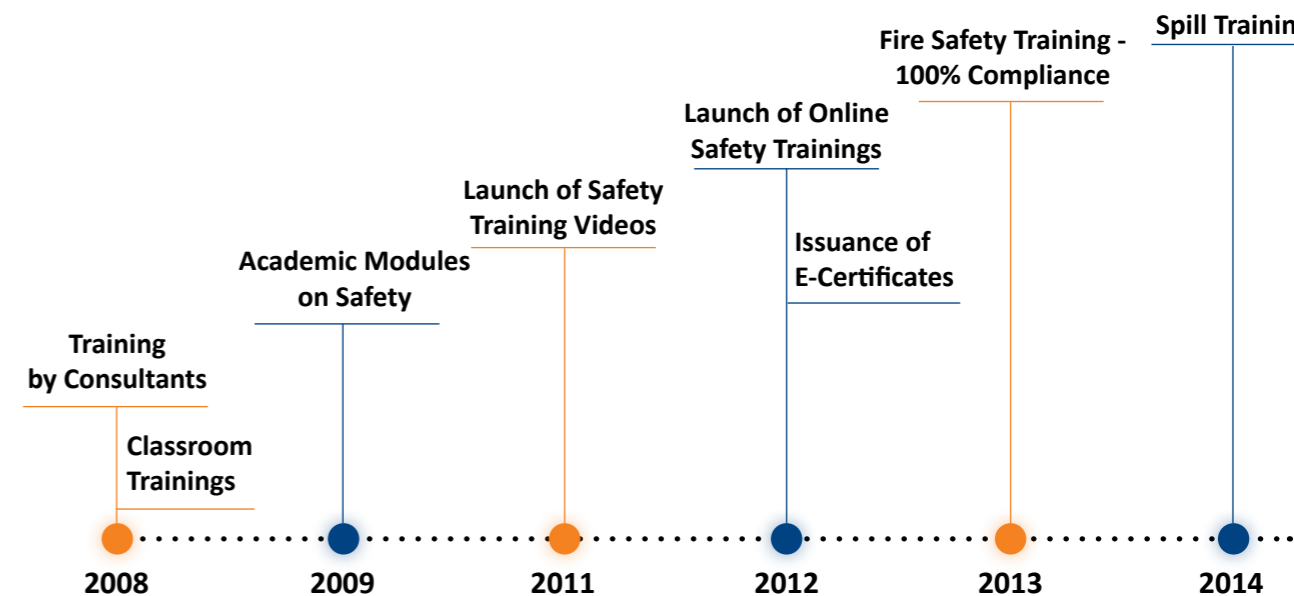


Figure 3.1.7a Development of the OSHE safety training programme

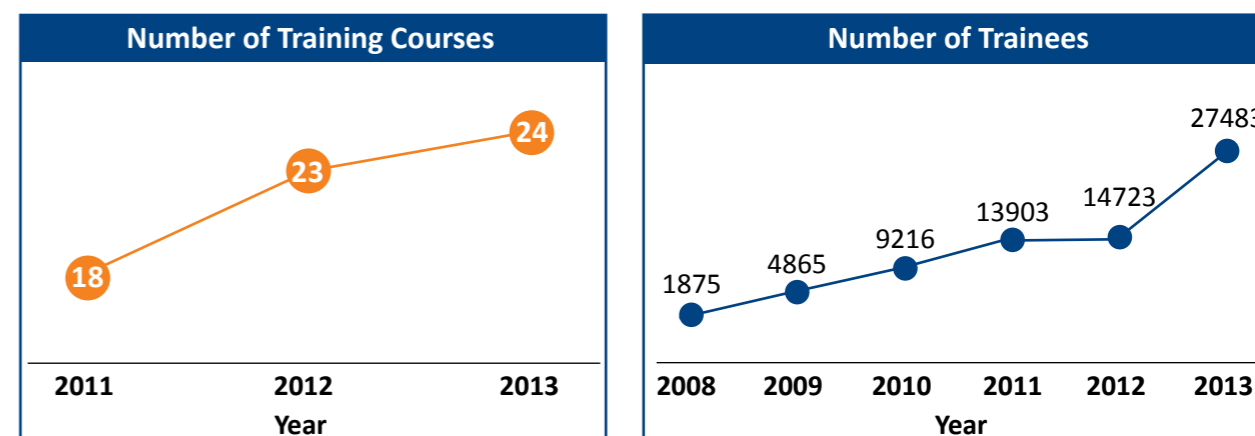


Figure 3.1.7b Increasing number of training courses and trainees over the years

An interactive online training programme is also being developed to enhance customers' learning experience.

In order to stay relevant and keep its standards high, OSHE continually seeks customer feedback on its training programmes via survey forms (Figure 3.1.8).

Example 9: Development of the PI Laboratory Safety & Health Management System Audit

The Laboratory Safety & Health Management Standard was established in 2007. An application package was introduced in 2009 to standardise the information required for the audit. A documentation system termed Laboratory Safety Data System (LSDS) was introduced in 2010 to facilitate the storage and sharing of SHMS documents between the laboratories and OSHE.

Following feedback from the PIs and laboratory members on the variation of audit findings by different internal and external auditors, OSHE began training its own pool of internal OSHE auditors in 2012 and discontinued engaging external auditors. In the same year, OSHE developed an application for iPad named iAudit to help auditors document their audit findings (Figure 3.1.9).

Example 10: Development of Safety Promotion Programme

The development of OSHE's Safety Promotion Programme is as follows (Figure 3.1.10):

- In 2005, OSHE launched the NUS Annual Safety & Health Performance Award (ASHPA) Scheme to encourage safety awareness and promote safe practices. The award recognises NUS departments, research centres and institutes,

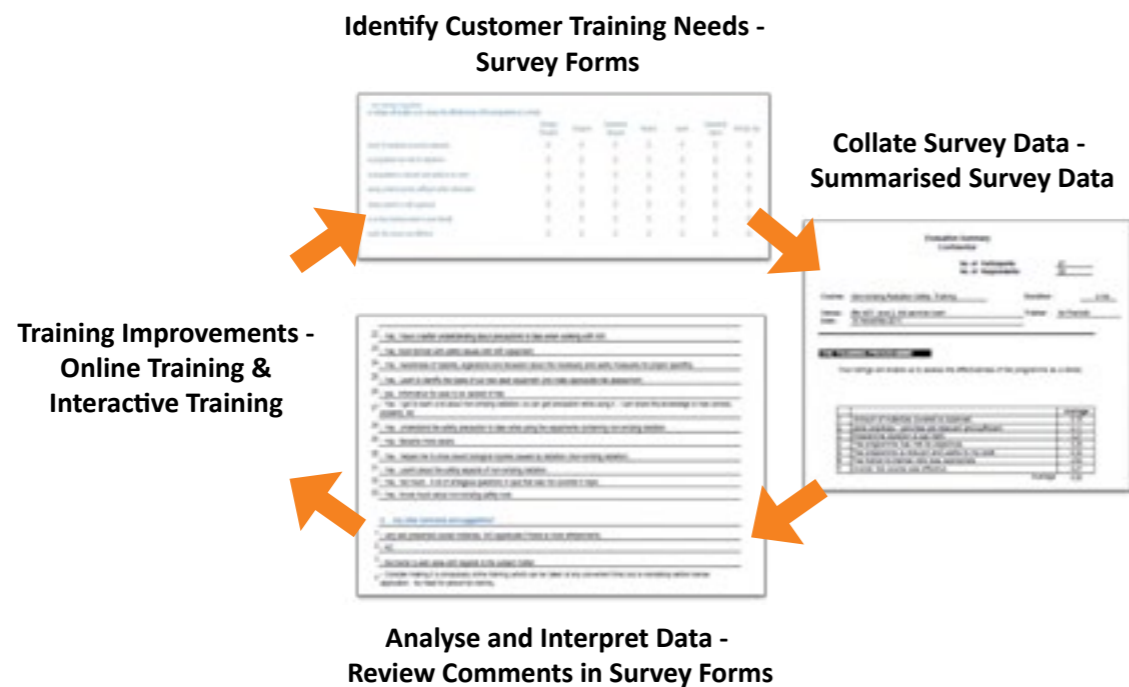


Figure 3.1.8 Application of knowledge management to improve OSHE safety training

administrative offices, and halls of residence which have implemented an effective safety and health management system (SHMS).

- In 2009, the Safety & Health Improvement Programme (SHIP) was introduced as a motivational scheme to promote workplace safety and health through innovative projects.
- In 2010, Safetymation was launched as a platform to support development of safety-related posters, videos and other media formats.

- In late 2012, SHIP and Safetymation were merged into 'Safety Team Award & Recognition' (STAR).
- In 2013, the inaugural Safety, Health and Environment (SHE) conference was successfully launched.
- In 2013, a Departmental Safety and Health Management System standard was introduced into the ASHPA.

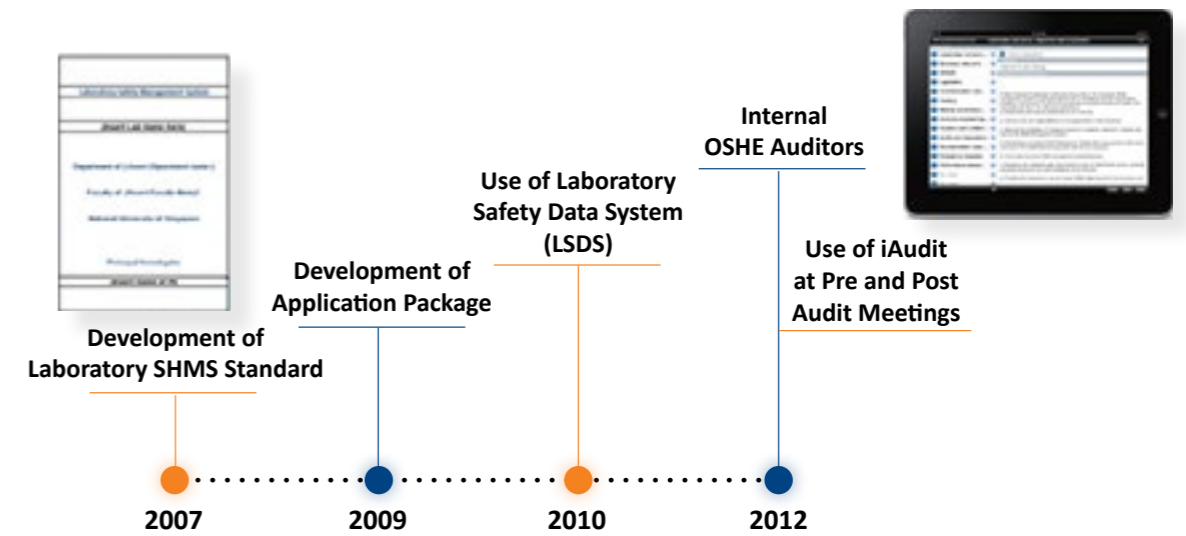


Figure 3.1.9 Development and improvement of the PI Laboratory SHMS Audit

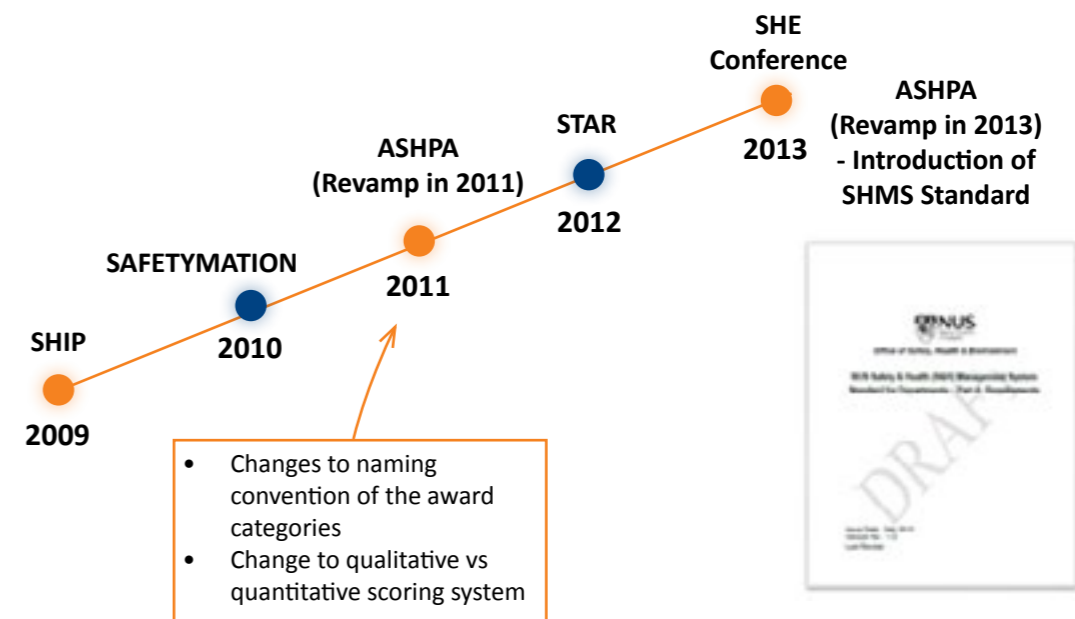


Figure 3.1.10 Development and improvement of safety promotional programme

Example 11: Fire Safety Excellence Award

OSHE started the NUS Fire Safety Inspection Programme in 2007 and introduced the NUS Building Fire Safety Compliance Award in 2008.

The award was re-branded to Fire Safety Excellence Award in 2010 to reflect that NUS was pursuing not just compliance but excellence in fire safety (Figure 3.1.11).

Example 12: Enhancement of IH and IAQ capabilities

OSHE began building its capabilities in Industrial Hygiene (IH) and Indoor Air Quality (IAQ) monitoring in 2011 to meet the demand for these services. Figure 3.1.12 shows the equipment bought between 2011 and 2014 to enhance OSHE's IH and IAQ capabilities.

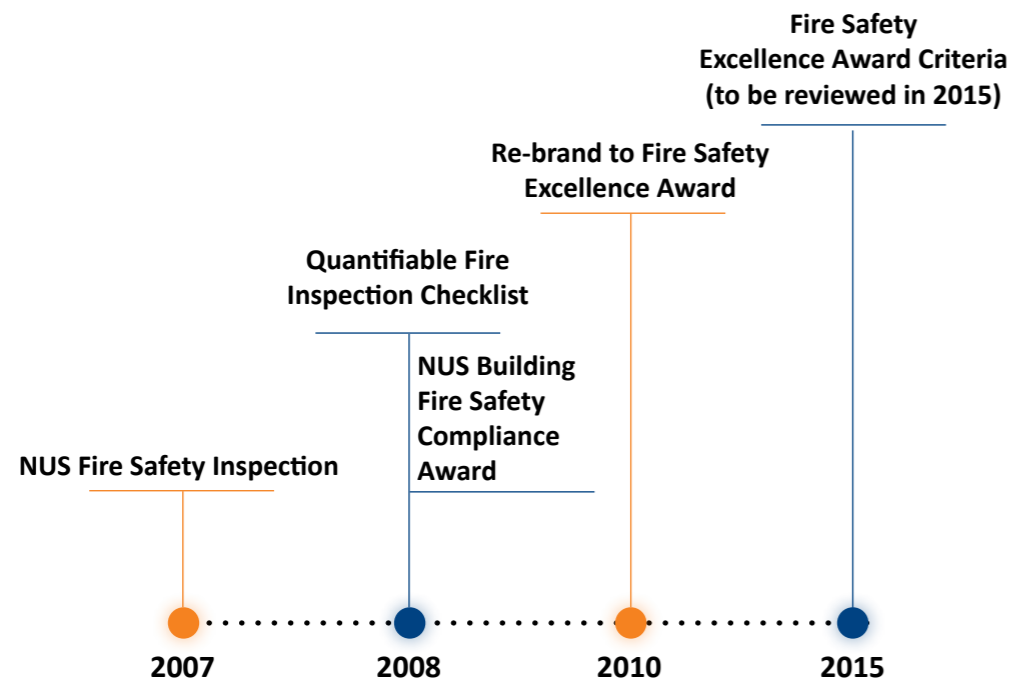


Figure 3.1.11 Development and improvement of Fire Safety Excellence Award



Figure 3.1.12 Enhancement of IH & IAQ capabilities

Example 13: Improvement in Radiation Programme

Following customers' concerns over the storage and handling of radioactive materials, OSHE provided customised solutions such as consolidated waste disposal, which resulted in cost savings (Table 3.1.3).



Contamination detector

Example 14: Development of OSHE IT tools and services

OSHE has introduced several IT tools and services since 2009 to facilitate ease of compliance to NUS and legal requirements. These include the Laboratory Signboard Generator, LSDS, AIRS, iORC, ORMI and FISHL. In 2013, OSHE reviewed its IT capabilities and embarked on a project to integrate these online applications (Figure 3.1.13). The new EHS IT tool will integrate several modules as illustrated in Figure 3.1.14.

Year	Customer Concerns	OSHE Customer Service Solution	Benefits to Customers
2012	<ul style="list-style-type: none"> Radiation safety concern from storage of unwanted radioactive sources in laboratories 	<ul style="list-style-type: none"> Identify overseas vendor to remove sources from NUS 	<ul style="list-style-type: none"> Reduction in radiation exposure risk Cost savings from consolidated disposal
2013	<ul style="list-style-type: none"> Users unaware of contamination monitoring process 	<ul style="list-style-type: none"> Develop contamination monitoring programme Purchase of contamination monitoring detector Train users on contamination monitoring 	<ul style="list-style-type: none"> Compliance to regulations Safe radiation work environment Cost saving from use of in-house contamination detector

Table 3.1.3 Application of knowledge management to improve of radiation programme



Figure 3.1.13 Development of OSHE online services

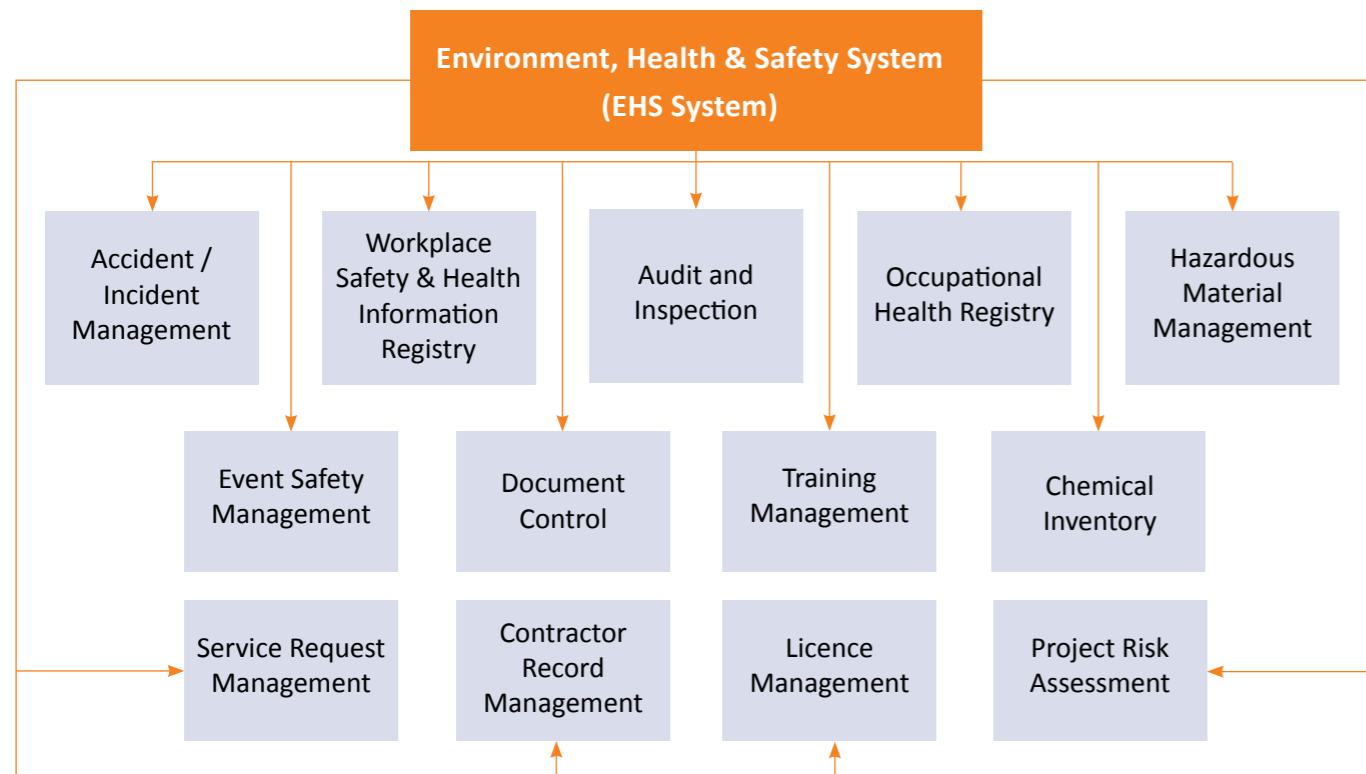


Figure 3.1.14 Identification of modules for EHS IT system

18 Department shares information on customers with staff

OSHE shares with its staff information on customers as well as any other information that may help staff to be more customer-centric through the following channels:

- E-mail
- Monthly Group Leaders’ meeting
- Divisional staff meeting
- Quarterly staff meeting
- Monthly Institutional Safety & Health for Professionals (ISHP) meeting
- IT databases such as OSHE SharePoint, EDMS, and shared folders

OSHE recognises the importance of managing knowledge to help staff to function more effectively, especially since the services provided by OSHE are

knowledge intensive. Figure 3.1.15 illustrates the IT platforms that support the knowledge management in OSHE. Knowledge is primarily collected through the following platforms:

- i. Websites (intranet and share points) – Where relevant information on safety and health and crisis management and prevention are posted. There is an ongoing study to explore how analytics can be used to obtain information about visitorship to the different weblinks on OSHE’s intranet.
- ii. EDMS (Enterprise Document Management System) – A common database for OSHE staff to archive documents.
- iii. SharePoint – A common platform for OSHE staff to share their information both internally as well as externally.

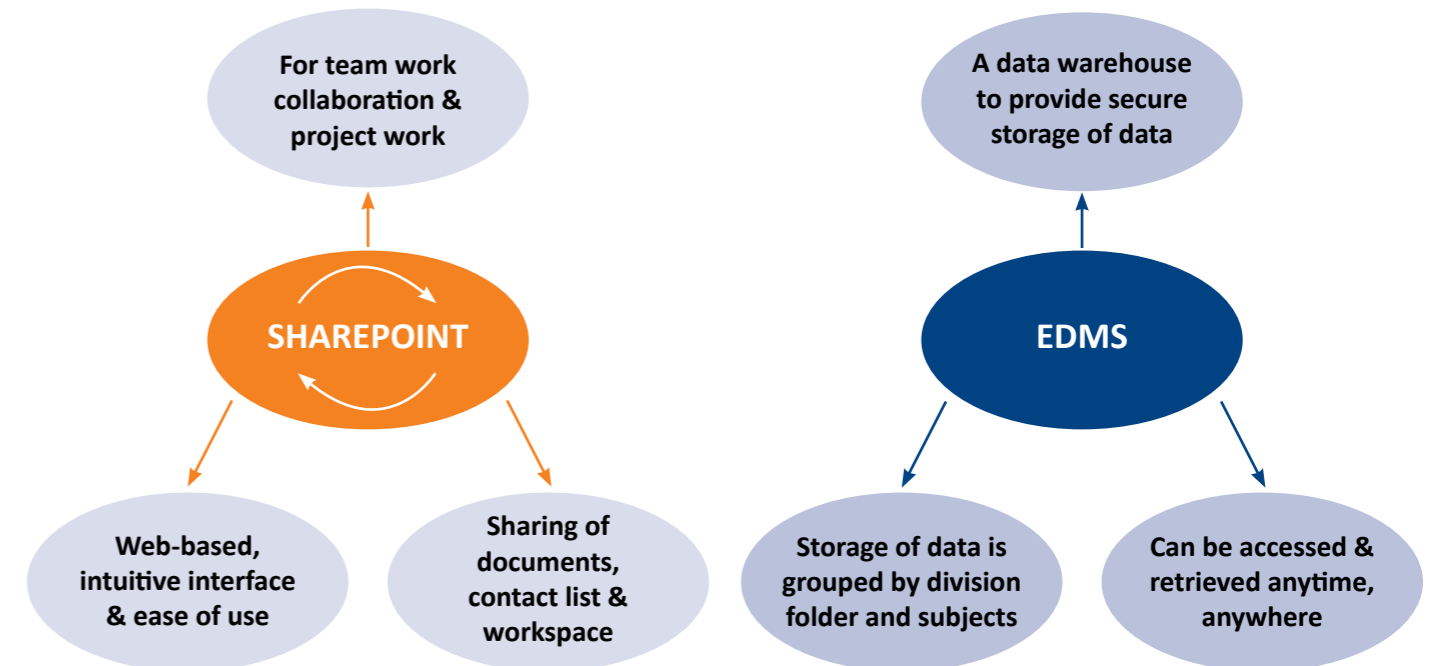


Figure 3.1.15 IT platforms that support OSHE Knowledge Management Framework

19 *Department evaluates and improves its customer intelligence system*

The evaluation and improvement of the customer intelligence system is overseen by the Divisional Heads. As part of the improvement process, the Divisions must review the following during the annual strategic retreat when formulating their work plans:

- Usefulness of data/information gathered
- Effectiveness in use of information
- Effectiveness of systems used to manage the information
- Effectiveness of analytical tools/methods
- Effectiveness of dissemination channels
- Data integrity of information systems

During the annual strategic planning process review, OSHE will appraise the various IT systems to ensure that they remain robust and continue to bring about synergy between the Divisions. Audits are conducted on the information systems every year to ensure data integrity.

The annual and ongoing cycle of review, feedback and evaluation have strengthened information management in OSHE. Some of the improvements are listed in Table 3.1.4.

3.2 COMPARISON AND BENCHMARKING

20 *Department develops criteria for selecting comparative and benchmarking information to improve customer experiences*

The selection for both benchmarking and comparative studies is done with the following guiding principles in mind:

- Aligned with the Department’s objectives;
- Value adding to customers and stakeholders;
- Enhancing the capability level of the Department.

COMPARISON

Comparative analysis is conducted by close monitoring of international rankings, national statistics and related data. It allows OSHE to assess its performance against that of its counterparts and the best-in-class to gauge the effectiveness of its policies and programmes. Comparative analysis also highlights potential areas of concern for further research and intervention.

Some of the key areas OSHE selects for comparison are:

- a. Number and types of safety-related accidents and incidents in laboratories and events organised.
- b. Number of non-compliances to safety regulations or requirements that result in injuries. MOM data on workplace violations and injury rates in industries is used for comparison.
- c. Faculty Perception Survey. This is a survey conducted internally by NUS targeted at NUS staff from various faculties, schools and research.
- d. Safety manpower resources. OSHE’s safety manpower resources were compared with those of eleven other international universities to help with OSHE’s planning and budgeting.
- e. Organisational Climate Survey. OSHE staff’s assessment of the current working environment is compared over the years.
- f. Average training hour. OSHE is committed to training its staff to be technically competent and customer-centric, and compares the average training hours per OSHE staff with NUS staff.

Table 3.2.1 shows examples of OSHE’s performance relative to its counterparts in some of the above-mentioned areas of comparison.

Improvements Introduced	Impact
Enhancement to Accident & Incident Reporting System (AIRS)	AIRS became more user-friendly and includes e-mail notifications to AIRS users. Accident & Incident Management System (AIMS) integrated platform will replace AIRS in 2015.
Online Feedback	OSHE can now seek feedback from customers with respect to its advisory and consultation services.
Created four main categories of survey: (i) Training (ii) Audit (iii) Inspection (iv) Advisory Services	The categorisation helps feedback and subsequent action to be more targeted.
Annual dialogue session with Senior Management to gain feedback on strategic issues	The feedback impact the strategic direction of OSHE for the following year.
Quarterly meetings with secondary Reporting Officers for Safety & Health Officers deployed to the faculties	Meetings allow primary Reporting Officers at OSHE to communicate and enhance alignment of safety policies and programmes and gain feedback from secondary Reporting Officers at faculties on the performance of Safety & Health Officers.
CrisPIE was re-introduced	As the number of crisis and emergency cases had reduced drastically, CrisPIE meetings had been suspended since 2011, but were recently revived again in response to feedback from CEM team members on the usefulness of the meetings.

Table 3.1.4 Improvements to Customer Intelligence System

S/N	Focus Area	Comparative Data
1	Injury rates	The NUS injury rate is compared against the national average. A target to keep its reportable injury below 25% of industry injury rate is set. NUS has successfully kept its reportable injury rate below 25% of the industry injury rate for the past 4 years. Rates and trends are also compared with international universities, e.g. Nagoya University and The University of Tokyo.
2	Safety manpower resources	The total number of safety and administrative personnel in OSHE is compared against 11 leading research universities in the world. A target of 1 FTE per \$14 M for research grants up to \$500 M received by NUS and 1 FTE per \$21 M for research grants exceeding \$500 M is set.
3	Faculty Perception Survey	The service level ratings are compared against other NUS administrative units/offices. In 2012, OSHE’s ratings of Good/Very Good increased 12% from those in 2010.
4	Organisational Climate Survey	The customer satisfaction index improved 6% from 2012 to 2014.
5	Average training hours per staff	The average training hours per OSHE staff has exceeded the average training hours per NUS staff for the past six years.

Table 3.2.1 OSHE’s performance in selected focus areas

BENCHMARKING

Benchmarking in OSHE is conducted through a 3-stage benchmarking process as illustrated in Figure 3.2.1.

Some of the key benchmarking programmes that OSHE focuses on are:

- a. Comprehensiveness of safety and health programmes
- b. Process for capturing chemical inventory in laboratories
- c. Laboratory coat standard

Details are listed in Table 3.2.2.

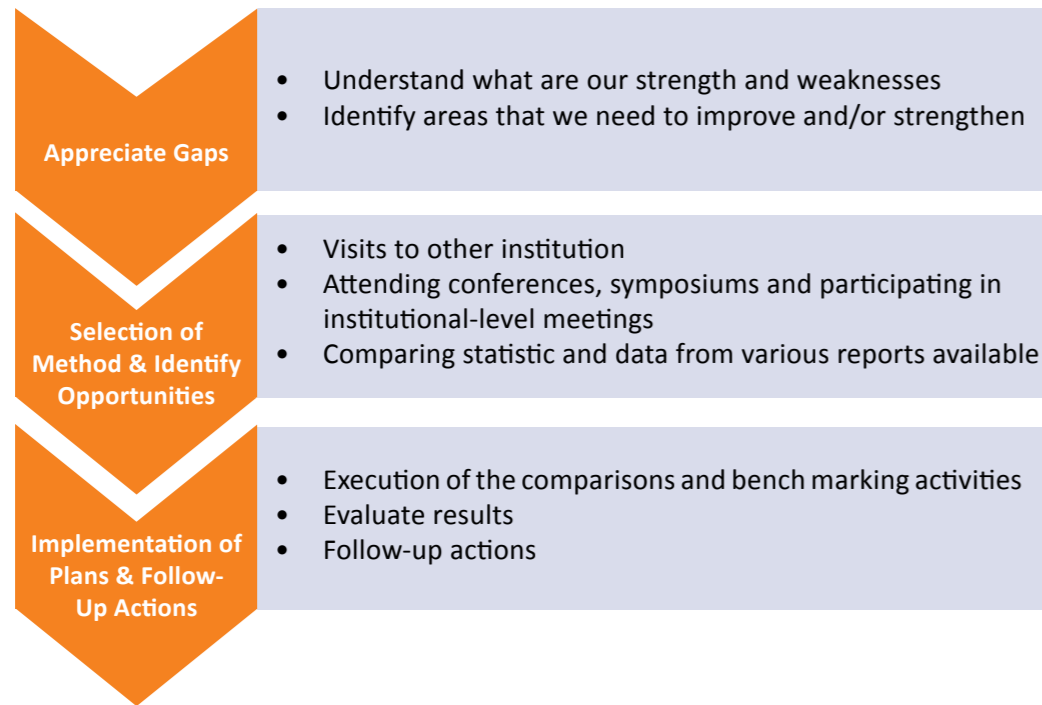


Figure 3.2.1 OSHE 3-stage benchmarking methodology

S/N	Focus Area	Benchmarking
1	Comprehensiveness of OSHE’s safety and health programmes	Benchmarking is conducted against the criteria set by the US-based Campus Safety, Health and Environmental Management Association (CSHEMA).
2	Process for capturing chemical inventory in laboratories	Benchmarking is conducted against international and national institutions, e.g. Nagoya University, The University of Tokyo, Agency of Science, Technology and Research (A*STAR), SGH-SingHealth, etc.
3	Laboratory coat standard	Benchmarking is conducted against international and national institutions, e.g. Massachusetts Institute of Technology (MIT), University of California, Pennsylvania State University, The University of Tokyo, Nanyang Technological University (NTU), etc.

Table 3.2.2 Some key benchmarking programmes

21 *Department uses comparative and benchmarking information to improve customer experience*

Benchmarking projects are typically conducted through:

- Study trips
- International collaborations
- Overseas conferences/seminars
- Expertise visits

Benchmarking results are used to refine work processes and improve OSHE’s operational performance. Benchmarking also helps OSHE see where it stands in the global arena. Besides aligning itself with international standards and practices, OSHE also undertakes breakthrough initiatives that have gained the attention of international counterparts.

Some benchmarking projects are listed in Table 3.2.3.

Benchmarking Area	Purpose of Studies & Benchmarking Partner	Impact
MIT Peer Review	To conduct a peer review with MIT on each institutional safety & health system.	<ul style="list-style-type: none"> • Improvement in Institutional Committees’ structure and activities • Improvement in specific programmes, e.g. biosafety and radiation safety programme
Chemical Safety	To benchmark chemical procurement system of three leading Japanese universities: The University of Tokyo, Kyoto University and Nagoya University.	<ul style="list-style-type: none"> • Customisation of NUS chemical procurement system

Table 3.2.3 Benchmarking projects



MIT Peer Review, 2010



Study trip to The University of Tokyo on Chemical Procurement System, 2013

PEOPLE



4.1 HUMAN RESOURCE PLANNING

22 *Department has human resource plans based on the department's customer-focused strategies*

Because competent and motivated staff are key to delivering excellent service to its customers, OSHE has developed a human resource plan based on the Department's customer-focused strategy. The rolling three-year plan is revisited every year during the strategic planning and budgeting process and involves the following five HR Systems (as illustrated in Figure 4.1.1):

- Human Resource Planning & Recruitment
- Employee Involvement & Commitment
- Education, Training & Development
- Employee Performance & Recognition
- Employee Health & Satisfaction

At the end of every year, OSHE will formulate its strategic plan and programme for the following year. This is both a top-down and a bottom-up process. Senior Management's input as well as feedback on

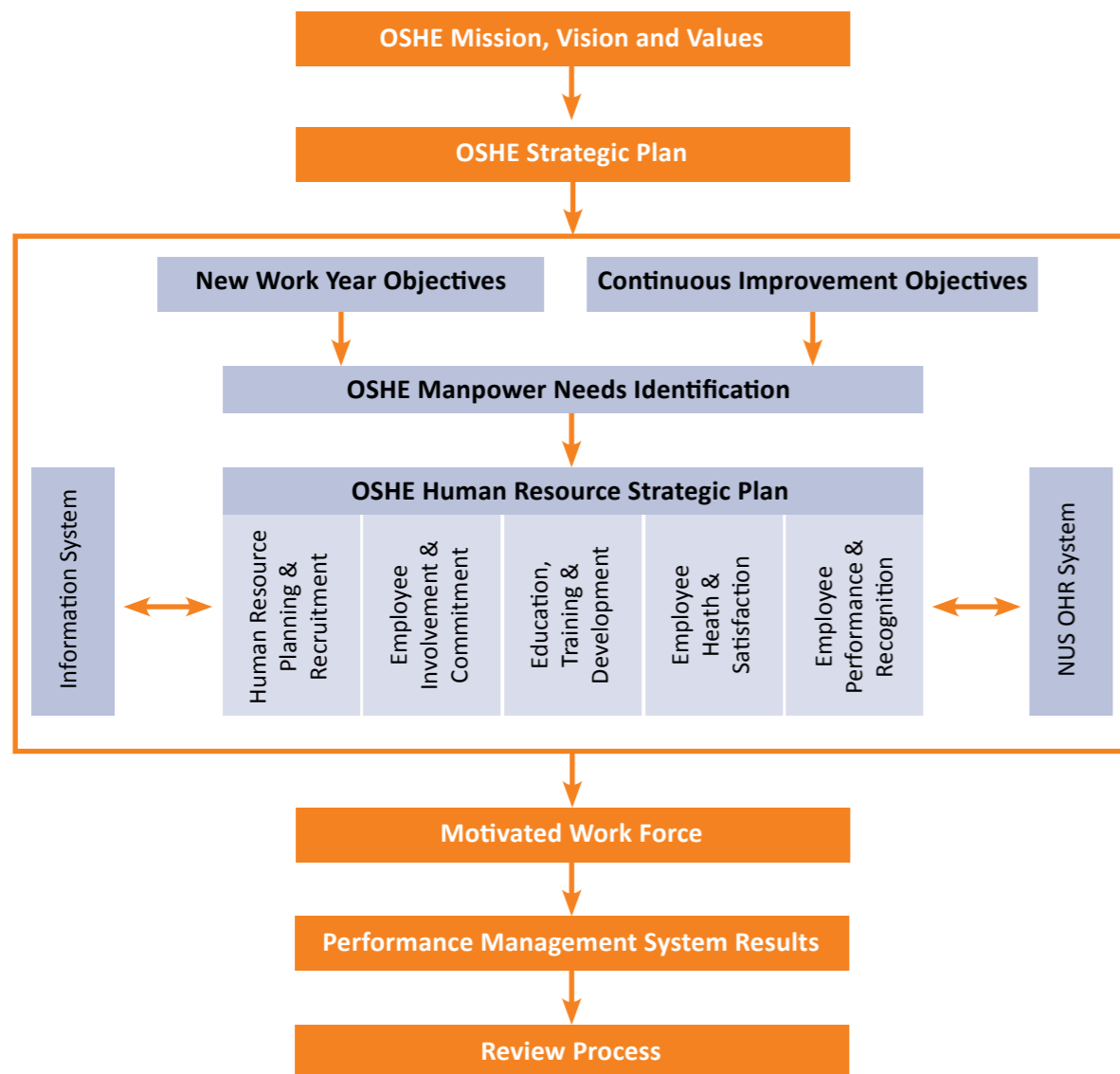


Figure 4.1.1 OSHE Human Resources Strategic Plan

critical issues which need to be addressed are taken into consideration. Budget and human resource plans are then developed to meet the University's as well as the Department's long-term and short-term goals and objectives.

23 *Service orientation of potential recruits is assessed to support customer-focused culture*

Supporting a customer-focused culture begins at the point of recruitment, where the service orientation of potential recruits is assessed. The Department works closely with OHR to ensure that staff who are recruited have the right competencies or potential.

OSHE has implemented several recruitment management initiatives over the years to assess each candidate's inclination to customer service:

- Personality profile analysis using Myer-Briggs Type Indicator
- Competency-based interview to assess interpersonal skills such as communication skills, customer-oriented services and ability to handle customer complaints
- Written test to assess service orientation
- Risk assessment review test to assess technical competency
- Presentation on a technical topic

4.2 EMPLOYEE ENGAGEMENT

24 *Department develops strategies and mechanisms to encourage employee involvement and commitment to improve customer experience*

OSHE engages its staff and build *esprit de corps* through various strategies, including coaching staff to value-add and transcend in their customer service, conducting brainstorming sessions for staff to come up with ideas on improving inefficient processes and enhancing customer experience, and involving staff in the review of policies/standards so that they can provide feedback for improvement from the customers' perspective. Mechanisms to encourage staff involvement and engagement are listed in Table 4.2.1.

25 *Department reviews and improves the employee involvement process*

Regular reviews are carried out by employee engagement programme champions to ensure programmes are effectively carried out and objectives are met. The programme champions report on progress of implementation at appropriate forums such as post-event debriefs and departmental meetings. Once a year, OSHE also carries out an integrated review of the employee engagement process at the Strategic Planning Day. See Table 4.2.2 for examples of improvements made to the employee engagement process.

Mechanisms	Objectives	Champion
Departmental meeting	Keep staff updated on developments at NUS, UCI and OSHE.	Director
ISHP meeting	Keep staff updated on development in new regulations, manuals and recent accident and incidents.	Head (SHM Div)
Division & Group meetings	Discuss challenges within each division/group and sharing of best practices.	Group Leader
Project Committees	Discuss the development of the safety manual and the implications of implementation of new ideas on the ground.	Group Leader
Customer Service Day	Review of customer feedback, sharing of best practices in customer service team bonding.	Director
IQ Team Project	Projects to improve safety on campus, working practices and conditions, and productivity.	Group Leaders & Quality Service Coordinator
VOICE Suggestion Scheme	Suggestions by staff to improve safety on campus and/or improve working practices and conditions.	Group Leaders & Quality Service Coordinator
HR Performance Review	Self-assessment and opportunity for staff to give feedback on their own performance and for RO & CO to provide staff feedback on their performance in terms of customer service, operational and other KPIs.	Director, Heads of Division and Group Leaders
Development & Review of Programmes	Staff present the objective and contents of their programme to OSHE Senior Management or academic staff and secure their approval.	Director, Heads of Division and Group Leaders
Cohesion activities for OSHE's stakeholders	Opportunity for staff to have team bonding and to know their partners/colleagues and collaborators better. Opportunity to share best practices and recent trend in accident and incident.	OSHE Social Committee Chairman
Strategic Planning Day	Opportunity for staff to flag resources needed for them to perform their jobs effectively.	Group Leader
Recreational activities	Opportunity for staff to have team bonding and to know their partners/colleagues and collaborators better.	OSHE Social Committee Chairman

Table 4.2.1 OSHE employee engagement mechanisms

Review Mechanism	Findings (AFIs)	Improvements Made
Organisational Climate Survey	<ul style="list-style-type: none"> Limited platforms for staff to come together for team activities. The need to have a greater understanding of cross-division activities. Leadership needs to be more engaging. 	<ul style="list-style-type: none"> Monthly team bonding activity was introduced to give staff opportunities to participate in department-wide activities, establish rapport, build networks, and develop a sense of common identity. In 2014, weekly jogging sessions and exercise activities were organised. Induction programme for all new staff was modified to include an introduction to the other division's activities and programmes. Book Club was set up to ensure leadership practices are harmonised and leaders become more engaging. Leadership training for leaders by external trainers on unleashing collective intelligence and ways to involve and engage team members.
Strategic Planning Day	<ul style="list-style-type: none"> Inadequate time during Strategic Planning Day to focus on customer service issues. Lack of adequate manpower to run safety and health programmes. Lack of IT applications to convert existing processes online and to reduce paperwork. 	<ul style="list-style-type: none"> Customer Service Day (one day a year in July) was introduced to discuss customer service issues. Paper was put up for the hiring of new Safety & Health Officers. Specialist staff in the area of radiation and biosafety were hired. Paper was put up for the implementation of a holistic EHS IT system.

Table 4.2.2 Improvement to employee engagement process



OSHE departmental meeting



Leadership training by Mr Boudewijn Bertsch, 2014

4.3 EMPLOYEE LEARNING & DEVELOPMENT

26 *Department determines the education, training and development needs for employees that are aligned to its customer-focused strategies and goals*

In line with its value of Nurturing Potential, OSHE determines the learning and development needs of employees, identifies competency gaps, and makes available training and development opportunities to bridge these gaps. This is achieved through the following professional development strategies:

1. **Competency Assessment** focused on evaluating the competency levels of staff and determining their training and development needs.
2. **Professional Development Trainings** focused on creating opportunities for staff to enhance their knowledge and skills through intra-departmental training sessions and OHR courses.
3. **Peer-to-Peer Learning** focused on providing opportunities for learning from peers in other educational and research institutions in Singapore and overseas.
4. **Learning On-the-Job** focused on mentoring staff and assigning tasks to build skills and add depth to the workforce.

OSHE uses a Learning & Development Framework (Figure 4.3.1) to plan, manage & review its training and development of staff. The Department carries out a structured annual learning needs analysis to identify key learning needs and the learning and development programmes required to support its departmental objectives.

Since the objective of the learning and training framework is not only to increase the competency level of the workforce and groom them for current job but also to aid their career and professional development, learning needs for staff are identified based on staff competency gaps, organisational needs and staff's own career aspirations.

All new staff go through a half-day induction programme by their respective Division, which includes a staff get-together lunch and an introduction to the Department's vision, mission, goals, values, and work flow. A buddy is assigned to guide the newcomer on university staff administration procedures. The Division Head brings new staff to various departments and introduces them to OSHE external customers.

In view of the diverse backgrounds and competency levels of their large pool of safety and health professionals, the SHM Division has developed a comprehensive competency matrix system, where the necessary competency levels for staff at each job grade are identified. Competency development of the staff is guided by the competency matrix and revisited whenever there is a change in the staff's job scope. The competency matrix is aligned with the elements of the Safety Management System, namely policy, risk assessment, operational controls, and audits. Staff development takes into account the specialist nature of the staff e.g. biosafety, chemical or radiation safety knowledge.

Following a self-assessment, staff then participate in a review by their RO. Competency matrix systems are being developed for administrative staff and EM Division.

27 *Department trains its employees to delight customers*

To better equip staff in SHM and EM Divisions, three main areas of staff training and development have been identified: Education, Skills & Knowledge, and Customer Service Focus (Table 4.3.1). All Management Assistant Officers in OSHE have attended the Customer Service Excellence course, and all OSHE staff attended a service excellence course in 2014.

A buddy system is implemented to ensure that at least two people are trained to carry out any particular task. This is useful for knowledge and expertise retention and as part of OSHE's succession planning process.

The learning and development framework systematically identifies individual staff's learning needs based on his or her scope of work. OSHE then sponsors the courses identified for them. The staff's supervisor monitors and reviews the outcome of attending the courses. Staff who have attended overseas conferences are expected to share lessons learnt with the rest of OSHE upon returning to Singapore.

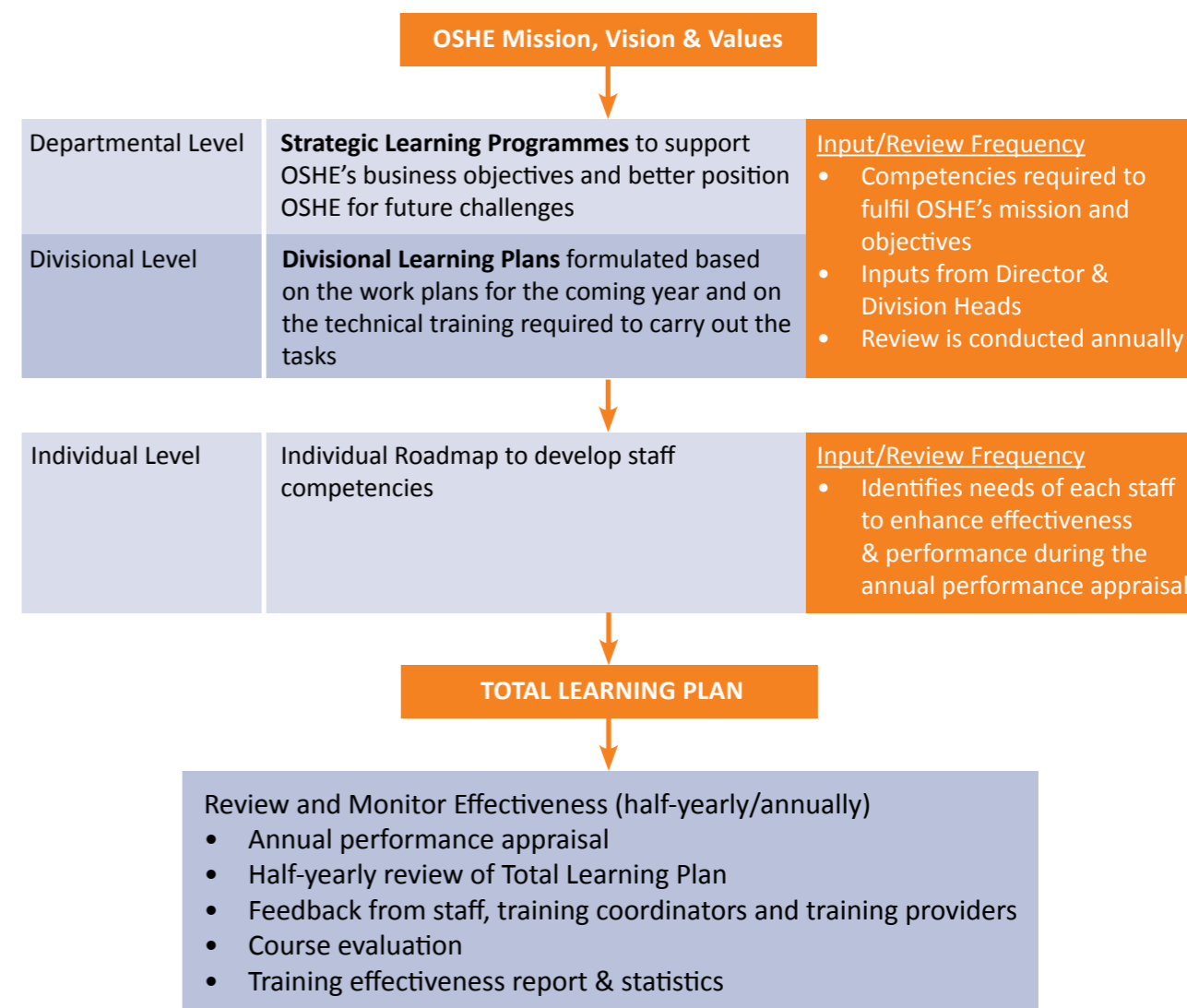


Figure 4.3.1 OSHE Employee Learning & Development Framework

Areas of Training	Types of Training	Examples
Education	<ul style="list-style-type: none"> • Sending staff for formal education – degree or specialist diploma programme 	<ul style="list-style-type: none"> • Bachelor degree in workplace safety and health • Specialist diploma in workplace safety and health
	<ul style="list-style-type: none"> • Professional qualifications 	<ul style="list-style-type: none"> • Specialist diploma in occupational hygiene • Business Continuity Certified Expert (BCCE) course
	<ul style="list-style-type: none"> • Professional qualifications 	<ul style="list-style-type: none"> • OHSAS 18001 Lead Auditor Course
Skills & knowledge	<ul style="list-style-type: none"> • Professional Development Group (PDG) 	<ul style="list-style-type: none"> • Laboratory Design Standard Requirement • Basic Workplace Safety Regulations • Use of PPE in Accident Investigation Kit • Office Ergonomics • Accident Investigation • Radiation Safety • Basic Regulatory Requirements for Biosafety
	<ul style="list-style-type: none"> • External short courses or seminars by NEA, MOM, SCDF, etc. 	<ul style="list-style-type: none"> • Management of Hazardous Substances • Basic Laser Radiation Safety • 2013 Fire Safety Manager Briefing • Infectious Substances & Biological Specimens Certification Course • A-PBA Biosafety Management Training
	<ul style="list-style-type: none"> • Internal courses 	<ul style="list-style-type: none"> • ‘Success & Peak Performance for Leaders’ • Training on Lean Six Sigma • ‘Moulding Tomorrow’s Leaders’ • ‘Turning Ideas into Gold’
	<ul style="list-style-type: none"> • External courses 	<ul style="list-style-type: none"> • Eagleson Institute training on BSL3
	<ul style="list-style-type: none"> • Conferences 	<ul style="list-style-type: none"> • CSHEMA Conferences • Asia Pacific Biosafety Conference • Safety & Health in Research and Education Conference • Asia Pacific Symposium on Safety • Asian Conference in Safety and Education in Laboratory
	<ul style="list-style-type: none"> • External short courses or seminars by NEA, MOM, SCDF, etc. 	<ul style="list-style-type: none"> • Management of Hazardous Substances • Basic Laser Radiation Safety • 2013 Fire Safety Manager Briefing • Infectious Substances & Biological Specimens Certification Course • A-PBA Biosafety Management Training
Customer Service Focus	<ul style="list-style-type: none"> • Service standards • Telephone etiquette 	<ul style="list-style-type: none"> • ‘Handling difficult customers’ • ‘Great service begins with me’ • ‘Achieving Superior Service’ • ‘Critical Thinking – A Solution Focused Leader’ • ‘Presentation skills’ • ‘Service Excellence Mindset’

Table 4.3.1 Training aligned to customer-focused strategies

Heads of Division identify training courses that are useful for staff to attend. Some courses are compulsory. These courses are focused on specific work areas. For example, Fire Safety Manager, Workplace Safety & Health and CPR+AED Trainers are compulsory courses for Fire & Life Safety Officers. The first two lead to professional certification.

SHM staff have attended the CPR+AED familiarisation training conducted by EM Division and are also encouraged to attend the following courses by EM Division:

- Fire Safety Education Course
- Crisis Communication Course
- Mental First Aid Course
- Suicide Awareness Course

Additionally, some SHM Division staff are seconded to overseas institutions to gain in-depth knowledge in various aspects of laboratory safety. In 2013, Ms Tang Fenglin attended the Administrative Staff Exchange Programme with MIT, Harvard and Yale in the USA. Staff also attend overseas conferences and visit other universities to gain experience and knowledge.

4.4 EMPLOYEE WELL-BEING AND SATISFACTION

28 Department creates a work environment that enhances service orientation

OSHE believes that highly-engaged and happy employees will lead to more satisfied customers and hence better business results. OSHE therefore aims to create a positive work environment. OSHE adopts a Staff Well-being & Satisfaction Framework with three key thrusts as illustrated in Figure 4.4.1.

OSHE provides a comprehensive benefits package, adopts practices promoting work-life balance, offers a variety of healthy lifestyle and recreational programmes, and maintains a harmonious relationship with the staff.

SOCIAL & PERSONAL DEVELOPMENT

OSHE takes care of the social needs of staff and helps to create and maintain a congenial work environment by advocating an open door policy, organising social events and establishing social platforms such as the ladies jogging club and WhatsApp group.



Figure 4.4.1 OSHE Staff Well-being & Satisfaction Framework

OSHE staff are encouraged to attend lunch-time courses organised by UHC as well as lunch-time exercise sessions organised by UCI's ReLAC Committee. Staff are also involved in after-work social events like soccer, badminton and group runs.

WELFARE & RECREATION

OSHE encourages staff to have work-life balance and to actively participate in wellness programmes at the university level such as Health Screening and Active Day. OSHE organises recreational programmes to build staff cohesion and encourage a healthy lifestyle. The Department has its own social committee, which organises team bonding and social events. In addition, staff are allowed to work at flexible hours at the discretion of the Director.

OSHE also believes in providing an excellent physical environment for staff to work in, and this is evidenced in its new office building and office seating arrangement.

OSHE has provided many other forms of staff benefits and welfare throughout the years, including an office pantry with free-flow of beverages and snacks, a nursing room and a roof herb garden.

HEALTHY LIFESTYLE

OSHE looks after the safety and health of its staff by identifying and managing ergonomics, and chemical, physical, biological and psychological risks arising from their work.

OSHE sourced for standing work stations for OSHE staff to use, and this initiative is still in the trial phase.



Christmas celebration 2013



Dragon boat team bonding 2014



NUS Active Day 2014



Paint-ball team bonding 2014

The Department is working on the programme for integrated workplace safety and health, and OSHE will be one of the departments to pilot the programme.

29 *Department measures and assesses employee satisfaction to improve service level*

There are a number of channels for OSHE's management to interact and obtain feedback from employees and assess their satisfaction. This is shown in Figure 4.4.2.

In June 2008, OSHE carried out its first Organisational Climate Survey (OrgCS), a survey conducted to objectively determine employee satisfaction. Subsequently, the Department conducted another three OrgCS in 2009, 2012 and 2014. These eight dimensions of employee satisfaction are surveyed:

- Management and its leadership
- Work system and work flow
- Work environment
- Co-workers
- Compensation & benefits
- Personal satisfaction
- Customers
- Performance management

OSHE analyses OrgCS results by looking at historical trends and thereby identifying areas for improvement at the departmental and divisional levels. Director shares the OrgCS findings and highlights measures OSHE will be putting in place to address staff concerns.

Besides the OrgCS, various engagement platforms such as those highlighted in Table 4.2.2 allow staff to share issues and concerns affecting their satisfaction levels as employees.

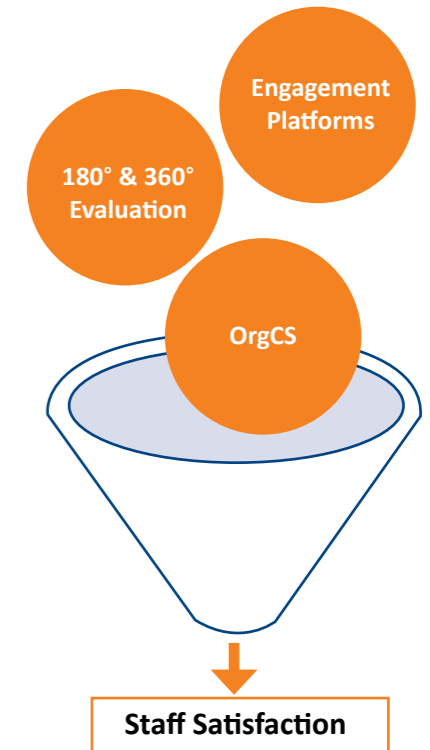


Figure 4.4.2 Measuring staff satisfaction

180° & 360° evaluations of senior staff and group leaders provide a means of staff feedback and allow management to have a sense of 'ground feel'.

4.5 EMPLOYEE PERFORMANCE AND RECOGNITION

30 *Department aligns performance appraisal to customer-focused goals*

Employee performance and recognition systems are aligned with OSHE's customer-focused values and departmental objectives.

OSHE adopts the OHR Performance Appraisal Framework (Figure 4.5.1), which follows a 3-phase cycle that is in line with the strategic planning and review cycle: Performance Planning, Performance Coaching, and Performance Evaluation.

The Division Heads meet regularly with their staff both formally and informally to give them feedback and address any concerns.

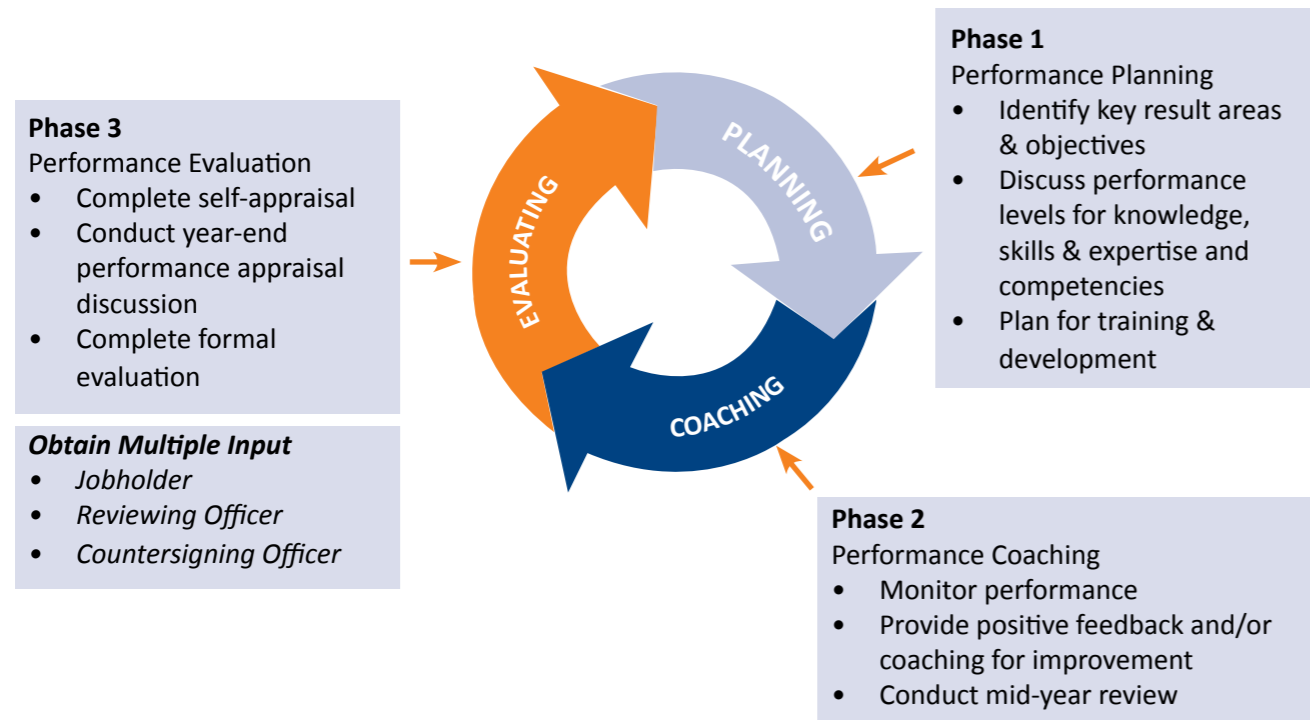


Figure 4.5.1 OHR Performance Appraisal Framework

During the formal appraisals, which are conducted in June and Oct/Nov, Division Heads together with individual staff identify upcoming goals and targets as well as the training and other forms of support needed to bring about those deliverables.

During the yearly performance appraisal, the performance of staff is compared against the objectives and targets established at the start of the year. These individual's performance targets are in turn aligned with the strategic customer-focused goals of the department.

Staff are appraised based on the following criteria:

- Customer-focus KRAs (including NASI+)
- Operational KRAs
- Customer feedback

31 *Department recognises and rewards the service performance of employees*

Staff members who have demonstrated a high level of customer focus and also performed well in all

aspects of their work scope will be duly noted during the appraisal period. Any personnel who has shown exemplary service to the University or Department may also be nominated for the NUS Quality Service Award.

Information on internal or external achievement awards conferred to any OSHE staff is shared internally in the department to honour the efforts put in by the recipient as well as to inspire the rest of the team to excel in their endeavours.

OSHE recognises staff service performance through these mechanisms:

- E-mail blast
- Compliments registered in VP(CI) report
- Awards by partners
- Web page listing compliments to OSHE employees
- Feedback from secondary RO



Dragon boat team bonding, 2014



Safety Team Award & Recognition (STAR) Conference 2012



Ventus (University Campus Infrastructure) Opening Day 2014



Celebrating Mr Ryan Yu's graduation, 2014



Celebrating birthdays



Bowling team bonding, 2013



Presenting to Ms Dorothy Woo her retirement gift, 2014



OSHE Social Committee 2014



Strategic Planning Day 2014



Dragon boat team bonding, 2014

CUSTOMERS



5.1 CUSTOMER REQUIREMENTS

32 Department determines the current and future expectations of customers

OSHE exists because of its customers. It is therefore of utmost importance that OSHE staff understand their customers' requirements. Through customer segmentation, OSHE identifies the different categories of customers and seeks to understand their needs and expectations (Figure 5.1.1). The Heads of Division manage the customer classification process while the Director provides guidance and direction. The customer classification process is in line with OSHE's core values of 'Service Excellence' and 'I Own & Value All I Do' and with the NUS mission and vision.

OSHE believes that understanding customer 'touchpoints' or critical-to-quality parameters is key to designing systems that give its customers a satisfactory and pleasant experience when interacting with the Department. OSHE sets short- and long-term goals for addressing the customer's needs and defines the expectations of the internal and external users in each customer segment through the mechanisms listed in Table 5.1.1. These in turn help the Department to develop new offerings, improve their service model, enhance their service standard, and initiate relevant customer communications. Customer segments and key customer expectations are listed in Table 5.1.2.

OSHE makes use of the following communication channels to gather information about its customers' needs and identify improvements to existing services:

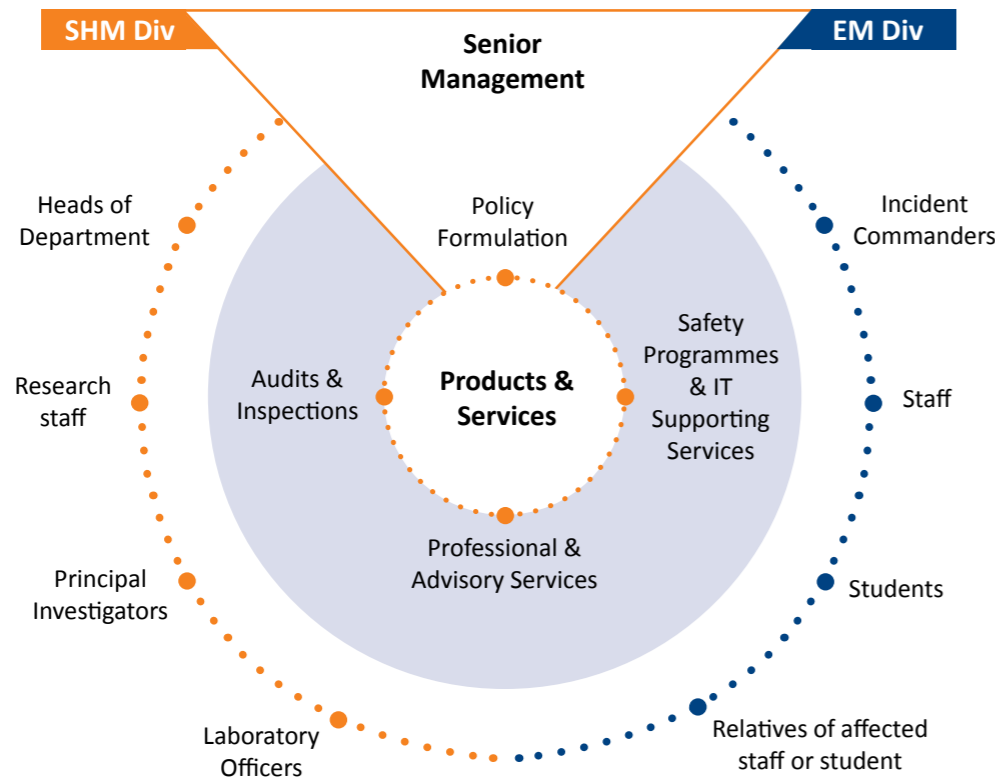


Figure 5.1.1 OSHE's key customer segments

- a. Input received during meetings with NUS Senior Management
- b. Online/manual feedback
- c. Post-event feedback via e-surveys
- d. Training course feedback
- e. User-requirement meetings during feasibility studies prior to launch of new programmes
- f. Monthly/Quarterly meetings with stakeholders from respective departments/faculties
- g. Online system for reporting of accident/incident/unsafe acts
- h. Monthly departmental/divisional meetings and meetings with Safety & Health Officers
- i. Quarterly meetings with Institutional Safety Committees
- j. Meetings with regulators especially when new regulations are introduced
- k. Road shows and dialogue sessions
- l. Ad-hoc e-mails and telephone hotline enquiries
- m. Customer perception survey
- n. VOICE feedback

During the annual strategic planning exercise, OSHE management reviews existing systems based on inputs from programme drivers, training evaluation reports and customer perception surveys, and incorporates the required action plans into the Department's annual work plan.

Channels	Mechanisms
Formal	<ul style="list-style-type: none"> • Meeting with NUS Senior Management • Institution & faculty safety & health committee • Customer satisfaction survey
Informal	<ul style="list-style-type: none"> • Interaction with stakeholders • Feedback from Safety & Health Officers • E-mails

Table 5.1.1 Mechanisms for determining customer expectations

33 Department determines the attributes of offerings that delight customers

Based on the Plan-Do-Check-Act cycle of management, OSHE's products and services may be categorised as follows:

- Plan – Policy formulation
- Do – Safety and health programmes, IT supporting services, and professional and advisory services
- Check – Inspections and audits
- Act – Management review with NUS Senior Management

OSHE's customers' expectations in the delivery of these products and services can be grouped into three areas: technical accuracy or correctness, timeliness, and transcendence (Figure 5.1.2). Service attributes are manifested in different ways for each of these the Strategic Service Intents (Table 5.1.3).

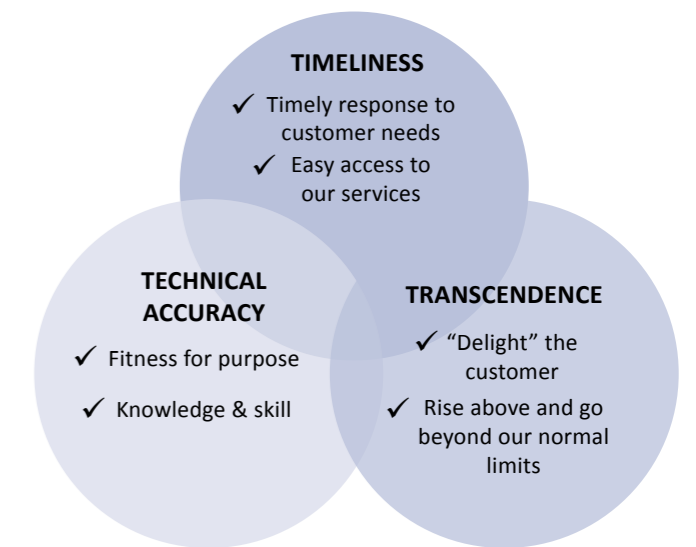


Figure 5.1.2 3Ts Strategic Service Intent

Customer Segments	Key Customer Expectations		
	Current	Future	
SHM Division	NUS Senior Management	<ul style="list-style-type: none"> Effectiveness in promoting a positive safety & health culture Legal compliance 	<ul style="list-style-type: none"> Efficient delivery of OSHE's services
	Deans, Directors & HoD	<ul style="list-style-type: none"> Ability to provide value added advice which will enable them to manage S&H more effectively 	<ul style="list-style-type: none"> Simplification of procedures Less administrative work without compromising safety
	Principal Investigators & Researchers	<ul style="list-style-type: none"> Technically accurate information Ease of access to S&H information Timely advice Helpfulness Friendly service Commitment to help Researchers views taken into account in arriving at workable solutions 	<ul style="list-style-type: none"> Self-help Empowerment Simplification of procedures Less administrative work without compromising safety
	Laboratory Officers	<ul style="list-style-type: none"> Technically accurate information Ease of access to S&H information Timely advice Helpfulness Friendly service Commitment to help 	<ul style="list-style-type: none"> Self-help Empowerment
	Incident Commanders	<ul style="list-style-type: none"> Technically accurate information Ease of access to S&H information Timely advice Helpfulness Friendly service Commitment to help 	<ul style="list-style-type: none"> Self-help Empowerment
EM Division	Staff & Students	<ul style="list-style-type: none"> Technically accurate information Ease of access to information Timely advice Helpfulness Friendly service Commitment to help 	<ul style="list-style-type: none"> Safety & crisis management as part of set of life skills
	Relatives of staff or students affected by a crisis	<ul style="list-style-type: none"> Timely and value-added advice Helpfulness & empathy Friendly service Commitment to help 	<ul style="list-style-type: none"> Timely and value-added advice Easy access to information about crisis situation Helpfulness & empathy Friendly service Commitment to help

Table 5.1.2 OSHE's current and future customer expectations

3Ts Strategic Service Intent	Key Attributes
Technical Accuracy	<ul style="list-style-type: none"> Fitness for purpose Competent, knowledgeable with a high level of interpersonal skills (courteous, honest, attentive, respectful)
Timeliness	<ul style="list-style-type: none"> Fast and easy access to OSHE's services Timely response to customers' needs Fast turnaround time for various tasks undertaken by OSHE
Transcendence	<ul style="list-style-type: none"> Delighting its customers Rise above and go beyond our normal limits Helpfulness, friendliness, commitment, proactive, information availability, information dissemination, obtain feedback

Table 5.1.3 Key attributes of offerings

34 Department tailors its offerings to exceed customer expectations

Tables 5.1.4a and 5.1.4b provide examples of how OSHE's portfolio of products and services for SHM Division and EM Division are tailored to exceed customer expectations.



OSHE providing Safety Management System training at NUS-Suzhou Research Institute in May 2014



OSHE staff conducting a Chemical Spill Training at Department of Biological Sciences



Fire Safety Excellence Award at OSHE Fire Fusion 2011

Safety & Health Management Division			
Products & Services	Customers	Customer Requirements	Examples of how OSHE delight its customers
Policy Formulation	NUS Senior Management	<p>Technical Accuracy</p> <ul style="list-style-type: none"> Based on sound scientific and/or safety & health principles <p>Timeliness</p> <ul style="list-style-type: none"> Current and relevant 	<ul style="list-style-type: none"> Policies are reviewed once every three years or when there are changes in the external or internal environment which will affect S&H management in NUS. Sufficient preparation work is done whilst developing the policies.
Safety Programme & IT supporting services	Heads of Department	<p>Introduction of new programme e.g. ASHPA criteria</p> <p>Timeliness</p> <ul style="list-style-type: none"> Timely release of award criteria <p>Transcendence</p> <ul style="list-style-type: none"> Professional advice on ideal safety management system Unbiased judging 	<ul style="list-style-type: none"> Release of ASHPA/SHIP application forms by month of July of each year to ensure sufficient time for submission. Sharing of best practices by other departments.
	Laboratory-based Principal Investigators and research staff (Research Fellows, Research Assistants, Laboratory Officers)	<p>Training</p> <p>Technical Accuracy</p> <ul style="list-style-type: none"> Course content relevant and useful to participants <p>Timeliness</p> <ul style="list-style-type: none"> Availability of courses Fast and easy access to information 	<ul style="list-style-type: none"> Course curriculum aligned with international and national standards eg. Biosafety course aligned with Laboratory Biosafety Manual by World Health Organisation, and Biosafety in Microbiological and Biomedical Laboratories. In-person training courses are conducted once every 2 months on average. Three channels of access: <ol style="list-style-type: none"> Courses are run classroom style. Training materials are available for download from OSHE's website. The General Laboratory Safety training course has a Mandarin version to cater to Mandarin-speaking staff.

Safety & Health Management Division			
Products & Services	Customers	Customer Requirements	Examples of how OSHE delight its customers
		<p>Transcendence</p> <ul style="list-style-type: none"> Skilled and knowledgeable trainers 	<ul style="list-style-type: none"> External trainers with accreditation are engaged to conduct some of OSHE's courses. Setting of targets for all training courses to have an overall rating of >5 on a 7 point scale.
Professional & Advisory Services	PIs and Incident Commanders	<p>Advisory Services</p> <p>Technical Accuracy</p> <ul style="list-style-type: none"> Ability to provide accurate information and advice <p>Timeliness</p> <ul style="list-style-type: none"> Fast and easy access to information Availability of staff to respond to queries Fast response on enquiries related to emergency and crisis management via phone or e-mail <p>Transcendence</p> <ul style="list-style-type: none"> Competent, knowledgeable, friendly and helpful 	<ul style="list-style-type: none"> No complaints from customers. Timely response of advisory within 2 days on matters raised by faculties and offices. Advisory services survey rating target of 4 out of a 5 point scale.
	Laboratory-based Principal Investigators and research staff (Research Fellows, Research Assistants, Laboratory Officers)	<p>Radiation Waste Collection</p> <p>Timeliness</p> <ul style="list-style-type: none"> Regular and reliable disposal of radiation waste <p>Transcendence</p> <ul style="list-style-type: none"> Central disposal of radioactive waste Cost-effective disposal of radiation waste 	<ul style="list-style-type: none"> Waste collection to be done three times a year. OSHE bears all costs of radiation waste disposal.

Safety & Health Management Division			
Products & Services	Customers	Customer Requirements	Examples of how OSHE delight its customers
	Laboratory-based Principal Investigators and research staff (Research Fellows, Research Assistants, Laboratory Officers)	<p>Project Risk Assessment (PRA)</p> <p>Technical Accuracy</p> <ul style="list-style-type: none"> Clear guidance to complete risk assessment <p>Timeliness</p> <ul style="list-style-type: none"> Fast and easy access Ease of submission Prompt review and approval of risk assessment submission <p>Transcendence</p> <ul style="list-style-type: none"> Professional advice for controls of hazards 	<ul style="list-style-type: none"> Submission is done via the online risk assessment system (OPRAS), available 24 hours daily. Setting of targets for approvals of at least 70% of Project Risk Assessments within 30 days from submission.
Audits	Principal Investigators and Laboratory staff	<p>Technical Accuracy</p> <ul style="list-style-type: none"> Ability to identify gaps in safety & health management system in order to spur improvement in safety performance <p>Transcendence</p> <ul style="list-style-type: none"> Ability to present audit findings in a fair and unbiased manner 	<ul style="list-style-type: none"> Audit survey rating target of 4 out of a 5 point scale.

Table 5.1.4a Customer requirements and Quality Service Indicators of key processes in Safety & Health Management Division

Emergency Management Division			
Products & Services	Customers	Customer Requirements	Examples of how OSHE delight its customers
Policy Formulation	Faculty and Department Staff and Students	<p>Technical Accuracy</p> <ul style="list-style-type: none"> Guidelines and policies on various crisis management matters for their preparation like the Flu Pandemic <p>Timeliness</p> <ul style="list-style-type: none"> Policies are issued in a timely manner to guide UICs in managing crisis situations <p>Transcendence</p> <ul style="list-style-type: none"> Simplicity and clarity 	<ul style="list-style-type: none"> Crisis policies and directives are aligned with national framework.

Emergency Management Division			
Products & Services	Customers	Customer Requirements	Examples of how OSHE delight its customers
Safety Programme & IT supporting services	Staff and students	<p>Technical Accuracy</p> <ul style="list-style-type: none"> Quality of training is kept at the optimum to ensure participants can have an enriching experience attending the respective training course Quality of training material & training aids are highly maintained <p>Transcendence</p> <ul style="list-style-type: none"> Highly trained & dedicated instructors who are passionate in sharing knowledge & skill at training courses 	<ul style="list-style-type: none"> Able to exceed the targets of a minimum grading of 5 on a scale of 7 or 4 on a scale of 5 in the effectiveness of training programme & trainers for courses conducted.
Professional & Advisory Services	Staff and students (seeking advice)	<p>Technical Accuracy</p> <ul style="list-style-type: none"> Ability to provide accurate information and advice <p>Timeliness</p> <ul style="list-style-type: none"> Fast and easy access to information Availability of staff to respond to queries Fast response on enquiries related to emergency and crisis management <p>Transcendence</p> <ul style="list-style-type: none"> Sense of responsibility and urgency while being competent, knowledgeable, friendly and helpful 	<ul style="list-style-type: none"> Timely response within 2 days on matters and concerns raised by faculties and offices.
Professional & Advisory Services	Staff and students (consultation on event safety)	<p>Timeliness</p> <ul style="list-style-type: none"> Clear guidance to complete risk assessment Prompt review and approval of risk assessment submission <p>Transcendence</p> <ul style="list-style-type: none"> Professional advice for controls of emergency Structured training to staff & students by competent instructor in providing advisory and consultation Face-to-face consultation 	<ul style="list-style-type: none"> Timely and practical safety & emergency planning advice within 3 days of receiving the Safety & Crisis Management Plans of intended events from the event organizers.

Emergency Management Division			
Products & Services	Customers	Customer Requirements	Examples of how OSHE delight its customers
Professional & Advisory Services	<p><u>Emergency Response</u></p> <ul style="list-style-type: none"> Staff & Students <p><u>Crisis Management</u></p> <ul style="list-style-type: none"> Staff and students, relatives of students or staff, CCA Groups 	<p>Timeliness</p> <ul style="list-style-type: none"> Fast & easy access to information required in emergency planning & preparedness Speed of response to support stakeholders in managing emergency / crisis situation <p>Transcendence</p> <ul style="list-style-type: none"> Highly experienced people who are capable in providing sound advisory & guidance in crisis management Empathy Moral and social support 	<ul style="list-style-type: none"> Intervention and response within the same day upon notification from staff, student, faculty, UHC & any other administration offices. Setting of response time targets: <ol style="list-style-type: none"> Within ½ hour (office hours) Within 2 hours (outside office hours) Response to request for advice within 2 days on matters and concerns of safety and emergency raised by faculties and offices.
Audits	Staff & Students	<p>Technical Accuracy</p> <ul style="list-style-type: none"> Ability to provide professional advice and guidance during the audits in relation to findings Efficient administration and conduct of audit <p>Timeliness</p> <ul style="list-style-type: none"> Providing advisory and consultation in a timely fashion <p>Transcendence</p> <ul style="list-style-type: none"> Audit conducted effectively and efficiently and the customer has benefited from the audit 	<ul style="list-style-type: none"> Auditors identify systemic issues that will improve the auditee’s safety performance. Auditors provide value-added options for the auditees’ consideration.

Table 5.1.4b Customer requirements and Quality Service Indicators of key processes in Emergency Management Division

35 Department uses technology to improve offerings

OSHE uses IT to facilitate the delivery of its programme and services. Table 5.1.5 shows how IT has been used to improve OSHE’s products and services.

In recent years, OSHE staff have identified technological advancements in safety and health-related equipment and implemented the following initiatives (Figure 5.1.3):

- Accident investigation toolkit
- Chemical waste trolley
- Radiation contamination monitoring
- Industrial monitoring equipment
- Retractable belt for passenger lifts

The accident investigation toolkit is a trolley bag with the necessary technological hardware (e.g. air quality monitoring instruments and Personal

Protective Equipment) to aid OSHE staff who are assigned to conduct investigations immediately after an accident.

The chemical trolley is a specially-designed trolley for use by researchers when transporting their chemical wastes to the store or collection point for disposal. It provides containment and ease of transport for bottles of chemical wastes.

A liquid scintillation counter was purchased and used for the monitoring of radioactive leaks for sealed radioactive sources.

Thermal scanners are deployed during pandemics to provide rapid screening of staff and students.

The retractable belt is another innovation that provides administrative control and prevents people from entering a lift when it is being used to transport hazardous materials.

Year	Technology Introduced	Impact
2009	Accident & Incident Reporting System (AIRS)	Accessible tool for staff & students to promptly report injury, accidents and near misses
2012	Online Regulated Materials Inventory (ORMI)	Compliance tool provided to staff & students to check for relevant licences before procurement of regulated chemicals
	Mass Temperature Screening Thermal Scanners	A reduction of manpower and efficiency in set-up and operation resulting in ability to manage large crowds
	Online safety training courses on IVLE platform	Easily accessible by staff and students at anytime and anywhere
	iPad	Improved productivity as staff are able to work on the move
	EDMS	Archive and main database for S&H information to ensure consistency with the information shared with various stakeholders
	SharePoint	Efficient & effective way to share S&H information among FSHOs
2013	‘iAudit’ application on iPad	Increased productivity and efficiency in generating audit report

Table 5.1.5 The use of IT to improve offerings



Figure 5.1.3 Innovative tools

36 *Department involves employees and stakeholders in the design of offerings*

OSHE incorporates changing customer and market requirements into its programmes and services based on the availability of resources.

Figure 5.1.4 shows how OSHE designs its programmes and services. During the planning stage (Stage 2), user requirements and inputs are gathered and taken into consideration in the development of the system or programme. Once the system is ready, a pre-launch review is conducted among internal staff and/or a focus group selected via random sampling to test the efficiency of the system. Quality Service Indicators are established for key processes that affect the majority of customers to ensure that key customer requirements are met.

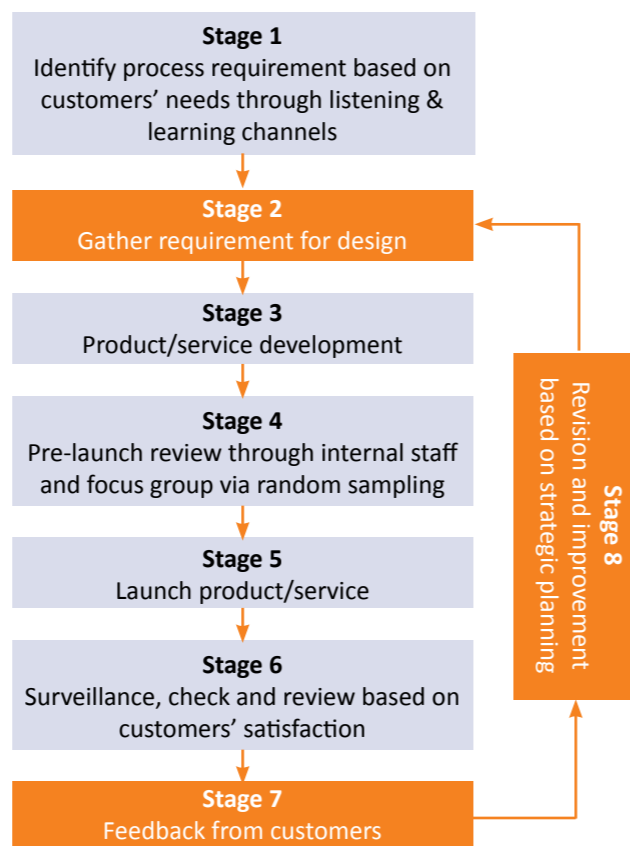


Figure 5.1.4 Programmes/Services Design Process

Table 5.1.6 gives examples of products and services that have resulted from OSHE's Programme/Services Design Process.

37 *Department evaluates and improves its processes for determining and addressing customer expectations*

OSHE regularly reviews its processes to address changing customer expectations.

In the past, in the interest of expediency, OSHE's products and services such as manuals, safety and health policies and programmes have been launched using a top-down approach, with only relevant members of the NUS Senior Management team being consulted.

As OSHE matures, the Department increasingly uses a bottom-up approach as well to demonstrate its commitment to service excellence. Stakeholders review the plan and provide inputs before the product is launched. For example, revisions to safety policies, manuals or programmes are reviewed by the IBC and ILSC prior to implementation. OSHE implements post-event and post-programme launch feedback to determine if its programmes and services have addressed customer expectations. Feedback on potential crisis and emergency situations is obtained through CrisPIE meetings.

The annual Customer Service Day also provides OSHE a platform to evaluate and improve its processes for determining and addressing customer expectations. The outcomes resulting from such reviews include the following:

- Introducing e-survey forms to obtain customer feedback.
- Implementing four telephone hotlines instead of one so that customers can have more direct access to OSHE staff and/or information.
- Instituting in 2013 the practice of obtaining feedback from a member of NUS Senior Management on an annual basis.



Role play to identify customers needs at Customer Service Day

Hardware-related	Software-related	Programmes
<ul style="list-style-type: none"> • Retractable belt • Chemical Trolley 	<ul style="list-style-type: none"> • iAudit • Online Regulated Material Identifier (ORMI) • Faculty and Institution Safety & Health Licences (FISHL) • Hazardous Materials Management System (HMMS) 	<ul style="list-style-type: none"> • Safety & Health Manuals • ASHPA

Table 5.1.6 Examples of products and services that resulted from OSHE's Programmes/Services Design Process

5.2 CUSTOMER RELATIONSHIP

38 *Department considers expectations of customers when designing touchpoints*

OSHE maintains frequent interactions with key customers through various interface points. The following three key customer expectations are taken into consideration when designing touchpoints:

- Technical Accuracy
- Timeliness
- Transcendence

39 *Department provides customers with easy access to do business with the department*

Besides staff contact numbers being made available on the web, there are also four dedicated hotlines for OSHE’s customers to contact with staff on specific issues. Staff who are always on the move also have their landlines re-directed to their mobile lines, which are subsidized by OSHE. Staff with crisis and emergency management responsibilities are provided with a BlackBerry® phone.

In keeping with technology trends, OSHE introduced a series of online e-services and tools (Figure 5.2.1). E-services enable customers to interact with OSHE at their convenience e.g. to report an accident or submit a risk assessment to OSHE for review. Tools are self-help IT application programmes. The e-services and e-tools have improved OSHE’s response turnaround.

40 *Department sets and deploys performance standards for people and processes involved in the customer response chain*

OSHE has established clear performance standards for frontline staff in the customer response chain. Some examples are shown in Table 5.2.1.



Figure 5.2.1 OSHE’s range of online e-services and tools

41 *Department ensures that customer complaints are resolved and analysed for improvement*

The Customer Feedback Management Framework (Figure 5.2.2) provides the guiding principles to ensure the needs of customers are attended to, and that complaints and concerns raised are resolved quickly.

The key steps in complaint resolutions are as follows:

- Attend promptly to issues raised by the customer and provide interim solutions or recommendations.
- Analyse the issue and assign appropriate staff to act on the matter.

Desired Outputs	Performance Standards
<p>Training Training exceeds customer expectations and training materials and presentations are continuously improved.</p>	<ul style="list-style-type: none"> • Face-to-face training rating – 6/7 • Online training rating – 5/7
<p>Audit Each audit finding recommendation ensures that customer benefits and embraces audit as an important tool.</p>	<ul style="list-style-type: none"> • Audit rating – 4/5
<p>Advisory Services Customer not only benefits from the advice and consultation but gains experience and skills that add to their own skill set and management capabilities.</p>	<ul style="list-style-type: none"> • Consultancy/advisory service rating – 4/5
<p>Inspections Laboratory inspections</p>	<ul style="list-style-type: none"> • Inspection rating – 4/5

Table 5.2.1 Performance standards

- Provide long-term solutions or recommendations that meet customer expectations and bring issue to a close.
- Determine how service can be strengthened.

Here is an example of how the customer feedback/complaint process works for IT services. Such complaints are currently addressed by OSHE’s

IT Business Analyst. Details of the user are automatically captured by the system, allowing the Business Analyst to contact the user to obtain more information about his or her concerns. IT specialists usually respond to complaints regarding IT applications within three working days through e-mails or telecommunication to clarify the problem. The problem is then analysed and resolved.

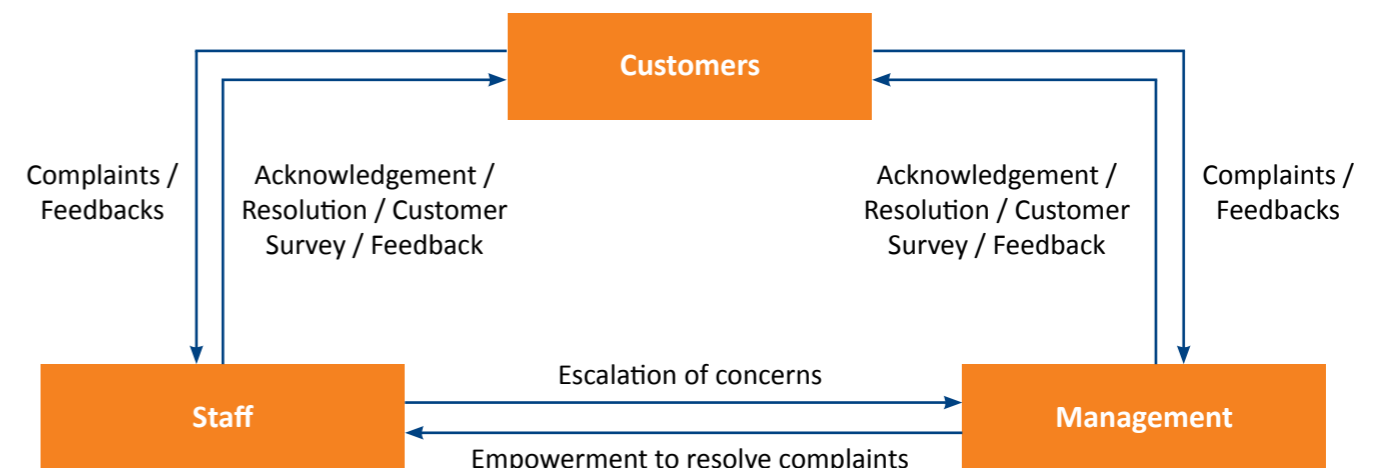


Figure 5.2.2 Customer Feedback Management Framework

42 *Department empowers its employees to delight customers*

OSHE empowers staff in the following ways:

- Staff are sent for training to acquire the necessary competencies.
- Staff are given room to exercise initiative and discretion when dealing with customers.
- Staff may consult with team/department members if further advice or technical assistance is required.
- Management supports staff's decision or actions and provides guidance where appropriate.
- Staff who have delighted the customer are duly acknowledged.
- Staff are encouraged to share their experiences with other team members.
- Staff are encouraged to propose beneficial solutions or plans.

Below are examples of how OSHE staff have used their empowerment to delight the customer:

- Head of EM Division empowers his staff to drive their respective fire safety programmes;
- Ms Oh Siew Kee, who administers the safety training courses, has reviewed the assessment questions and provided feedback to trainers on questions that trainees tend to answer incorrectly;
- Ms Sania Binte Nader, the administrator for the integrated Online Research Compliance system, uses the Office Communicator to guide iORC users remotely through their PC for iORC-related enquiries;
- Ms Joyce Ng, Personal Assistant to the Director, answers e-mails and schedules appointments

for the Director, based on the broad guidelines provided;

- The Administrative Group has created its own WhatsApp chat group to ensure services provided are not disrupted when a staff member takes urgent leave or medical leave;
- Ms Evon Chee and Mr Danny Toh have released the audit master plan to faculties, schools and institutes at the beginning of the year so that they can choose their preferred dates instead of having the schedule imposed on them.

43 *Department has a process for selecting suppliers and partners who fit into the department's customer-focused strategies*

OSHE works closely with its key partners and suppliers to achieve its goals and enjoys good working relationships with them. The profile of its suppliers and partners is detailed in Table 5.2.2.

External suppliers and partners are selected through a structured process (Figure 5.2.3). OSHE staff apply rigorous criteria to assess if they are aligned with the Department's customer-focused strategies.

44 *Department manages the performance of suppliers and partners to improve customer experience*

Partners and suppliers are a vital component in the service delivery process. Hence, they have to be managed throughout the entire life cycle in order to have assurance that services will meet the standard required by customers. See Table 5.2.3 for the three stages of supplier management.

SUPPLIERS		
Superficial (Cousin)	Normal (Sibling)	In-Depth (Twin)
<p><u>Definition</u> Provide resources for OSHE's operations</p> <ul style="list-style-type: none"> • IH monitoring contractor (e.g. calibration) 	<p><u>Definition</u> Support OSHE's operations</p> <ul style="list-style-type: none"> • Waste collection vendors • Thermal scanner supplier • AED suppliers who provide pads & batteries • Printer for OSHE labels, inspection tags, etc. • Vendors for analysing trade effluent discharge 	<p><u>Definition</u> Integral part of OSHE's operations</p> <ul style="list-style-type: none"> • OH Physician • External safety & health auditors
PARTNERS		
Internal		External
<ul style="list-style-type: none"> • OSA & NUSSU student leaders • Faculty student clubs student leaders • NUS internal departments (CCE, OCA, OCS, OED, OEO, OFM, OHR) 		<ul style="list-style-type: none"> • External trainers • Service provider for AED programme and scanners for Flu Pandemic preparedness

Table 5.2.2 OSHE's key suppliers and partners

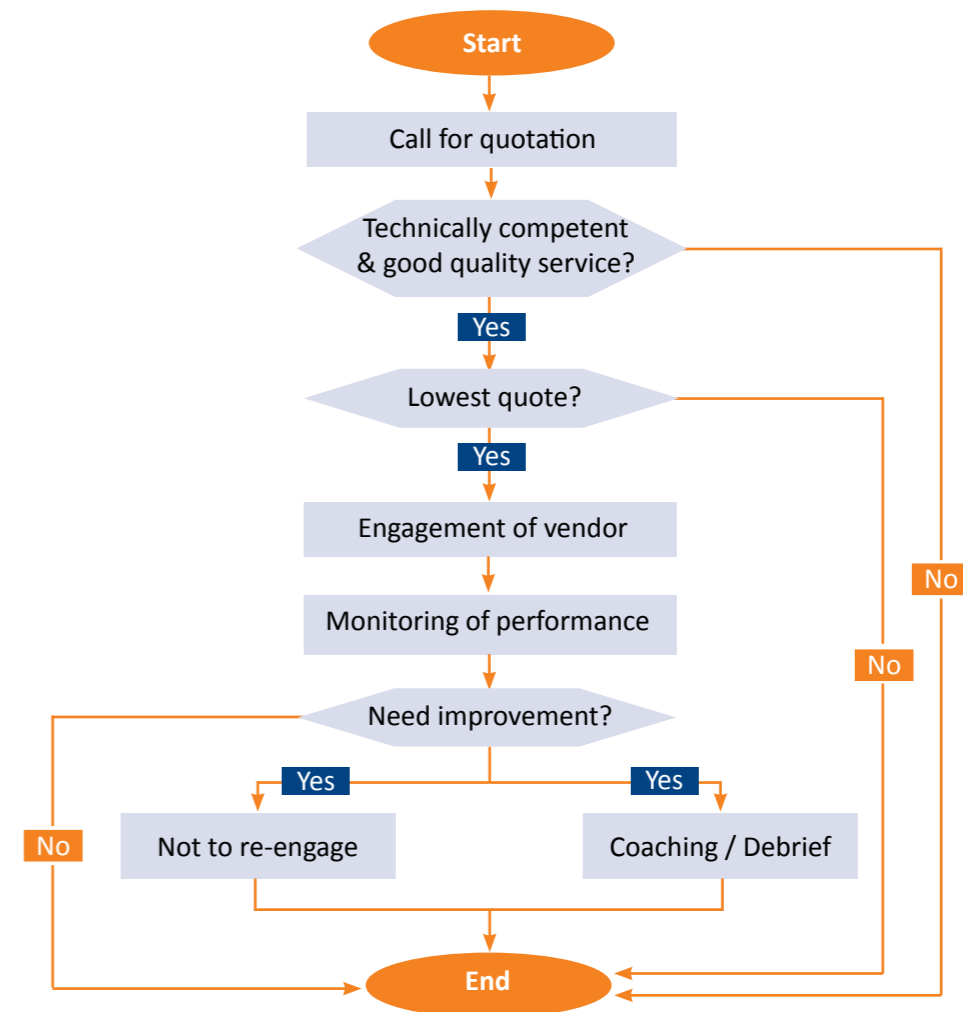


Figure 5.2.3 Process of engaging vendors and suppliers

Before (pre-engagement)	During (engagement)	After (post-engagement)
<ul style="list-style-type: none"> Identify potential suppliers / partners by reviewing their track record and credentials. Brief to ensure requirements are understood by suppliers / partners. Suppliers / partners are required to demonstrate their competency or functionality of their products. Review cost and value-added services, if any. 	<ul style="list-style-type: none"> Communicate regularly through e-mails or face-to-face interaction. Closely monitor agreed-upon timeline, especially for IT applications, to ensure that the contractor meets the project timeline. Give feedback to supplier / partner if performance is below expectations. 	<ul style="list-style-type: none"> Carry out post-event review of supplier / partner's performance. Provide feedback from participants to suppliers / partners. Recommend improvement to product/service based on feedback received.

Table 5.2.3 Supplier Management Framework

An example of OSHE's dedicated management of its suppliers is in its management of internal auditors. A senior OSHE staff would accompany a newly appointed audit consultant to an audit, observe him/her conduct the audit, and provide feedback after the audit. OSHE staff also join selected audits to monitor the performance of the consultants. The safety and health executives who are team

members of the audit would provide feedback to OSHE management on the performance of the auditors and raise any problems to management for their action.

OSHE has established KPIs for external partners and suppliers with which to quantitatively measure their performance (Table 5.2.4).

Key Partners & Suppliers	KPIs
Occupational Health Physician	Overall satisfactory rating by an external independent assessor (Occupational Health Specialist)
External Auditors	1. <u>Preparation Phase</u>
Services – Industrial hygiene monitoring & trade effluent sampling	<ul style="list-style-type: none"> Responsiveness to pre-site logistic arrangement Readiness to carry out the job
Services – Radiation waste disposal	2. <u>Execution Phase</u>
	<ul style="list-style-type: none"> Punctuality on site Meeting project schedule Technical competency
	3. <u>Post-Execution Phase</u>
	<ul style="list-style-type: none"> Timely submission of reports Quality of reports

Table 5.2.4 KPIs for key external partners and suppliers

45 *Department evaluates and improves its customer relationship management to exceed expectations*

In conjunction with the review of the Department's overall customer intelligence system, OSHE regularly reviews its customer relationship management process to identify areas for improvement. An example of improvement made was the creation of a central depository for all feedback, compliments and complaints. Department meetings and management meetings are some of the platforms for evaluating complaints or feedback to bring about overall organisational improvement.

5.3 CUSTOMER SATISFACTION

46 *Department determines customer satisfaction*

OSHE determines customer satisfaction through both qualitative and quantitative means, such as:

- Feedback from customer/partners
- Feedback from staff
- Customer perception survey
- Training course evaluation and feedback
- Post-event evaluation survey

Feedback on customer satisfaction is used to develop strategic and improvement plans.

Feedback from Customers

OSHE obtains feedback from its customers through multiple channels. Among these are the customer feedback forms that are handed to customers whenever a major OSHE event is completed. Ideas, suggestions and inputs consolidated from post-event feedback are noted for discussion and subsequently used to improve future events. Other feedback channels are summarised in Table 5.3.1.

Customer feedback is reviewed by the Director, Heads, and Group Leaders (GLs) at the monthly GLs meeting (Figure 5.3.1 shows a screenshot of the customer feedback statistics reviewed).

Customer Perception Survey

The Faculty Perception Survey conducted by Organisational Excellence Office provides valuable feedback on OSHE's responsiveness and pro-business orientation.

S/N	Types of feedback channels	Description
1	Post-event feedback	e-Survey forms are distributed to all participants after event.
2	Evaluation of training courses	Participants are encouraged to evaluate training courses via OHR online feedback portal.
3	E-mails	Feedback on unsafe acts can be reported to OSHE through staff's e-mail or safety@nus.edu.sg.
4	General phone enquiries	Feedback on safety issues are usually performed via direct contact with OSHE staff.
5	e-Customer satisfaction survey	An easy-to-fill e-survey form is available on OSHE's intranet.

Table 5.3.1 OSHE's feedback channels for customers

Name		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Compliments to Individuals	Compliments (Individual)	0	0	0	0	0	0	0	0	1	0	1	
	Name of OSHE Staff												
		0	0	0	0	0	0	2	0	1	0	1	
		0	1	0	0	0	0	0	0	1	0	0	
		0	1	0	0	0	1	0	0	2	0	0	
		0	0	1	1	0	1	1	0	0	1	0	
		0	0	0	0	0	0	0	0	1	0	0	
		0	0	0	1	0	0	0	0	2	2	3	0
		0	0	0	1	0	0	0	0	3	0	1	
		0	0	0	1	0	1	3	0	2	2	1	
		1	2	0	0	0	2	1	0	3	0	0	
		0	0	0	0	0	0	0	0	1	0	1	
		0	0	0	1	0	0	0	0	1	3	0	
		0	1	0	1	0	1	0	0	1	0	1	
		0	1	0	1	0	0	0	0	1	0	0	
		0	0	0	0	0	0	2	2	4	2	1	
		0	0	0	1	0	1	3	1	0	0	0	
		0	0	0	0	0	1	0	0	0	0	0	
		0	0	0	0	0	0	1	0	1	0	0	
		0	0	0	0	1	0	1	2	1	0	0	
	0	1	0	1	1	0	0	0	0	0	0		
	0	0	0	0	2	1	0	0	4	0	0		
	0	0	0	0	2	0	0	0	0	0	0		
	1	1	11	0	0	1	3	1	6	1	1		
	0	0	0	0	0	1	1	1	2	0	0		
	0	0	0	0	0	1	1	1	1	0	0		
	0	0	0	0	0	0	1	1	1	1	2	0	
	Total	2	0	12	10	6	14	10	11	41	13	0	
Back to TOP													
Compliments to Group	Compliments	3	9	15	3	7	11	1	13	7	4	4	
	Remarks: Includes all compliment (individual, collective, OSHE management and MNO)												
Back to TOP													
Complaints	Complaints	0	0	0	0	0	0	0	0	0	0	0	
	Remarks												
Back to TOP													
Suggestions	Suggestions	0	0	0	0	0	1	0	0	1	3	0	
	Remarks												

Figure 5.3.1 Screenshot of customer feedback statistics

47 Customer satisfaction feedback is used to develop strategic and improvement plans

Data on customer satisfaction are collated and communicated to all staff and management to identify areas needing improvement and to discuss possible solutions.

Using a structured approach, the department analyses and uses customer satisfaction feedback to formulate and refine customer-focused strategies in its strategic plans and to develop improvement action plans (Figure 5.3.2). The impact and effectiveness of implemented action plans are monitored and reviewed.

Following the structured process, some improvements that have been introduced include:

- E-learning – to address the lack of training places.
- Face-to-face review of safety plans with student leaders – to improve outreach and extend consultation and advisory.
- Hardware – Chemical waste trolley, retractable belt.
- Software – ORMI, iAudit, iORC, FISHL, and AIMS.
- Programmes – new safety manuals.

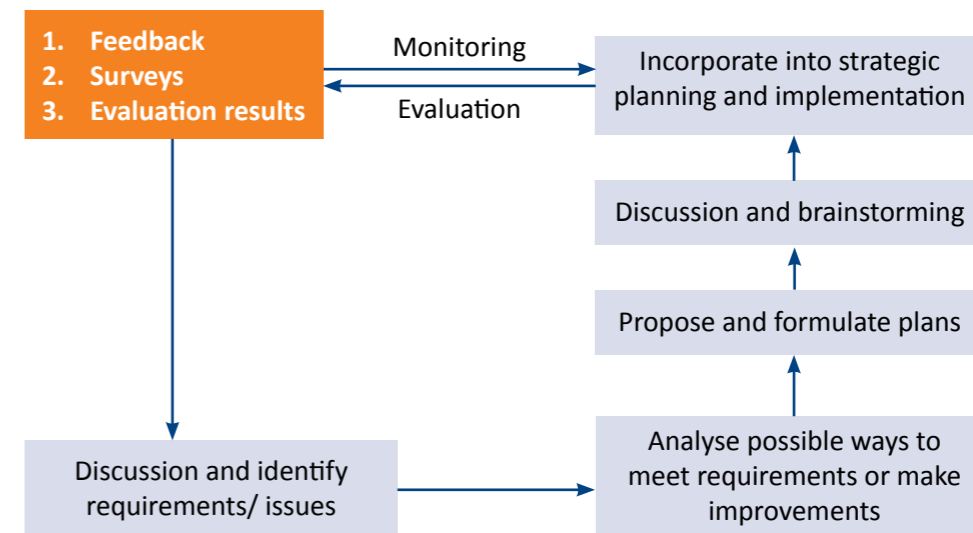


Figure 5.3.2 Process to translate customer satisfaction feedback

48 Department manages the performance of processes associated with product/service delivery for customer satisfaction

OSHE’s key business processes for delivering products and services to its customers have process performance measures established and targets set. Process owners are assigned to manage the respective business processes (Table 5.3.2).

KPIs are analysed at monthly Group Leaders meetings to ensure that OSHE is on track to achieving its strategic objectives. The Department also compares the performance of each indicator with its target and benchmarks where available to highlight areas for improvement.

OSHE continually strives to improve its processes to meet customers’ needs and expectations. As part of good quality management, every process is subject to review by the respective process owners. The reviews take into account feedback from various sources like audits and customer feedback.

OSHE continually looks for opportunities to use the latest technology to improve its processes.

Examples include the implementation of new IT systems such as the integrated Online Regulatory Compliance (iORC) system – an online system for joint submission of OSHE and IACUC forms.

OSHE has also embarked on Lean & Green Improvement Projects to streamline and simplify its processes and thereby saving time and increasing customer satisfaction. Some of the projects undertaken include:

- Integrated NUS Laboratory Biorisk Management Manual and NUS Laboratory Chemical Safety Manual
- NUS institutional Licence to Possess Veterinary Biologics
- Harmonisation of animal research protocol review process
- Review of Material Transfer Agreement submission

Examples of improvements made as a result of the reviews are listed in Table 5.3.3.

Key Process	KPIs/Measures	
	SHM Division	EM Division
Policy Formulation	<ul style="list-style-type: none"> 100% success rate for papers submitted to President Staff Meeting (PSM) for approval Effectively communicated Effective in achieving the intended purposes 	<ul style="list-style-type: none"> 100% success rate for papers submitted to PSM for approval Effectively communicated Effective in achieving the intended purposes
Programme Development & IT Support Services	<ul style="list-style-type: none"> Number of programmes benchmarked against leading universities / associations e.g. CSHEMA Outreach - number of programmes implemented Effectiveness – incident reduction, awareness increase 	<ul style="list-style-type: none"> Number of programmes benchmarked against leading universities Outreach - number of programmes implemented Effectiveness – incident reduction, awareness increase
Professional & Advisory Services	<ul style="list-style-type: none"> Overall customer satisfaction survey rating – 4/5 	<ul style="list-style-type: none"> 100% advisory and consultation addressed as requested by customers Train at least 50% of staff supervisors in reviewing and providing advisory on events and activities safety management
Audits & Inspections	<ul style="list-style-type: none"> Overall customer satisfaction survey rating – 4/5 	<ul style="list-style-type: none"> All internal fire safety audits and those required by SCDF must be completed 90% and 100% respectively

Table 5.3.2 OSHE's Process Management & Measurement

49 *Department reviews its process of determining customer satisfaction to improve customer experience*

OSHE reviews its process of determining customer satisfaction using the Plan-Do-Check-Act process and makes improvements accordingly. The annual Customer Service Day provides OSHE a platform to conduct these evaluations and staff a platform to

propose improvements to the system. Such reviews have resulted in the following improvements:

- Institutionalisation of process to seek feedback from a member of NUS Senior Management on OSHE's programmes annually
- Introduction of e-survey on customer satisfaction feedback
- Re-introduction of CrisPIE meetings

S/N	Programmes/ Services	Feedback from customers	Improvements made
1	Risk Assessment (manual system → OPRAS)	<ul style="list-style-type: none"> Unable to trace status of approval Lost/delayed forms in snail mail Excessive administrative workload 	OPRAS: <ul style="list-style-type: none"> 'Live' data status Online submission ensure delivery of forms 'Copy' function and allowing other project members to complete the form
	Risk Assessment (OPRAS → iORC)	<ul style="list-style-type: none"> Excessive administrative workload i.e. both online and hardcopy submissions. Need to submit another set of forms to IACUC for animal work 	iORC: <ul style="list-style-type: none"> Integration of OSHE and IACUC risk assessment forms Elimination of hardcopy submission
2	ASHPA	<ul style="list-style-type: none"> Too much paperwork Target audience very limited Judging process not qualitative Low participation rate Easier for smaller departments to win 	<ul style="list-style-type: none"> Complexity and number of pages in application forms reduced Specify submission requirements Open to non-laboratory based departments Scorecard style Awards aligned to MOM's award criteria
3	Safety Innovation Team Project	<ul style="list-style-type: none"> Too much emphasis on 'innovation' 	SHIP: <ul style="list-style-type: none"> Emphasise more 'improvement' than 'innovation' in projects
4	Training courses (Classroom training → IVLE SSTS courses)	<ul style="list-style-type: none"> Long waiting list for classroom training Researchers not able to attend the scheduled classes due to their research work Self-collection of training certificate and loss of some certificates if trainee forgets to collect them 	<ul style="list-style-type: none"> Convert to online IVLE SSTS courses which are accessible to staff and students anytime and anywhere Issuance of e-certificate to trainees via e-mail

Table 5.3.3 List of improvements made as a result of management reviews



NUS Open Day 2015 safety briefing for students



Excellence Day 2011 group photo



Mr Yam Guan Shyh giving advice to a student

RESULTS



6.1 CUSTOMER RESULTS

50 Current levels and trends for customer satisfaction and retention indicators

Customer satisfaction is determined through the various surveys that the Department conducts (e.g. NUS Faculty Perception Survey, training feedback survey, etc.).

As seen in Table 6.1.1, the Overall Customer Service Experience score in the Faculty Perception Survey decreased from 96% in 2008 to 89% in 2012, averaging 93% over those five years. The 2012

score, while lower, remains close to the target of 90%, and reflects a rapidly changing environment with diversified research areas and a bigger audience segment that is not familiar with safety matters and the role of OSHE.

Noticeably, OSHE's customer satisfaction ratings from course feedback have been consistently favourable (Figures 6.1.1a to 6.1.1j). Using a scoring band of 1 (not at all satisfied) to 7 (very satisfied), all of the customer ratings have exceeded the target rating of 5 out of 7.

Attributes	Very Good / Good / Average		
	2008	2010	2012
Timeliness	99%	96%	93%
Expertise	96%	94%	87%
Helpfulness	95%	92%	84%
Friendliness	98%	94%	91%
Commitment	97%	96%	96%
Pro-activeness	98%	96%	92%
Information Availability	97%	94%	86%
Information Dissemination	95%	95%	92%
Obtain Feedback	93%	93%	88%
Overall Customer Service Experience	96%	93%	89%

Table 6.1.1 Faculty Perception Survey

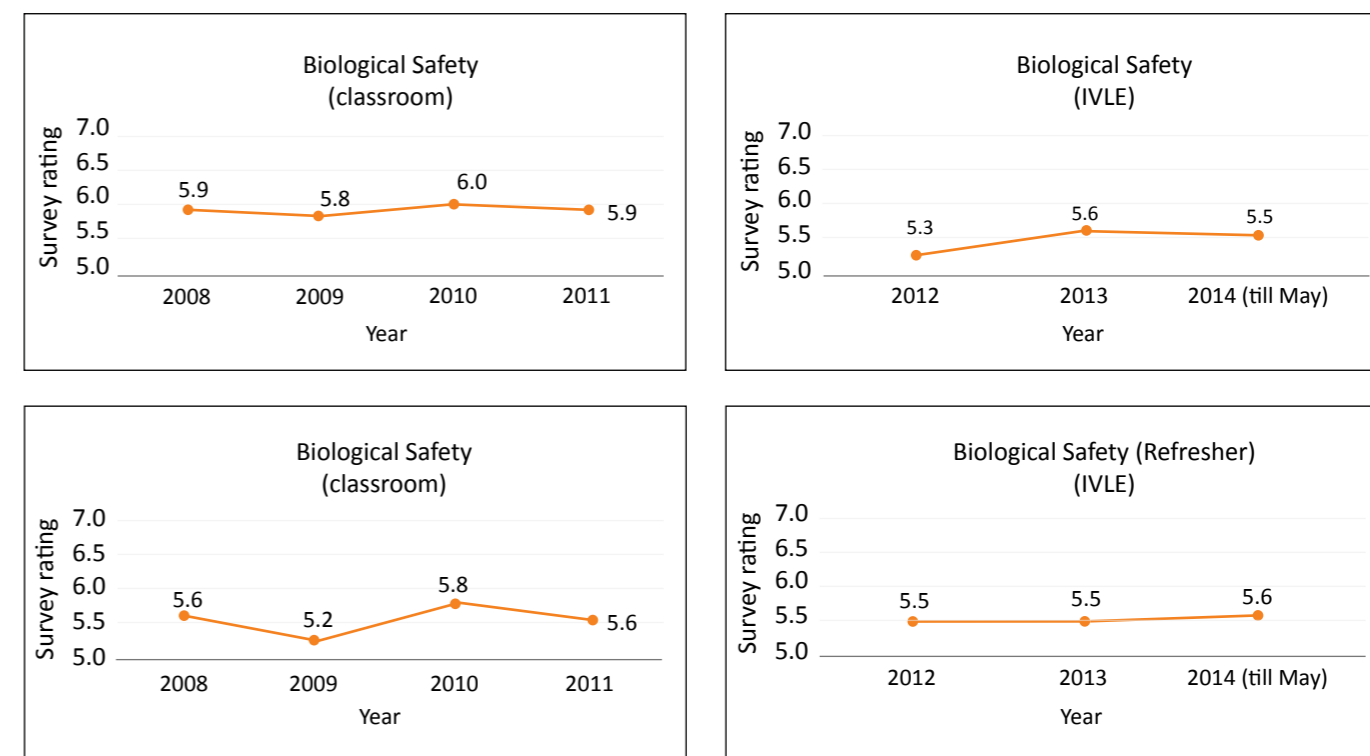


Figure 6.1.1a Course Survey Results (Biological Safety)

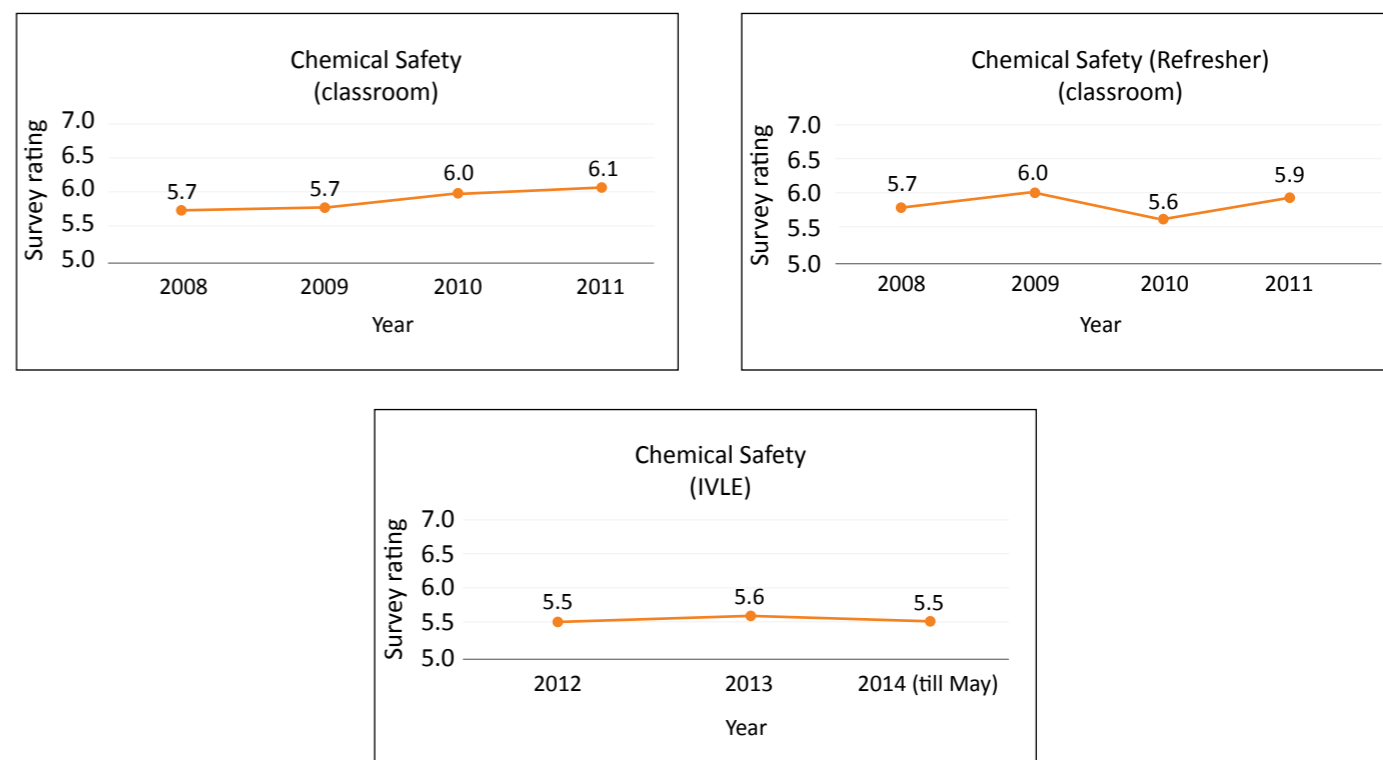
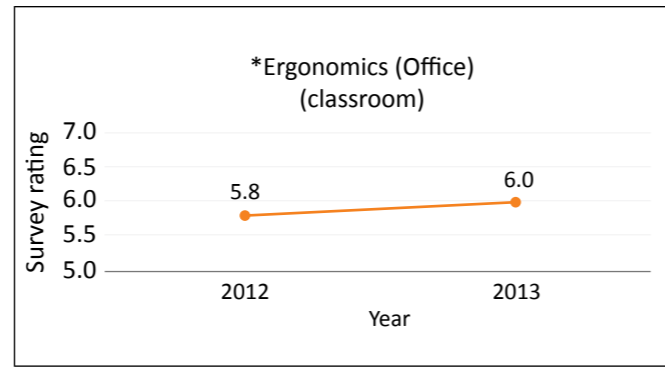
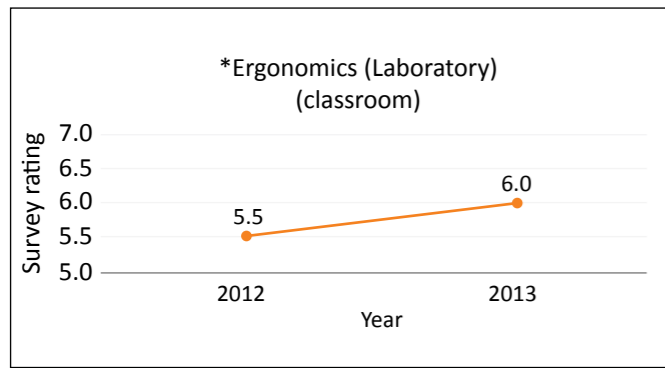


Figure 6.1.1b Course survey results (Chemical Safety)



*Training started in 2012

Figure 6.1.1c Course survey results (Ergonomics Safety)

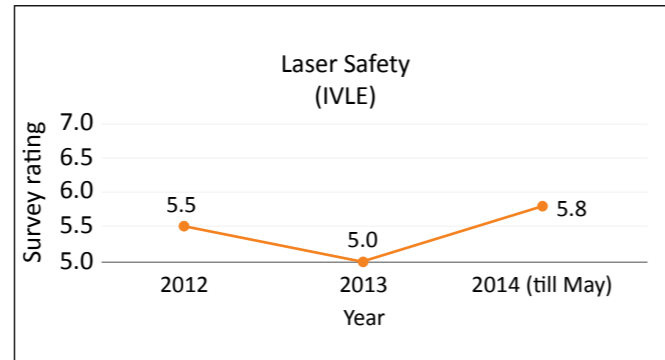
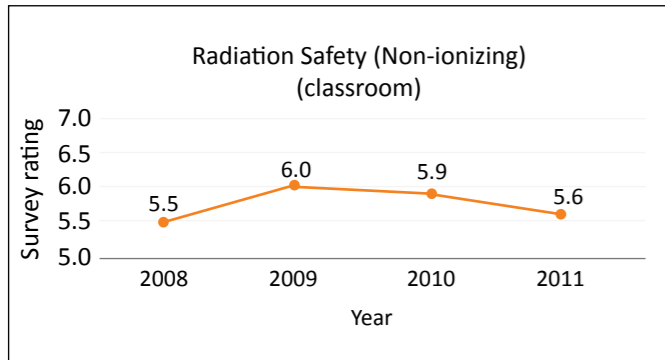
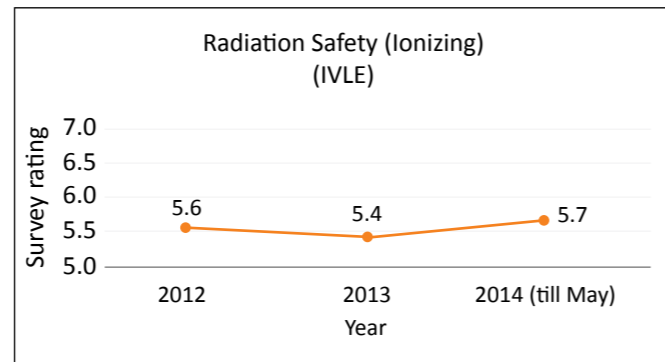
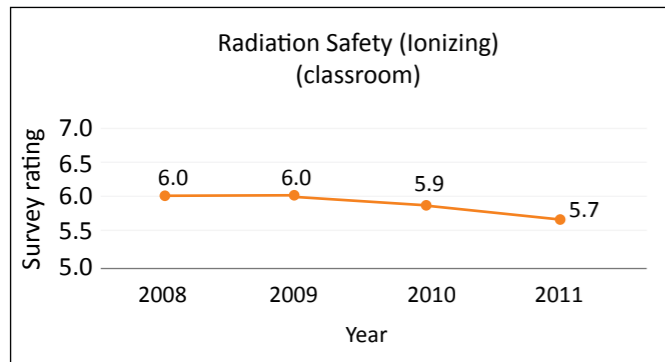


Figure 6.1.1d Course survey results (Radiation Safety)

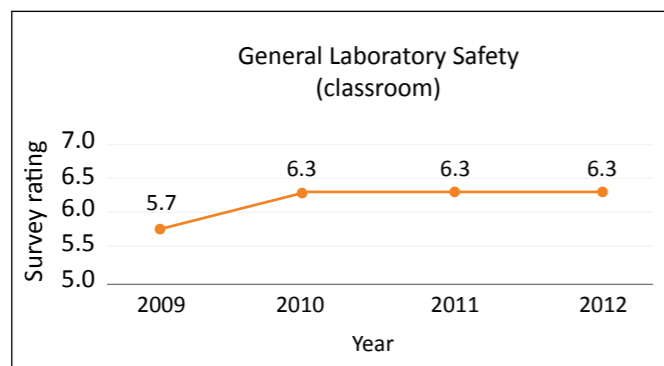


Figure 6.1.1e Course survey results (General Laboratory Safety)

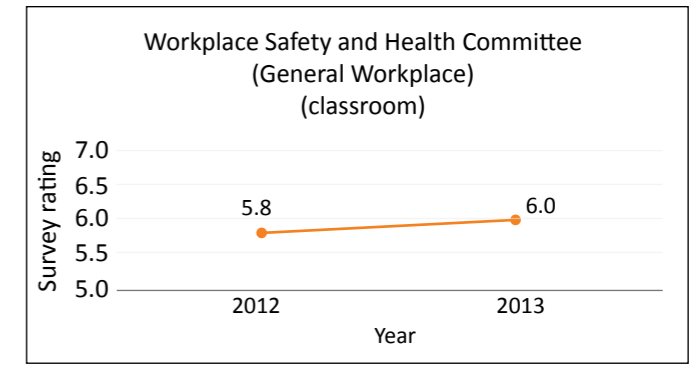
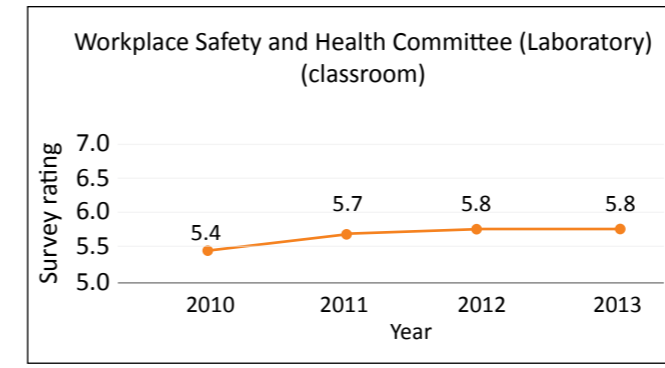
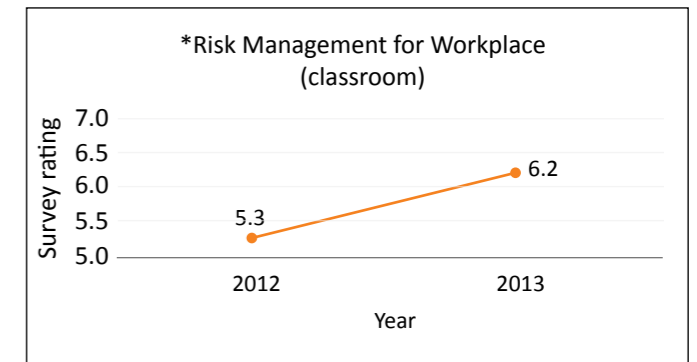
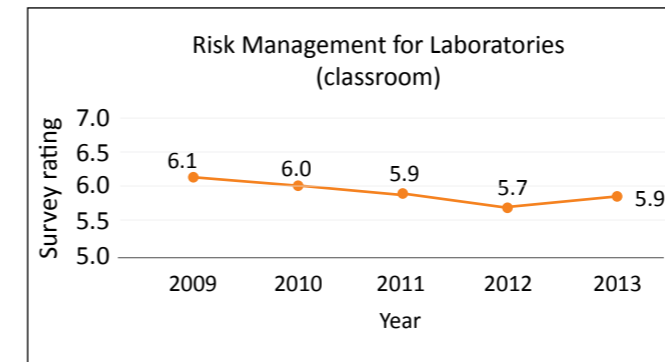


Figure 6.1.1f Course survey results (WSH Committee Training)



* Training started in 2012

Figure 6.1.1g Course survey results (Risk Management Training)

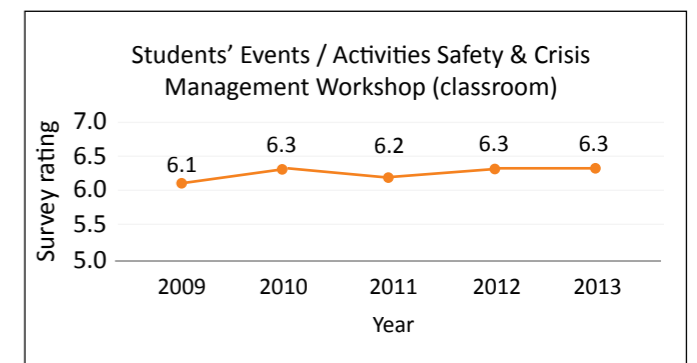
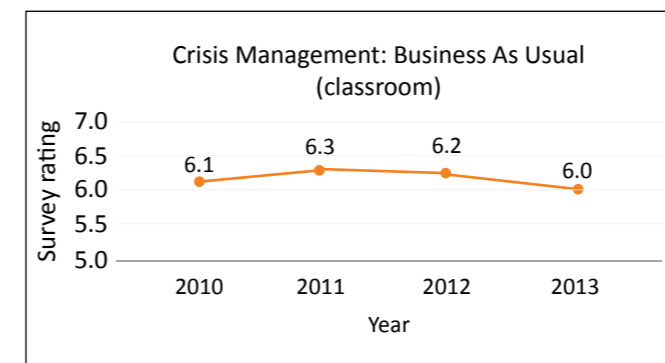


Figure 6.1.1h Course survey results (Emergency Management Training)

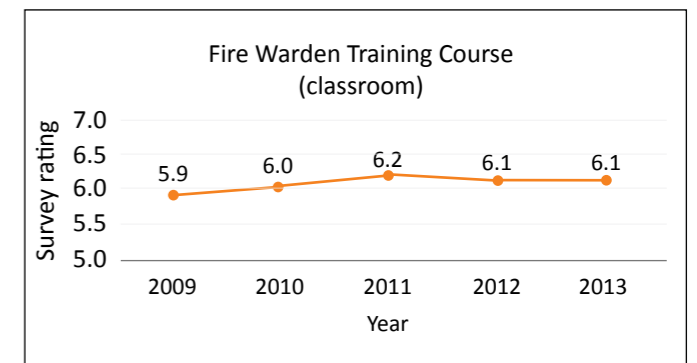
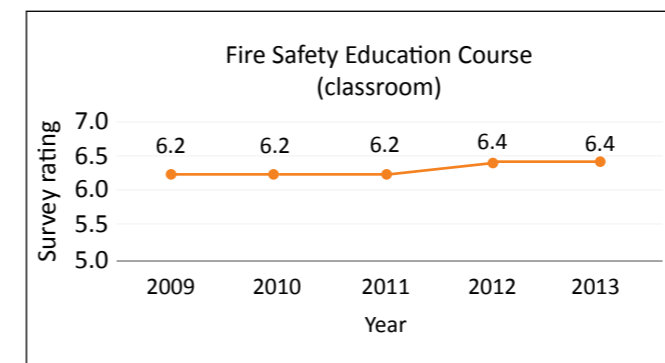


Figure 6.1.1i Course survey results (Fire Safety Training)

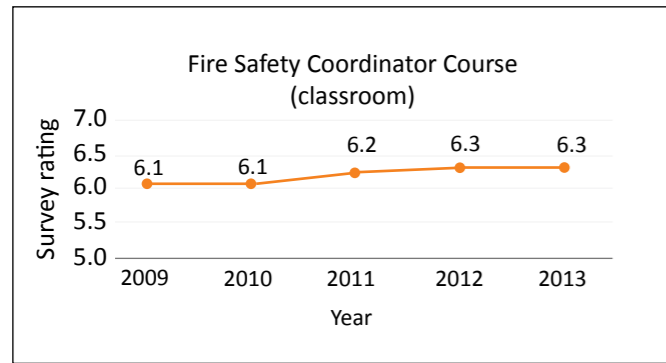
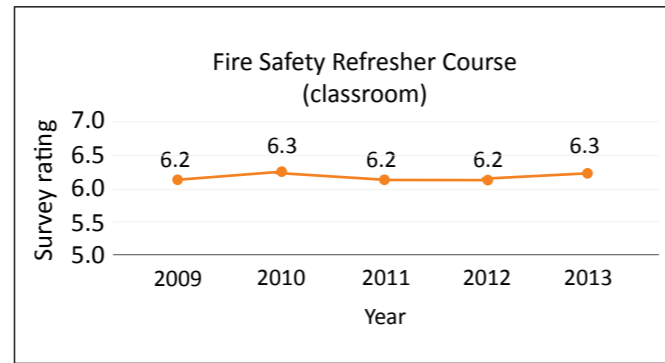


Figure 6.1.1j Course survey results (Fire Safety Training)



The compliments-to-complaints ratio is a widely used measure of the service level of organisations. OSHE’s compliments-to-complaints ratio has improved significantly over the years (Figure 6.1.2). Through regular reporting and analysis of complaints received, the Department managed to address service gaps and blind-spots to continually improve its service to its customers.

OSHE received only two complaints over a period of six years, both of which had to do with the IT system. The complaints were investigated and closed in a timely manner.

In view of the limitations of the Faculty Perception Survey, which only provides aggregated information about OSHE’s services, OSHE customised and rolled out an Online Survey in 2013, which was meant to serve as a dedicated platform for soliciting customer satisfaction feedback on the department’s four key services:

- Advisory Services
- Laboratory Inspection
- Fire Safety Inspection
- Audit

The results of the online survey are shown in Figure 6.1.3.

In addition to the regular surveys, OSHE also conducts specific surveys at the end of major conferences and seminars to gauge the satisfaction level of the participants. Figure 6.1.4 shows the satisfaction ratings from the 2013 NUS Safety & Health Conference.

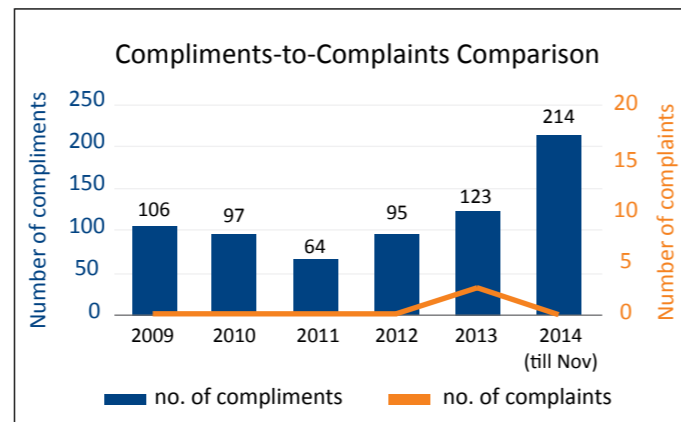


Figure 6.1.2 Compliments-to-complaints comparison

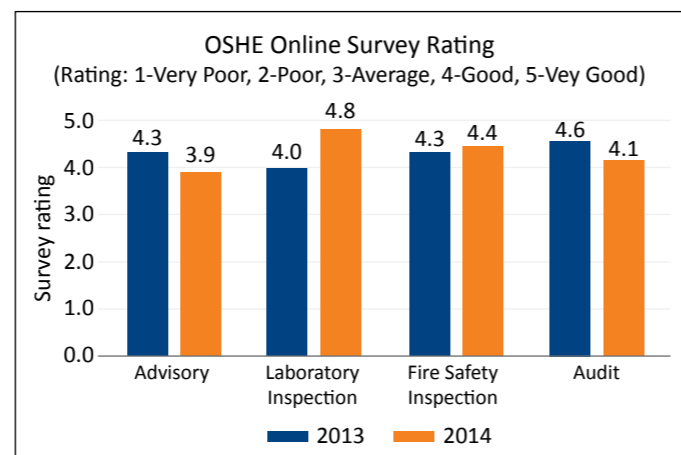


Figure 6.1.3 OSHE online survey ratings

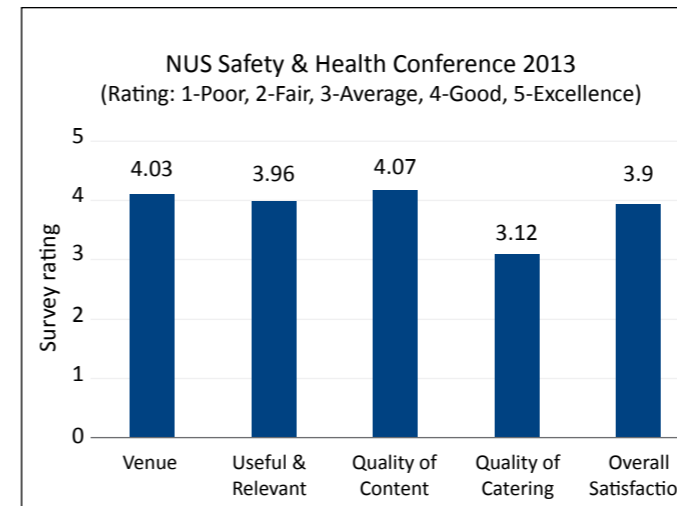


Figure 6.1.4 NUS Safety & Health Conference survey ratings

51 *Current levels and trends for product and service performance indicators*

OSHE monitors performance levels and trends for product and service performance indicators.

Incident Statistics

To meet stakeholders’ expectations of a safe and healthy workplace, OSHE monitors incident statistics and injury rates.

The number of incidents involving staff and students has been on a downward trend since 2011. This can be attributed to a comprehensive range of safety and health programmes that have been in place for a number of years and the unwavering efforts of the entire NUS community to rigorously implement and enforce the safety and health system.

Number of Safety & Health Officers

Safety & Health Officers play a key role in implementing the safety and health management system and raising safety and health standards in any institution. OSHE has studied the correlation between the number of Safety & Health Officers to

research funding of the University, and the number of Safety & Health Officers and administrative staff in OSHE is comparable with that of other leading universities with similar amounts of research funding.

Project Risk Assessment (PRA) Reviews

OSHE has also achieved an impressive turnaround time for risk assessment (RA) reviews, with 95% of RAs reviewed within 30 days (Figure 6.1.5). This far exceeds the target of 70% and is a marked improvement over the turnaround time in 2011, when only 56% of RAs were reviewed within 30 days. The reduction in turnaround time was achieved by migrating from a partially automated system (OPRAS) to a fully automated system (iORC).

52 *Favourable comparison of customer results with competitors or benchmarks*

Customer Satisfaction Rating

OSHE’s customer satisfaction ratings also compared favourably against other NUS administrative units/offices in the Customer Perception Survey.

Figure 6.1.6 shows OSHE’s satisfaction ratings compared against NUS’s top five administrative units in 2012.

6.2 PEOPLE RESULTS

53 *Current levels and trends for customer-focused training indicators*

OSHE measures the quality of its new recruits through the Quality of Hire (QOH) index. Since 2012, QOH has been computed semi-annually and the results are shown in Figure 6.2.1.

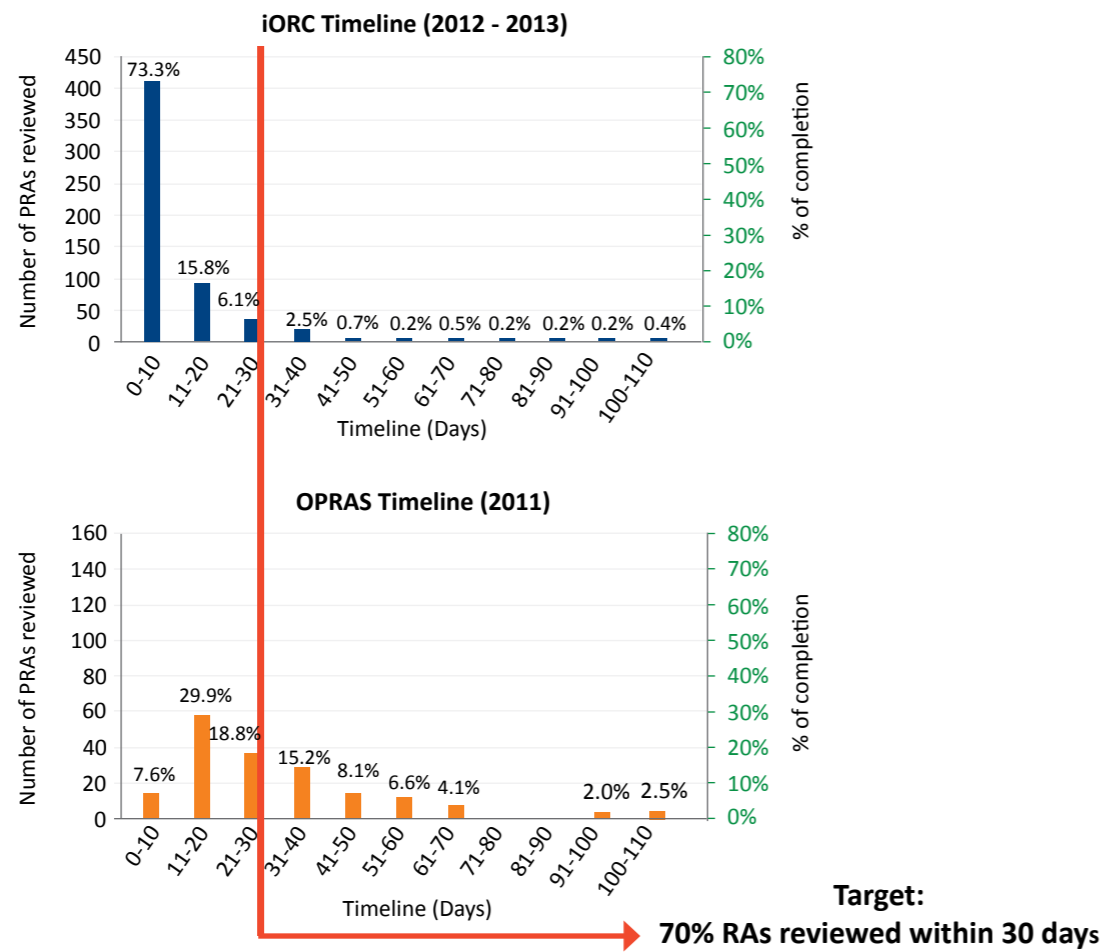


Figure 6.1.5 Turnaround time for RA reviews

Positive Rating on University Administrative Units / Offices

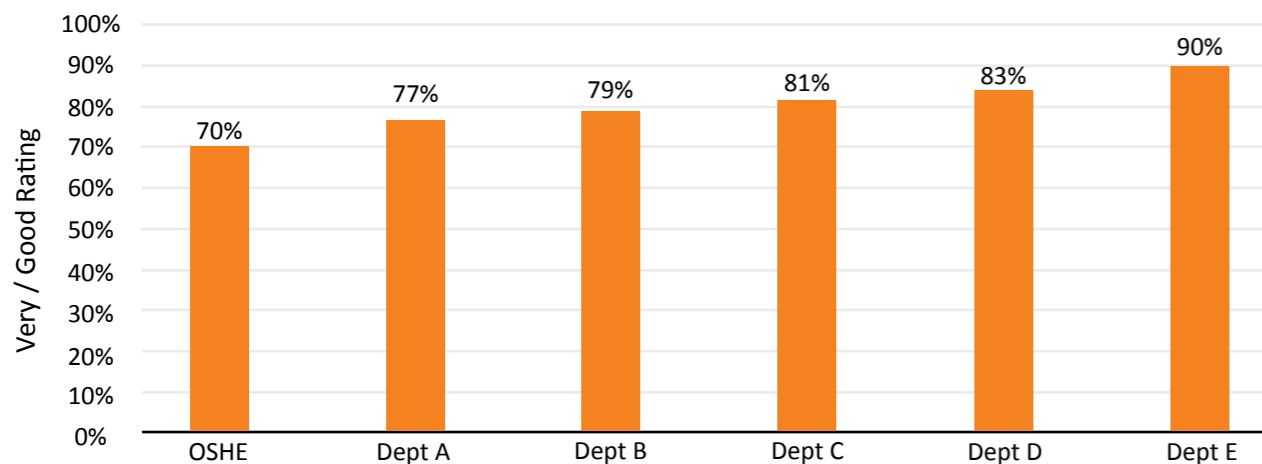


Figure 6.1.6 Customer satisfaction ratings on University Administrative Units/Offices (2012)

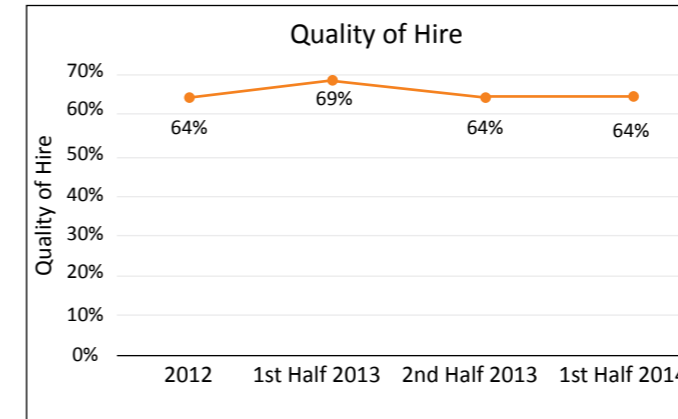


Figure 6.2.1 Quality of Hire

OSHE places a strong focus on people development and learning. It constantly reviews and enhances its learning systems to ensure that staff's skills and knowledge are kept current and allow staff to stay ahead in a rapidly changing external environment.

Training Hours per Staff

For the past six years, the average training hours

	2008	2009	2010	2011	2012	2013
Staff Strength	16	27	29	39	40	39
Average training hours per OSHE staff	64	108	130	148	82	83
Average training hours per NUS staff	44	49	46	45	44	35

Table 6.2.1 Average training hours per staff

per OSHE staff has significantly exceeded the NUS average. This reflects the department's strong belief that providing staff with learning opportunities to enhance their skills will lead to better performance (Table 6.2.1).

OSHE ensures that staff attend core and compulsory courses and PDG training. In addition, staff are given opportunities to participate in local and overseas conferences, training courses and overseas study visits to give them greater exposure.

Professional Development

OSHE encourages high potential and high performing officers to pursue local and overseas safety-related certification for continual learning and upgrading. The number of staff with various professional certifications is shown in Table 6.2.2.

Professional Certification	Number of Staff
1 Registered Fire Safety Manager	12
2 OHSAS 18001 Lead Auditor	11
3 Registered Safety Officer	10
4 Biosafety Coordinator	7
5 Advanced Certificate in Training and Assessment	4
6 Noise Monitoring and Control Officer	2
7 Business Continuity Certified Expert	2
8 Crisis Management Certified Expert	2
9 ISO 14001 Lead Auditor	1
10 Lean Six Sigma (Yellow Belt)	1
11 Certified Health Physicist	1
12 Radiation Safety Officer	1
13 Laser Safety Officer	1
14 Certified Safety & Health Manager	1
15 Environmental Control Officer	1

Table 6.2.2 Number of staff with professional certification

OSHE Staff Contribution in NUS, National and International Development and Safety

Professional training and development of OSHE staff is not limited to training courses. OSHE staff

are presented with opportunities to learn and contribute at various NUS, national and international committees (Table 6.2.3). The participation rate of OSHE staff has increased from 2011 to 2014 (Figure 6.2.2).

Year	NUS, National and International Committees	Name of Staff
2014	<ul style="list-style-type: none"> Singapore representative to ISO PC 283 and Task Group Leader for the development of the ISO standard on Occupational Health and Safety Management System (ISO 45001) Deputy Chairman of SPRING Singapore’s Technical Committee on Occupational Safety and Health Management System 	<ul style="list-style-type: none"> Dr Peck Thian Guan
	<ul style="list-style-type: none"> National Working Group for the Standard on Fire Safety for Laboratories Using Chemicals 	<ul style="list-style-type: none"> Mr Hairulnizam Bin Ishak
	<ul style="list-style-type: none"> Members of the Review Committee for Code of Practice SS532 : Storage of flammable liquid 	<ul style="list-style-type: none"> Mr Hairulnizam Bin Ishak Mr Joel Swee Dao Wen
	<ul style="list-style-type: none"> Member of MD6 BSL-3 Biosafety Committee Observer in Duke-NUS GMS ABSL-3 Biosafety Committee 	<ul style="list-style-type: none"> Dr Tessa Joseph
	<ul style="list-style-type: none"> Working Group on Safety & Health in Higher Education and Research sector 	<ul style="list-style-type: none"> Dr Peck Thian Guan (Chairman) Mr Saravanan Gunaratnam (Member) Dr Lim Cheh Peng (Secretariat) Miss Dhanapriya Muthirulappan (Asst Secretariat)
	<ul style="list-style-type: none"> SPRING Singapore’s General Engineering and Safety Standards Committee SISO EXCO Committee Member 	<ul style="list-style-type: none"> Mr Saravanan Gunaratnam
	<ul style="list-style-type: none"> SPRING Singapore’s Technical Committee on Business Continuity 	<ul style="list-style-type: none"> Mr Yam Guan Shyh
	<ul style="list-style-type: none"> Singapore-MIT Alliance for Research and Technology (SMART) Institutional Biosafety Committee (IBC) 	<ul style="list-style-type: none"> Dr Lim Cheh Peng (Observer)
	<ul style="list-style-type: none"> Committee Member in Working Group on revising the Code of Practice for safe use of lasers in the building and construction industry (CP 86) 	<ul style="list-style-type: none"> Mr Pramoth Chandrikamohan
	<ul style="list-style-type: none"> WDA’s Biosafety Technical Committee 	<ul style="list-style-type: none"> Dr Tessa Joseph Dr Lim Cheh Peng
	<ul style="list-style-type: none"> Biorisk Association of Singapore 	<ul style="list-style-type: none"> Dr Tessa Joseph (EXCO) Miss Dhanapriya Muthirulappan (Secretary) Dr Lim Cheh Peng (Internal Auditor)
	<ul style="list-style-type: none"> Risk Management Steering Committee (RMSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Hairulnizam Bin Ishak

Year	NUS, National and International Committees	Name of Staff
	<ul style="list-style-type: none"> Institutional Biosafety Committee (IBC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Danny Lum (Secretariat)
	<ul style="list-style-type: none"> Institutional Construction Safety Committee (ICSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Mirza Baig (Secretariat) Mr Muhammad Yousuf Munir (Asst. Secretariat)
	<ul style="list-style-type: none"> Institutional Laboratory Safety Committee (ILSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Pramoth Chandrikamohan (Secretariat) Mr Joel Swee Dao Wen (Asst. Secretariat)
2013	<ul style="list-style-type: none"> Working Group on Safety & Health in Higher Education and Research sector 	<ul style="list-style-type: none"> Dr Peck Thian Guan (Chairman) Mr Saravanan Gunaratnam (Member) Dr Lim Cheh Peng (Secretariat) Miss Dhanapriya Muthirulappan (Asst. Secretariat)
	<ul style="list-style-type: none"> Singapore representative to ISO PC 283 and Task Group Leader for the development of the ISO standard on Occupational Health and Safety Management System (ISO 45001) Deputy Chairman of SPRING Singapore’s Technical Committee on Occupational Safety and Health Management System 	<ul style="list-style-type: none"> Dr Peck Thian Guan
	<ul style="list-style-type: none"> SPRING Singapore’s General Engineering and Safety Standards Committee Co-chairman Safety & Health in Education and Research Committee SISO EXCO Committee Member 	<ul style="list-style-type: none"> Mr Saravanan Gunaratnam
	<ul style="list-style-type: none"> SPRING Singapore’s Technical Committee on Business Continuity 	<ul style="list-style-type: none"> Mr Yam Guan Shyh
	<ul style="list-style-type: none"> Singapore-MIT Alliance for Research and Technology (SMART) Institutional Biosafety Committee (IBC) 	<ul style="list-style-type: none"> Dr Lim Cheh Peng (Observer)
	<ul style="list-style-type: none"> Participation in the Working Group on revising the Code of Practice for safe use of lasers in the building and construction industry (CP 86) Member of the Organizing Committee for the AOCMP-SEAFOMP 2013 conference 	<ul style="list-style-type: none"> Mr Pramoth Chandrikamohan

Year	NUS, National and International Committees	Name of Staff
	<ul style="list-style-type: none"> WDA's Biosafety Technical Committee Member of NUS-IACUC Semi-Annual Review Committee for reviewing Institutional Animal Research (SAR) Programme Member of NUS-IACUC Crisis Management Team (CMT) Member of NUS-Animal Research Committee (ARC) 	<ul style="list-style-type: none"> Dr Tessy Joseph
	<ul style="list-style-type: none"> Biorisk Association of Singapore 	<ul style="list-style-type: none"> Dr Tessy Joseph (EXCO) Miss Dhanapriya Muthirulappan (Secretary) Dr Lim Cheh Peng (Internal Auditor)
	<ul style="list-style-type: none"> Risk Management Steering Committee (RMSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Hairulnizam Bin Ishak
	<ul style="list-style-type: none"> Institutional Biosafety Committee (IBC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Dr Lim Cheh Peng (Secretariat)
	<ul style="list-style-type: none"> Institutional Construction Safety Committee (ICSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Mirza Baig (Secretariat)
	<ul style="list-style-type: none"> Institutional Laboratory Safety Committee (ILSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Pramoth Chandrikamohan (Secretariat)
	<ul style="list-style-type: none"> Singapore representation to ISO Project Committee 283 and Task Group Convenor – development of the International Standard on Occupational Health and Safety Management System (ISO 45001) Deputy Chairman of SPRING Singapore's Technical Committee on Occupational Safety and Health Management System 	<ul style="list-style-type: none"> Dr Peck Thian Guan
2012	<ul style="list-style-type: none"> NUS PPM (IT) Review committee SPRING Singapore's Committee Engineering Technical Committee SISO EXCO Committee Member Member of CSHEMA Association 	<ul style="list-style-type: none"> Mr Saravanan Gunaratnam
	<ul style="list-style-type: none"> SPRING Singapore's Technical Committee on Business Continuity 	<ul style="list-style-type: none"> Mr Yam Guan Shyh
	<ul style="list-style-type: none"> Member of American Biosafety Association (ABSA) 	<ul style="list-style-type: none"> Mr Saravanan Gunaratnam Dr Tessy Joseph
	<ul style="list-style-type: none"> Singapore-MIT Alliance for Research and Technology (SMART) Institutional Biosafety Committee (IBC) 	<ul style="list-style-type: none"> Dr Lim Cheh Peng (Observer)
	<ul style="list-style-type: none"> Member of Health Physics Society Member of American Academy of Health Physics 	<ul style="list-style-type: none"> Mr Pramoth Chandrikamohan

Year	NUS, National and International Committees	Name of Staff	
	<ul style="list-style-type: none"> Member of Asia Pacific Biosafety Association EXCO member of Biorisk Association of Singapore 	<ul style="list-style-type: none"> Dr Tessy Joseph 	
	<ul style="list-style-type: none"> Risk Management Steering Committee (RMSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Hairulnizam Bin Ishak 	
	<ul style="list-style-type: none"> Institutional Construction Safety Committee (ICSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Lau Kwok Siong (Secretariat) Mr Mirza Baig (Secretariat) 	
	<ul style="list-style-type: none"> Institutional Laboratory Safety Committee (ILSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Ms Gisela Ho (Secretariat) Mr Pramoth Chandrikamohan (Secretariat) 	
	2011	<ul style="list-style-type: none"> Deputy Chairman of SPRING Singapore's Technical Committee on Occupational Safety and Health Management System 	<ul style="list-style-type: none"> Dr Peck Thian Guan
	<ul style="list-style-type: none"> SPRING Singapore's General Engineering and Safety Standards Committee SISO EXCO Committee Member Member of CSHEMA Association Member of American Biosafety Association Co-chairman Safety & Health in Education and Research Committee 	<ul style="list-style-type: none"> Mr Saravanan Gunaratnam 	
	<ul style="list-style-type: none"> SPRING Singapore's Technical Committee on Business Continuity 	<ul style="list-style-type: none"> Mr Yam Guan Shyh 	
	<ul style="list-style-type: none"> Asia-Pacific Biosafety Association Biorisk Association of Singapore 	<ul style="list-style-type: none"> Dr Tessy Joseph (EXCO) 	
	<ul style="list-style-type: none"> Risk Management Steering Committee (RMSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Mr Hairulnizam Bin Ishak 	
	<ul style="list-style-type: none"> Institutional Biosafety Committee (IBC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Ms Dulani Upeksha Gamlaksha (Secretariat) 	
	<ul style="list-style-type: none"> Institutional Laboratory Safety Committee (ILSC) 	<ul style="list-style-type: none"> Dr Peck Thian Guan Mr Saravanan Gunaratnam Ms Gisela Ho (Secretariat) 	

Table 6.2.3 Participation and contribution of OSHE staff in NUS, national and international development and safety (2011 – 2014)

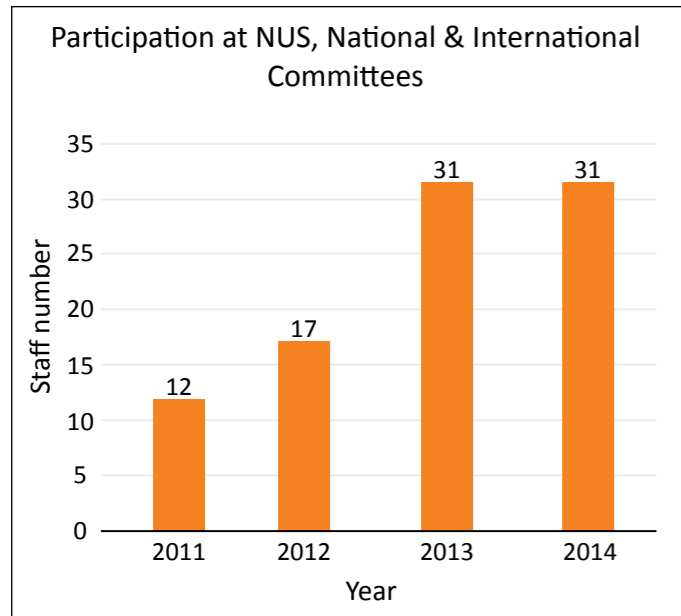


Figure 6.2.2 Participation rate of OSHE staff in NUS, national and international committees

54 *Current levels and trends for employee satisfaction indicators*

Organisational Climate Survey (OrgCS)

OSHE's OrgCS results in 2014 were strong, with a 6% improvement in the Employee Satisfaction Index compared to 2012 and a continuation of the upward trends in almost all the category items surveyed for the past 6 years (Figure 6.2.3). The findings showed that OSHE was a healthy, dynamic, and forward-looking department.

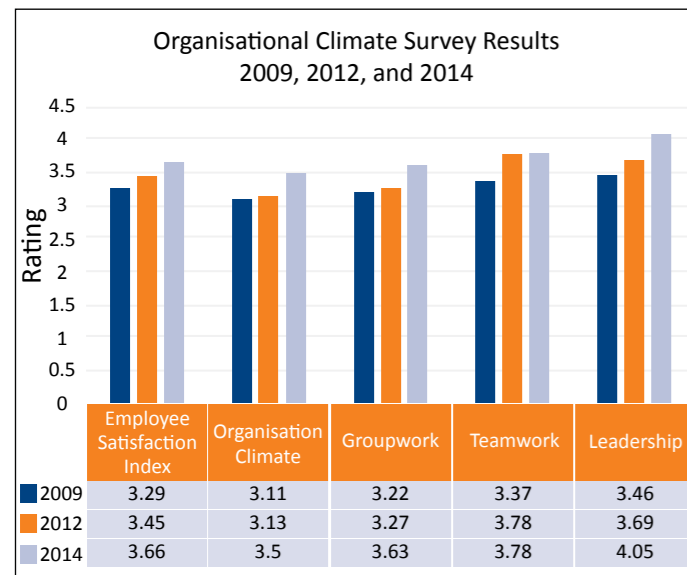


Figure 6.2.3 OrgCS results

Staff Attrition

The staff turnover rate has declined from 23% in 2011 to 19% in 2013 (Figure 6.2.4).

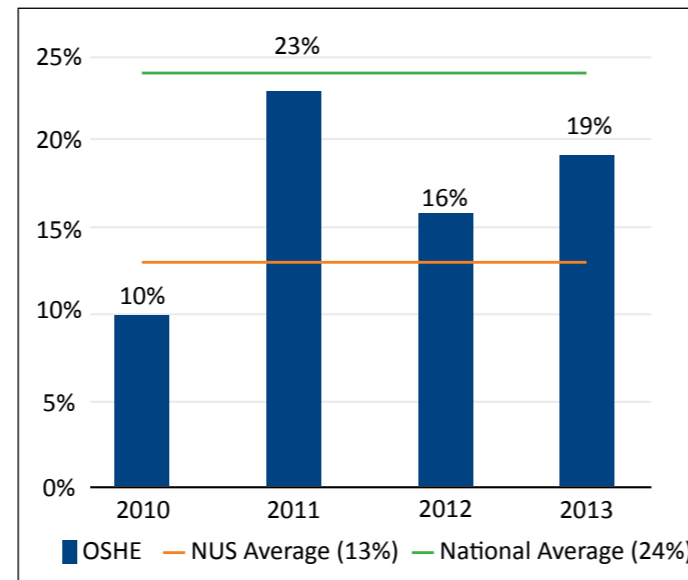


Figure 6.2.4 Staff attrition rate

Length of Service

Average length of service has been on an upward trend (Figure 6.2.5). The average length of service increased from 1.7 years from 2011 to 3.2 years in 2014.

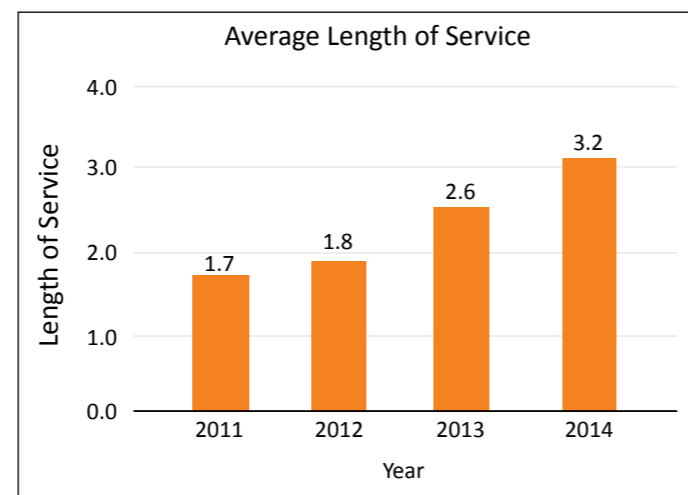


Figure 6.2.5 Average length of service

Staff Sick Leave

OSHE staff's low sick leave rate is below the target of 4 days per staff per year and suggests a healthy OSHE workforce (Figure 6.2.6).

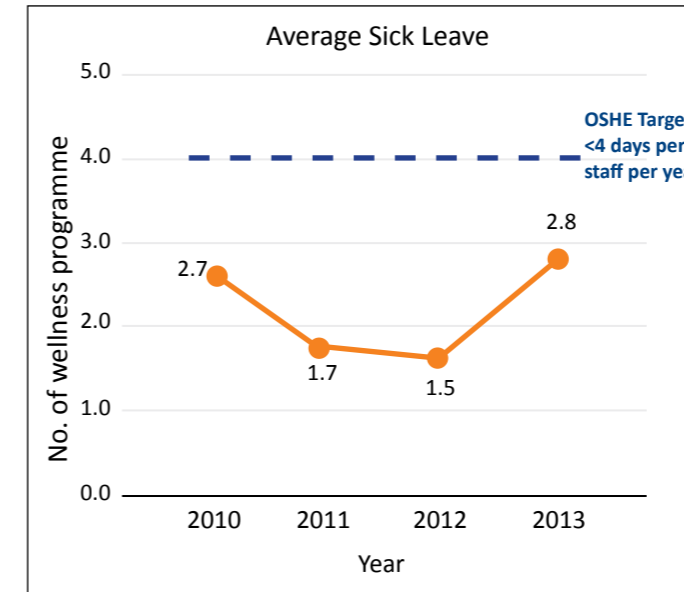


Figure 6.2.6 Average sick leave (days per staff per year)

Wellness Programme

Figure 6.2.7 shows that the number of wellness programme is on an upward trend.

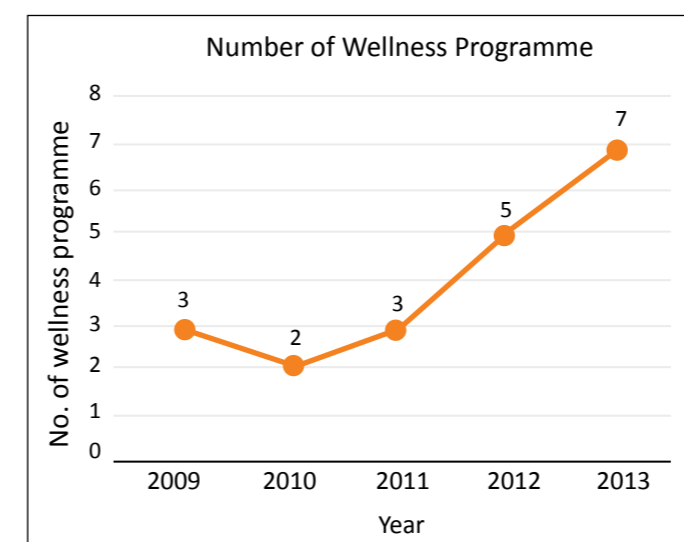


Figure 6.2.7 Number of wellness programme

Service Awards

The number of Service Awards received by staff and the department has increased from two awards in 2011 to eight in 2012 and 2013, and seven in 2014 (Table 6.2.4 and Figure 6.2.8).

Notably, Dr Peck Thian Guan received the Public Administration Medal (Bronze) in 2012 and Mr Hairulnizam Bin Ishak the Commendation Medal in 2014. A Service Award from Massachusetts Institute of Technology (MIT) and Singapore-MIT Alliance for Research and Technology (SMART) was presented to Dr Lim Cheh Peng in 2013 for her outstanding service to the SMART Institutional Biosafety Committee (IBC) and for being an invaluable resource to SMART.

OSHE staff also received International Convention for Quality Control Circles (ICQCC) Awards, Learning Institution's Quality Conference (LIQC) Awards, Quality Control (QC) Projects Awards and Long Service Awards.

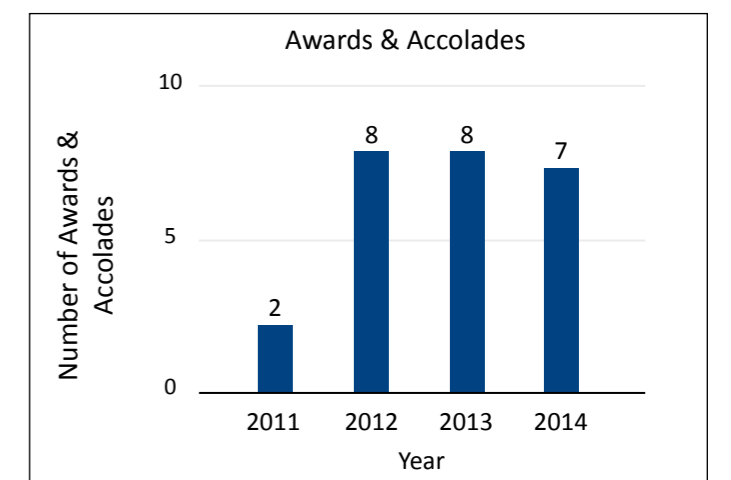


Figure 6.2.8 Number of awards received

Year	International & National Award	Name of Awardee
2014	• National Day Award: Commendation Medal	• Mr Hairulnizam Bin Ishak
	• NUS Service Class 2014 - Outstanding for Service Excellence Award	• OSHE
	• Outstanding VOICE Participation Award (2nd Prize)	• OSHE
	• The Learning Institution's Quality Conference (LIQC) Award (Gold) on Safer Chemical Transportation	• Dr Lim Cheh Peng • Mr Saravanan Gunaratnam • Ms Alicia Huang • Ms Tang Fenglin • Ms Louise Ng • Mr Hairulnizam Bin Ishak
	• Quality Service Award (Service Advocate)	• Dr Lim Cheh Peng • Mr Gabriel Chen • Ms Sania Binte Nader
2013	• Outstanding VOICE Participation Award (3rd Prize)	• OSHE
	• The Learning Institution's Quality Conference (LIQC) Award (Silver) on e-Certificate Project	• Dr Tessy Joseph • Ms Oh Siew Kee
	• The Learning Institution's Quality Conference (LIQC) Ancillary Award for Best Impact on Productivity	
	• Lean-Six Sigma Award - Green Belt • Award for QC projects on NUS Excellence Day	• Dr Tessy Joseph
	• Long Service Award	• Mr Yam Guan Shyh • Mr Hairulnizam Bin Ishak
• Service Award from Massachusetts Institute of Technology (MIT) and Singapore-MIT Alliance for Research and Technology (SMART)	• Dr Lim Cheh Peng	
2012	• Complete Safety Award of Commendation by Campus Safety Health & Environmental Management Association (CSHEMA)	• OSHE
	• National Day Award : Public Administration Medal (Bronze)	• Dr Peck Thian Guan
	• National Innovation Quality Circle (NIQC) 2012 (Gold Award) – Retractable Belt	• Mr Hairulnizam Bin Ishak • Ms Gisela Ho • Mr Lau Kwok Siong
	• National Innovation Quality Circle (NIQC) 2012 (Silver Award) – RCI project	• Ms Gisela Ho • Ms Christine Looi • Ms Cindy Zhang • Ms Kimberly Ng • Dr Leong Wei Lee
	• Award for QC projects on NUS Excellence Day	• Dr Tessy Joseph
	• Long Service Award	• Dr Peck Thian Guan • Dr Tessy Joseph • Ms Sania Binte Nader

Year	International & National Award	Name of Awardee
2011	• Complete Safety Award of Commendation by Campus Safety Health & Environmental Management Association (CSHEMA)	• OSHE
	• Distinguished (Silver) Award at International Convention for Quality Control Circles (ICQCC), Japan	• Dr Tessy Joseph • Dr Qian Zhoulei
2010	• Quality Service Award (Service Advocate)	• Mr Ravindran Sockalingam • Mr Hairulnizam Bin Ishak • Dr Qian Zhoulei • Mr Scott Patlovich
2009	• Silver Award at the Workplace Safety & Health (WSH) Awards 2009 by Singapore Workplace Safety Health (WSH) Council	• OSHE
	• International Convention for Quality Control Circles (ICQCC) Award, Philippines	• OSHE
2008	• Award of Merit for Complete Safety Program by Campus Safety Health & Environmental Management Association (CSHEMA)	• OSHE
	• NUS Service Class 2008 - Recognition for Service Excellence Award	• OSHE

Table 6.2.4 Service awards

OSHE received various accolades from partners, suppliers and international organisations. For example, a commendation was received from the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC) in 2013 during the AAALAC's audit and re-accreditation of the NUS Animal Programmes. The assessment team gave a positive review and pointed out that there was a good system of communication between OSHE, Comparative Medicine (CM) and International Animal Care & Use Committee (IACUC) on safety issues.

6.3 OPERATIONAL RESULTS

55 *Current levels and trends for performance indicators of product/service delivery processes that impact customer satisfaction*

Structured Safety Training System (SSTS)

Safety and health training is a critical part of the NUS Safety Management System. OSHE has established

a Structured Safety Training System (SSTS) that defines the requirements for safety and health training for staff and students exposed to various hazards as part of their work.

OSHE develops and conducts a variety of training courses on safety disciplines such as biological safety, chemical safety, radiation safety and risk management to improve the safety awareness of staff and students.



Quality Service Award 2014 - Service Advocate Dr Lim Cheh Peng, Mr Gabriel Chen, Ms Sania Binte Nader

A total of 7,565 staff and students were trained in 2013 via online and classroom training (Table 6.3.1). Chemical Safety training (IVLE) and Biological Safety training (IVLE) were the two most popular courses, accounting for about 40% and 25% of all trainees respectively. With the use of IVLE, OSHE's courses are now accessible to a larger audience. Researchers are able to access the materials and take the online quiz at their convenience.

The number of trainees for each course is shown in Figures 6.3.1a to 6.3.1j.

Summary of SSTS	No. of Trainees		
	2011	2012	2013
IVLE Courses			
• Biosafety (Refresher)		49	460
• Biosafety		1308	1888
• Chemical Safety		2063	3163
• Radiation Safety (Ionising)		301	456
• Laser Safety		477	686
Sub-total (IVLE Courses)		4198	6653
Classroom Courses			
• Sub total (classroom)	4735	715	912
Grand Total	4735	4913	7565

Table 6.3.1 SSTS training breakdown

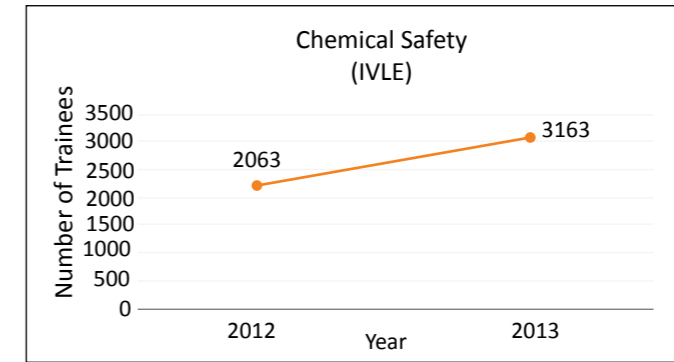


Figure 6.3.1b Chemical Safety Training

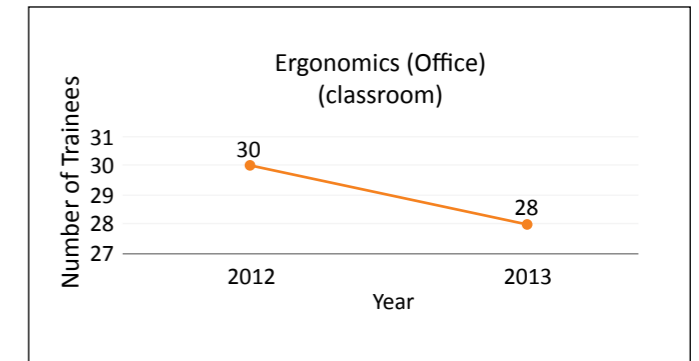
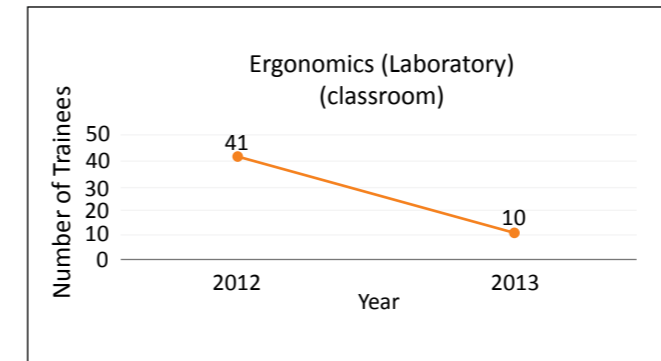
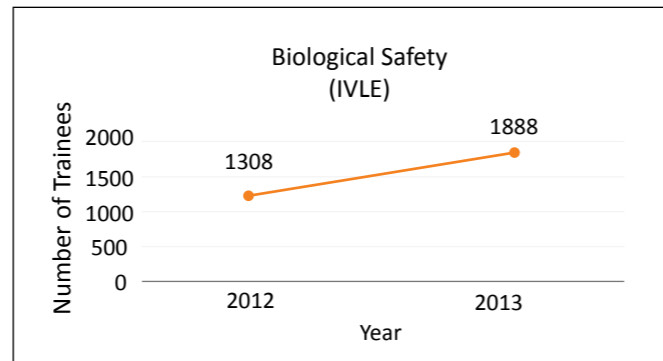
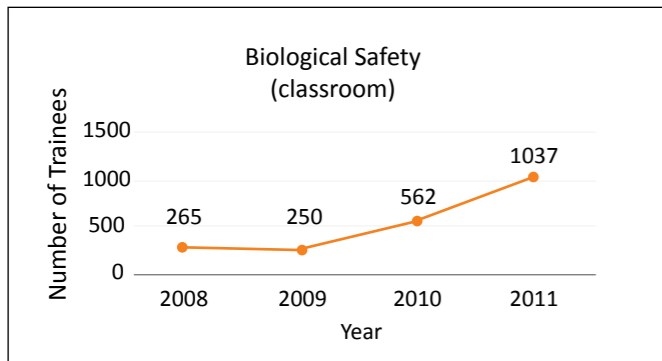


Figure 6.3.1c Ergonomics Training

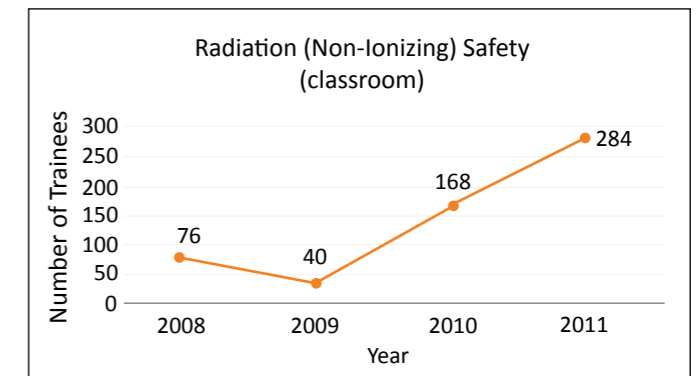
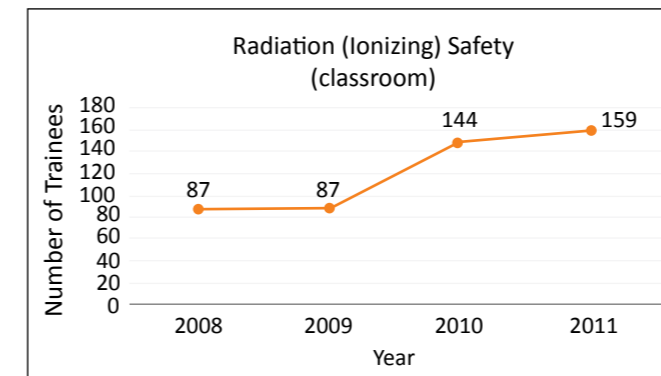
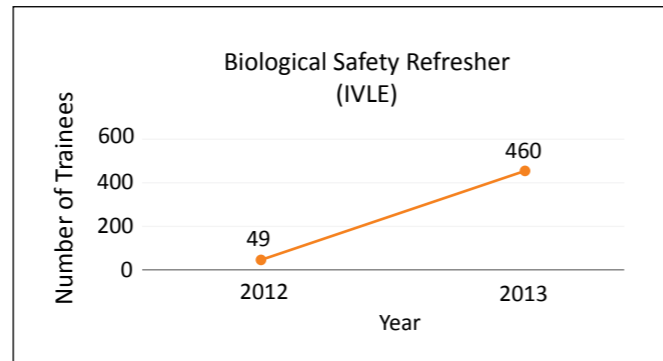
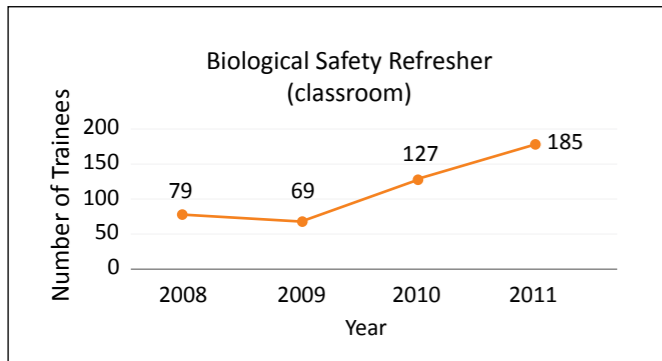


Figure 6.3.1a Biological Safety Training

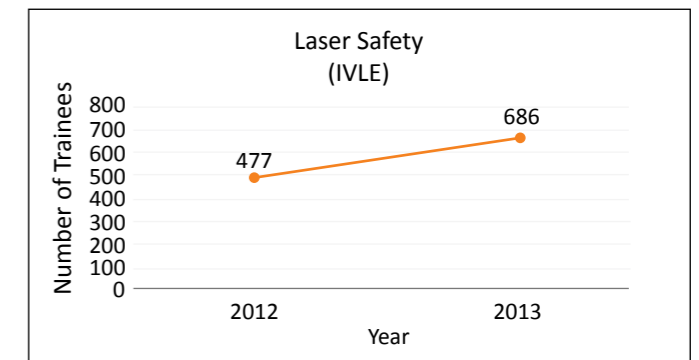
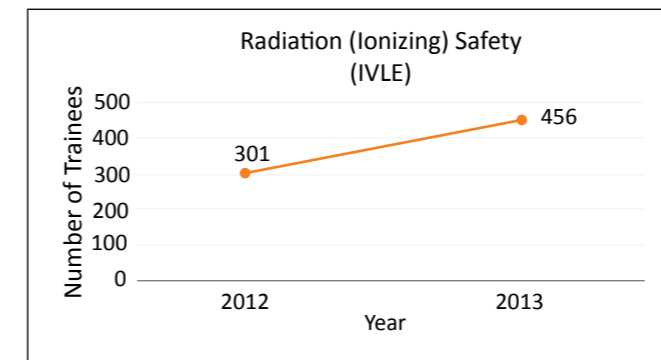
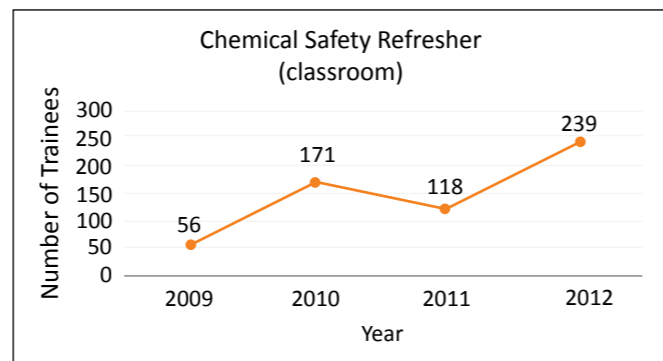
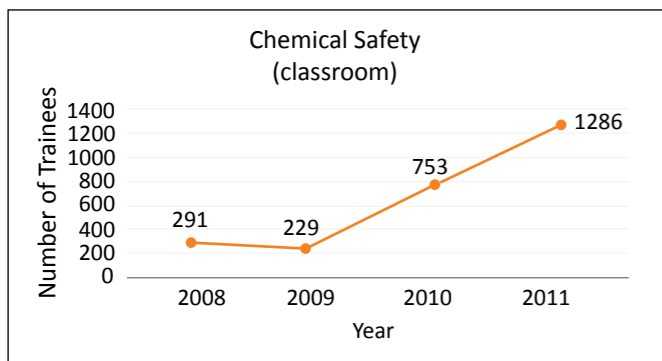


Figure 6.3.1d Radiation Safety Training

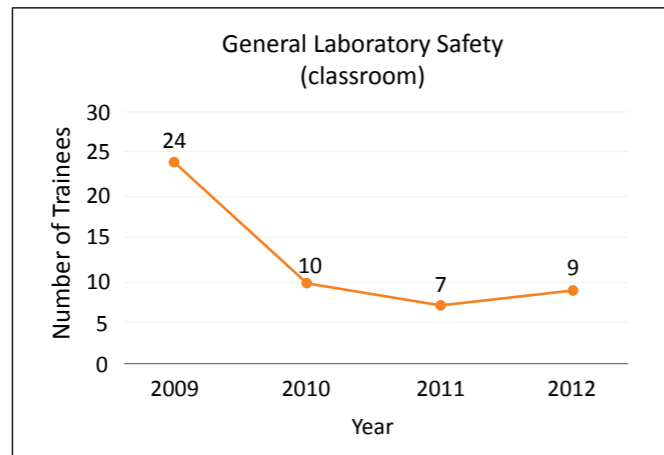


Figure 6.3.1e General Laboratory Safety Training

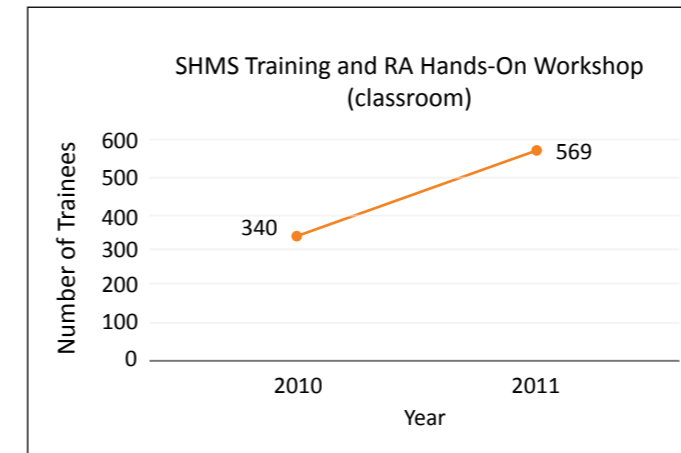


Figure 6.3.1h SHMS Training

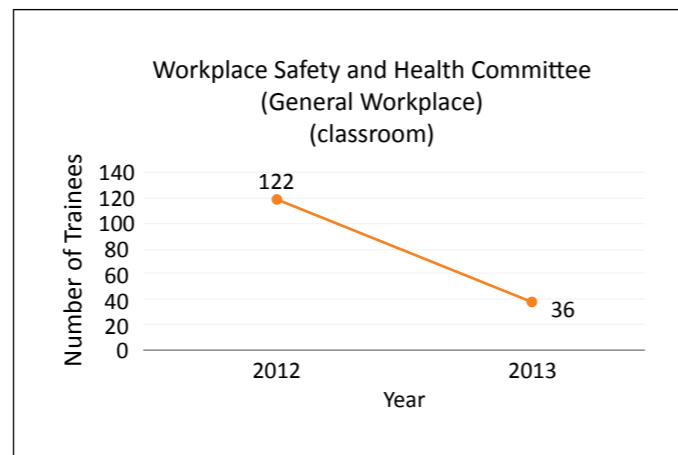
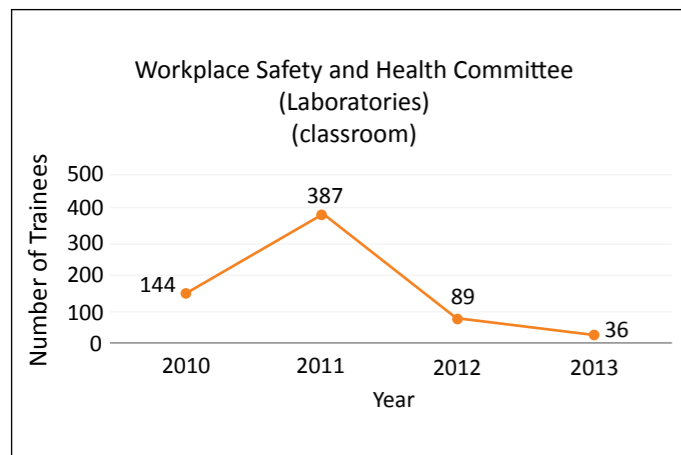
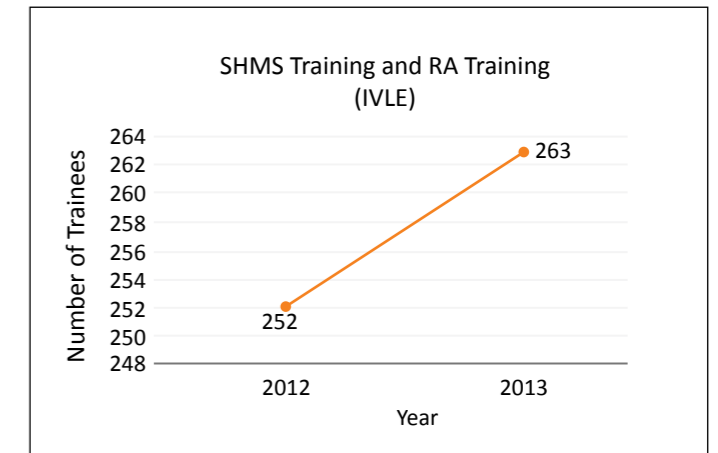


Figure 6.3.1f WSH Committee Training

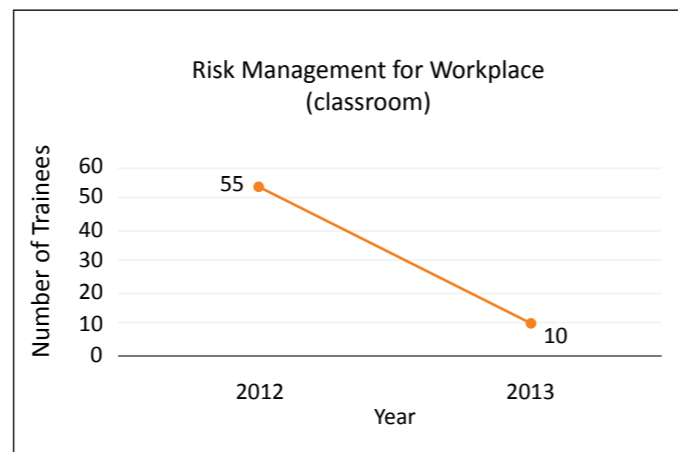
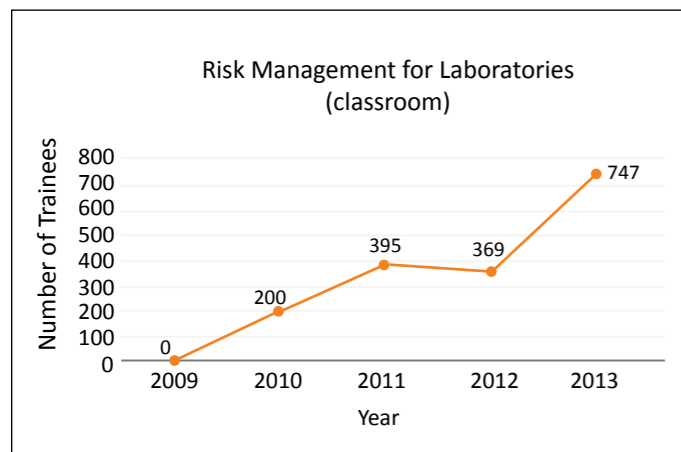
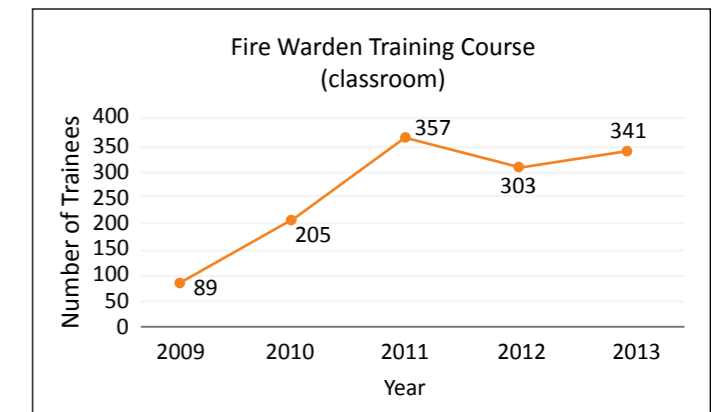
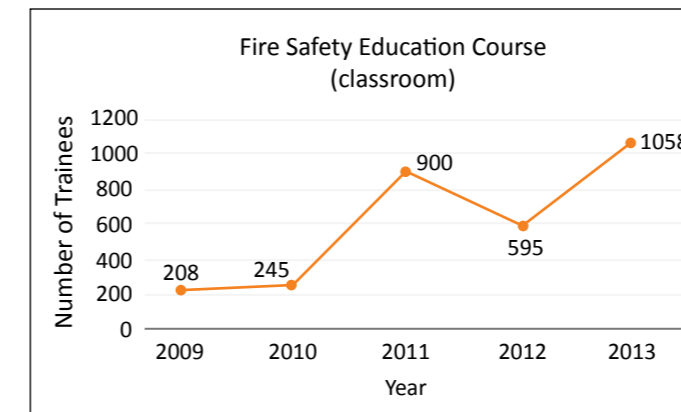


Figure 6.3.1g Risk Management Training

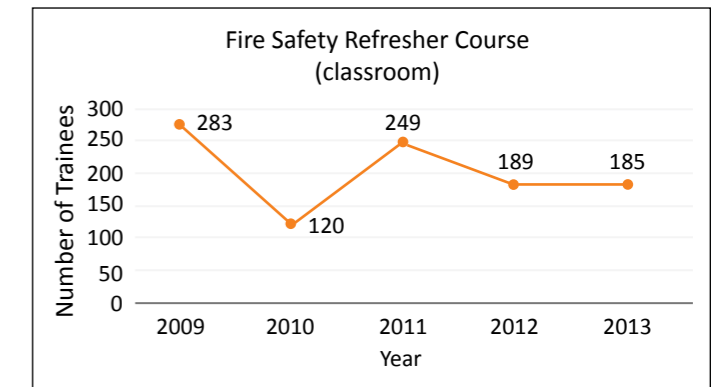
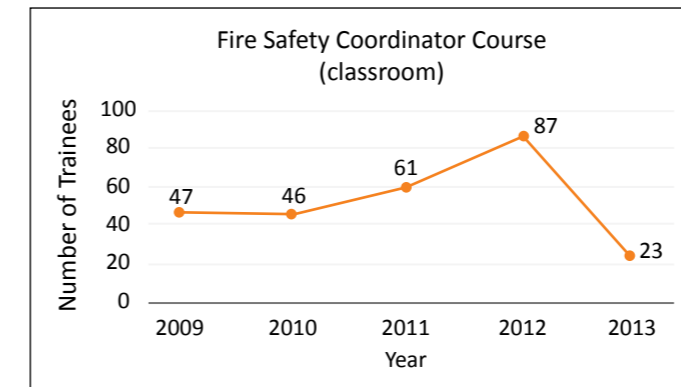


Figure 6.3.1i Fire Safety Training

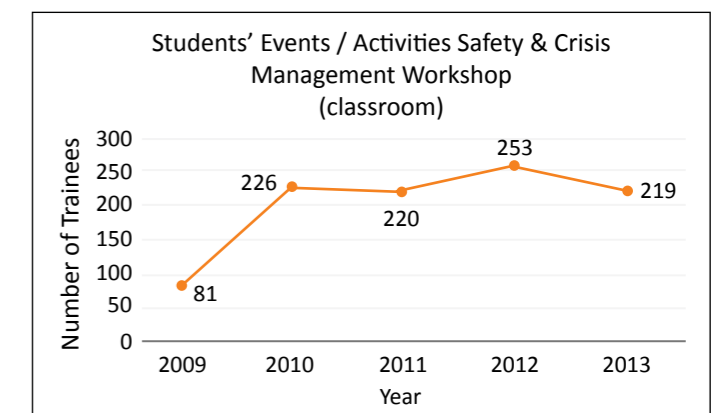
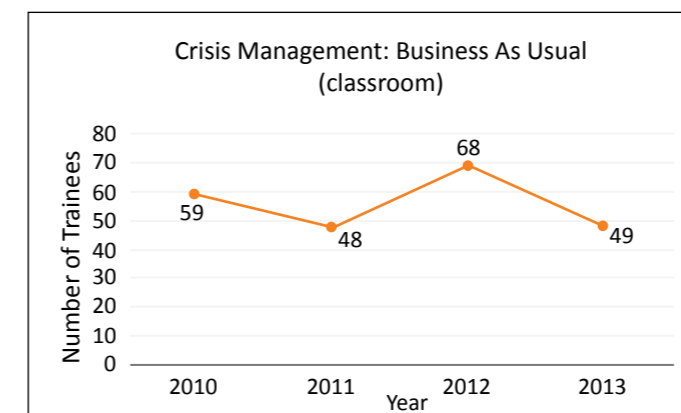


Figure 6.3.1j Emergency Management Training

Biological Safety

Under the Biological Safety Programme, the Microbiological and Biomedical Group of OSHE reviews all research work involving the use of biological agents and/or animals. This involves the review of project risk assessments (PRA), Genetic Modification Advisory Committee (GMAC) proposals involving genetic modification, Material Transfer Agreement submissions involving material transfer and IACUC submissions involving animal work. For projects involving animals, Hazard Summary Sheets are generated by OSHE to summarise the pertinent safety information for each protocol. OSHE ensures regulatory compliance and safe conduct of research.

The number of reviews conducted by the Microbiological and Biomedical Group for various programmes is listed in Table 6.3.2.

Radiation Safety

The major goal of the Radiation Safety Programme is to reduce the risks associated with working with ionizing and non-ionizing radiation in NUS. Through the programme, OSHE ensures that the use of irradiating equipment and materials is conducted in a safe manner. The number of trainees, consultations, radiation licences and bags of radiation waste disposed are listed in Table 6.3.3.

Description	2011	2012	2013
Issue of Hazard Summary Sheets	50	77	116
Project Risk Assessment (PRA) reviewed	317	294	413
GMAC proposal reviewed	51	85	87
Material Transfer Agreement (MTA) reviewed	100	122	99
IACUC submissions reviewed	61	414	414

Table 6.3.2 Summary of reviews conducted

Description	2013
No. of persons attended the Radiation Safety Training course	1098
No. of Safety Consultations on Radiation Safety	29
No. of L3 Licence to keep or possess an irradiating apparatus for use (other than sale)	41
No. of L4 Licence to keep or possess radioactive materials for use other than sale	6
No. of L5 Licence to use an irradiating apparatus (other than sale)	37
No. of L6 Licence to use, handle and transport radioactive materials (other than sale)	64
No. of N2 Licence to keep or possess for use non-ionising irradiating apparatus	391
No. of N3 Licence to use the non-ionising irradiating apparatus	225
No. of R1 Registration as radiation worker	215
No. of bags of radiation waste disposed	188

Table 6.3.3 Indicators of the Radiation Safety Programme

Occupational Health (OH) Programme

The NUS Occupational Health programme aims to protect the health of staff and students at work. Based on risk exposure, the programme provides medical surveillance from the time staff join the University, as they undertake different work activities in diverse workplaces within the University, till the time they leave the University. The patient caseload resulting from the OH Programme is given in Table 6.3.4

Laboratory Safety & Health Management System Certification Scheme

In April 2013, OSHE launched an in-house developed application for the iPad, iAudit, that would facilitate audit report writing and compilation. Through the use of this application, OSHE has improved its productivity and auditors are now able to provide audit report in a more timely manner. The improvement in turnaround time for report generation is shown in Figure 6.3.2.

OH Caseload	2011	2012	2013
Animal Work Questionnaire Reviews	609	610	566
BSL 2 Work Questionnaire Reviews	-	-	16
BSL 3 / ABSL 3	46	36	16
Statutory Medical Examination	420	193	186
Ionising Radiation	142	209	156
Laser	115	120	190
Respirator fitness	530	320	230
Research divers	56	61	25
Others (Misc.)	67	125	70
Total	1985	1674	1455

Table 6.3.4 Summary of OH Caseload

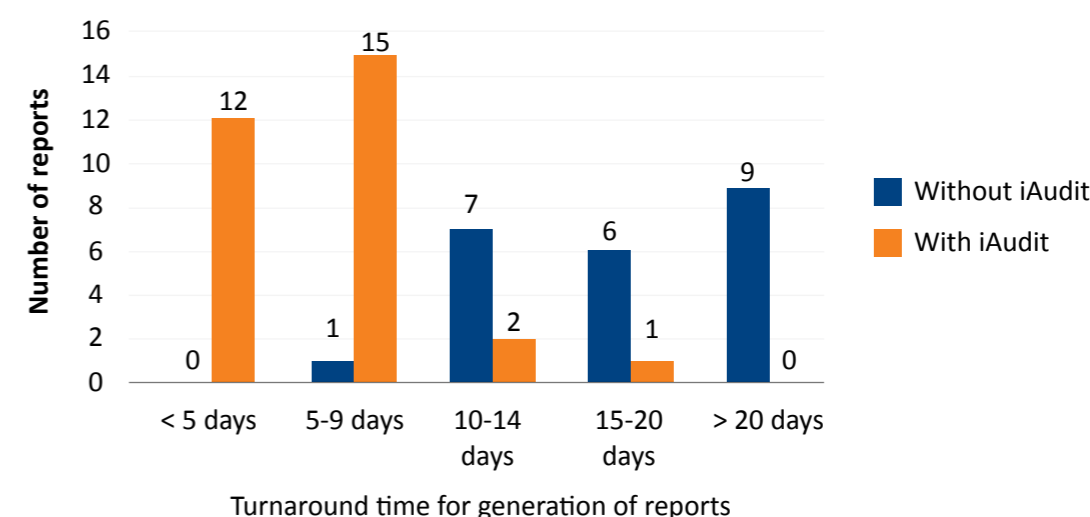


Figure 6.3.2 Number of reports vs turnaround time for generation of reports with and without the use of iAudit (April – Dec 2013)

Review of Research Protocols

One of OSHE’s key services is the review of research protocols on behalf of the Institutional Biosafety Committee (IBC) and the Institutional Laboratory Safety Committee (ILSC) for biological and chemical related protocols respectively. The number of project risk assessments (PRA) reviewed from 2011 to 2013 is shown in Figure 6.3.3.

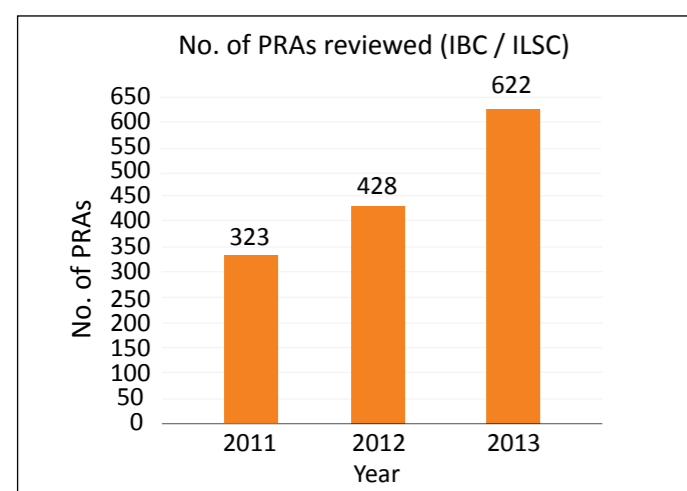


Figure 6.3.3 Number of Project Risk Assessments reviewed

Emergency Preparedness and Management

The University is prepared to manage incidents, emergencies, and crisis situations. This is achieved by introducing the relevant policies and frameworks, training, exercises and drills, audits and inspections and ensuring that the operating units of the University are equipped with appropriate hardware to handle any critical situation. EM Division’s efforts in emergency management and preparedness are shown in Table 6.3.5.

Life Safety

OSHE provides professional advisory and consultation services on life safety, emergency and crisis management for students and staff. OSHE’s aim is that events, activities and field trips organised would be conducted successfully without any incident and injury, and that, in the event of an accident, students and staff would be well prepared to manage it.

	2011	2012	2013
Emergency Management - Advisory & Consultation			
• Death, serious illness or mental health-related cases	31	17	22
• Travel advisory	-	6	50
• Pandemic preparedness	6	5	20
• Infrastructure-related cases	2	2	12
• Others (Misc.)	-	-	76
Total	39	30	180
Emergency Preparedness - No. of training courses, exercises and briefings			
• Crisis Management Course	4	4	4
• Suicide First Responder Awareness Course	3	4	2
• Practical Exercises and Table Top Exercises	5	4	8
• Briefings to Unit Incident Commanders	3	3	9
• Promotional Programmes	1	1	1
• Additional Training	4	5	4
• Pandemic Preparedness Activities	6	6	20
Total	26	27	48

Table 6.3.5 Number of advisory & consultation sessions and number of training courses, exercises and briefing conducted by EM Division

In 2013, about 220 student leaders were trained in safety and crisis management, while 477 staff and students were trained in CPR and AED. Figure 6.3.4 shows the level of participation in the two courses from 2011 to 2013.

Fire Safety

OSHE offers fire safety advisory and consultation services to its stakeholders, along with a range of fire safety training courses. The activities carried out under the fire safety programme are listed in Table 6.3.6.

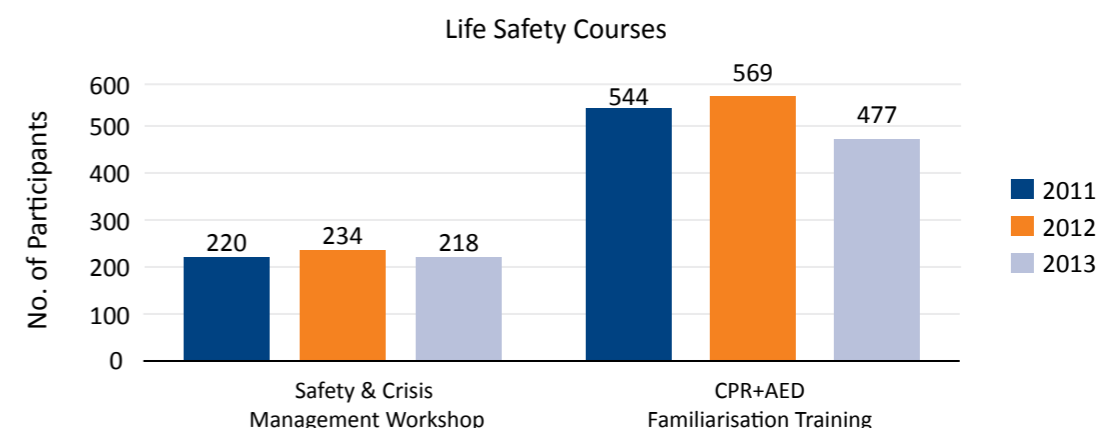


Figure 6.3.4 Number of participants in OSHE’s Life Safety Courses from 2011 to 2013

Fire Safety Programmes	2011		2012		2013	
	No. of Courses	No. of Pax	No. of Courses	No. of Pax	No. of Courses	No. of Pax
Fire Safety Training Courses						
• Fire Safety Education	26	900	18	595	34	1015
• Fire Warden Training	15	357	13	303	12	341
• Fire Coordinator Course	3	61	5	87	2	23
• Fire Safety Refresher Course	10	249	11	189	10	185
• Fire Extinguisher Practical Only	0	0	0	0	11	780
• Other Fire Safety Training	83	2071	57	2824	53	2923
Total	137	3638	104	3998	122	5267
Fire Drills & Exercises						
• Announced		95		81		73
• Unannounced		9		28		39
Total		104		109		112
Fire Safety Compliance Inspections						
• Announced Inspection		91		96		70
• Unannounced Inspection		0		10		4
• Re-inspection		2		2		1
• SCDF Enforcement Checks		0		0		95
Total		93		108		170

Table 6.3.6 Fire Safety Programme activities

Lean & Green Projects

OSHE is an advocate of lean & green philosophy and strongly encourages its staff to think of ways to improve its products and services. From 2011 to 2013, the number of lean & green projects undertaken by OSHE increased nine-fold (Table 6.3.7).

56 Current levels and trends for supplier and partner performance indicators

OSHE’s key partners and suppliers are the Occupational Health Physician, external auditors, Industrial Hygiene Monitoring service providers, trade effluent sampling vendors, and radiation waste disposal collectors. Suppliers and partners have consistently delivered satisfactory performance, with an average performance rating of 4 out of 5 (Figure 6.3.5).

Occupational Health Physician

OSHE engaged an independent external expert in October 2013 to review the Occupational Health

Clinic and its services. The reviewer evaluated several case notes e.g. animal work questionnaire reviews, respirator fitness tests, statutory medical examinations, etc. and found them to be satisfactory. He also identified a few areas for improvement and made recommendations e.g. to move from paper medical records to a computerised system in order to facilitate the sending of reminders for occupational health surveillance or follow-up notices for subsequent appointments.

Auditors

External auditors may be engaged to help in the audit of the Safety & Health Management Systems for laboratories. These audits are managed and led by a lead auditor, who is an OSHE staff. External auditors serve as co-auditors assisting the lead auditor in preparing the audit trail, conducting the audit and writing the report. The audit reports written by the external auditors are checked and reviewed by the lead auditors and the OSHE Audit Manager to ensure quality of the audit findings/reports.

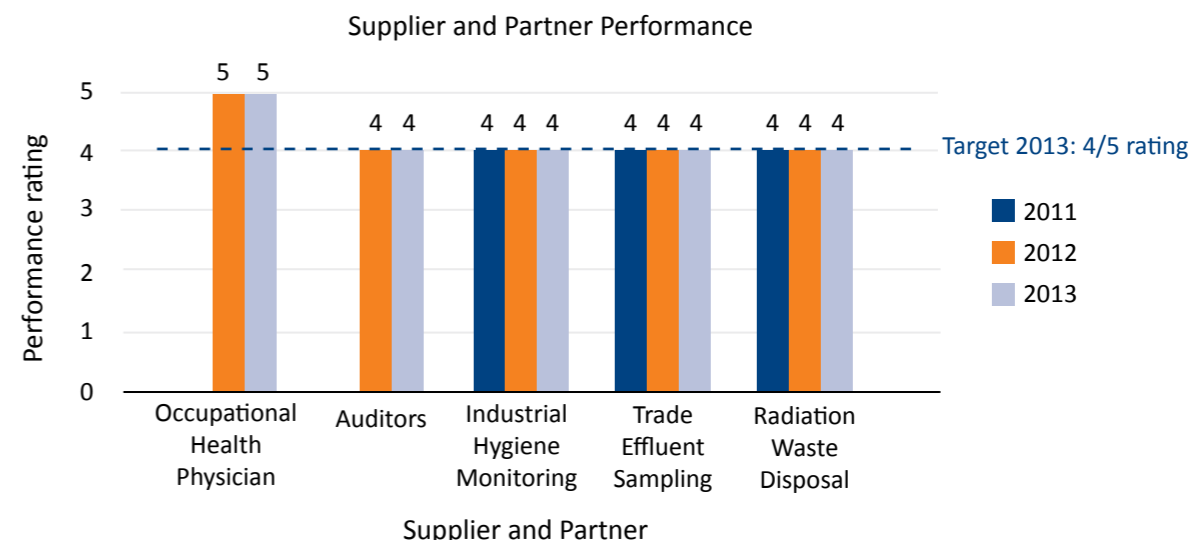


Figure 6.3.5 Performance measurement of suppliers and partners

Industrial Hygiene Monitoring

Industrial hygiene monitoring service providers are engaged by OSHE to conduct air sampling and sample analysis to determine the presence of airborne contaminants and personnel’s exposure level in laboratories.

The industrial hygiene monitoring service providers are selected based on criteria such as punctuality, delivery of report within the stipulated time frame and accuracy of the report. Assessment of the service providers is carried out during engagement and deployment of their services on site.

To ensure quality is maintained, the industrial hygiene monitoring service provider executes the industrial hygiene monitoring plan developed by the OSHE industrial hygiene monitoring officer. In addition, the OSHE industrial hygiene monitoring officer or the Faculty Safety & Health Officer is on site during the air sampling process to provide close supervision and address any issues or concerns that laboratory users may have during the air sampling process.

Trade Effluent Sampling

OSHE engages external testing laboratory vendors to conduct trade effluent discharge analysis. Trade effluent samples are drawn from eight different sewer manholes across NUS campus to ensure compliance with PUB trade effluent discharge limits. To ensure quality of the services provided by the vendor, OSHE only engages vendors with laboratories that have obtained Singapore Laboratory Accreditation Scheme (SINGLAS) accreditation. Services provided by the vendor will be assessed by the OSHE staff that accompanies the vendor on site, and if the vendor does not perform his duties based on the risk assessment submitted, either immediate intervention is carried out or the vendor’s work is terminated.

Radiation Waste Disposal

OSHE engages an external licensed collector for radiation waste disposal, which involves collecting radioactive wastes from various locations at the NUS campus three times a year. The company was selected based on criteria such as responsiveness to pre-site logistic arrangement, punctuality for site arrival, etc.

Year	No. of Projects	Name of Lean & Green Projects
2011	1	Safety Online Video
2012	5	Retractable Belt in Elevator
		iPad Application for Audit
		Regulated Chemical Identifier (RCI)
		Integrated Online Research Compliance (iORC)
		IVLE SSTS Safety Course
2013	9	NUS Institutional Licence to Possess Veterinary Biologics
		Developing an efficient E-certification system for SSTS training
		NUS EHS IT System
		Chemical Waste Trolley
		Integrated Biorisk Manual
		Integrated Chemical Manual
		Harmonization of animal research protocol review process
		Material Transfer Agreement (MTA)
		Online Regulated Material Identifier (ORMI)

Table 6.3.7 Lean & Green projects

6.4 FINANCIAL & MARKET RESULTS

57 *Current levels and trends for financial performance results linked to customer-focused strategies*

Budget Utilisation

OSHE's budget utilisation from 2008 to 2013 was close to 100%, indicating minimal budget variance.

Cost Savings

OSHE strives to explore more effective ways to manage its operations i.e. to do more with less. Savings achieved can be channelled into newer, more important or more critical programmes. OSHE has achieved cumulative cost savings of close to \$6 million from improvement projects since 2008 as shown in Table 6.4.1.

Year	Project Title	Cost Saving
2008	Research Diving Online Risk Assessment	\$1,200
	Laboratory Space Registration	\$10,000
	Statutory Medical Examination for Laboratory Work	\$20,000
	Document Workspace for Laboratory OH&S Certification Scheme	\$100,000
	Printing of Training Certificates	\$1,080
	Guidelines for Occupational Health Funding	\$5,400
2009	OSHE Radiation Clinic	\$160,000
	Tetanus Vaccination Project	\$42,250
	Sharps Management Flow	\$7,650
	Centralised Management of Laboratory Safety & Space Information	\$25,355
	Accident Tracking System	\$20,000
	OH Mobile Clinic	\$7,371
	NUS Integrated Safety Video	\$5,250
	PPE Training Workshop	\$6,000
	Needlestick Injury Prevention	\$6,100
Direct Laboratory Services	\$10,000	
2010	Application for Approval from MOH on behalf of NUS PI	\$246,000
	Regulated Chemical Identifier	\$652,543
	Utilisation of internal resources to conduct SHMS internal audit training	\$6,400
	Building of internal audit capabilities	\$58,125
2011	PFM In-house Inspection	\$10,000
	Safety Online Video	\$12,000
2012	Retractable Belt in Elevator	\$103,900
	iPad Application for Audit	\$50,000
2013	NUS Institutional Licence to Possess Veterinary Biologics	\$2,403
	Developing an efficient E-certification system for SSTS training	\$502,461
	NUS EHS IT System	\$3,800,000
	Chemical Waste Trolley	\$198,750
Grand Saving		\$6,070,238

Table 6.4.1 Cost savings from improvement projects undertaken by OSHE

Expenditure per capita

OSHE has also strived to keep expenditure per capita low. Expenditure per capita fell over 40% from \$3,277 in FY11 to \$1,923 in FY13 (Figure 6.4.1).

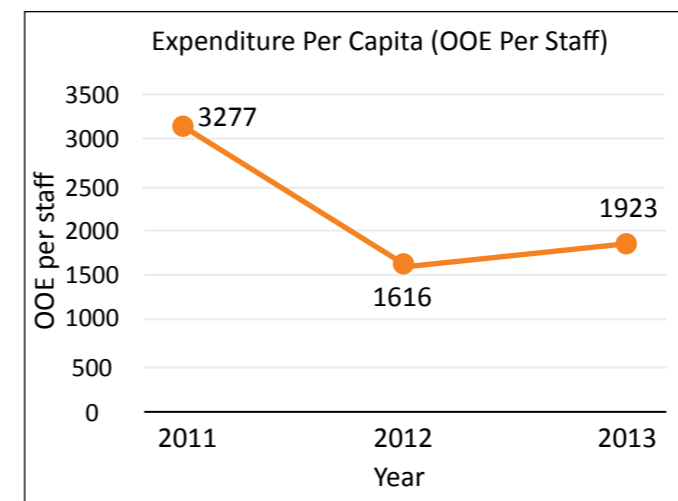


Figure 6.4.1 Expenditure per capita (OOE per staff)

58 *Current levels and trends for marketplace performance results linked to customer-focused strategies*

International Collaboration

OSHE has contributed to raising safety standards internationally by organising conferences, participating in steering and advisory committees, and hosting study visits by other universities. Table 6.4.2 shows the international visitors hosted by OSHE.

Year	Visits by Other Universities
2014	<ul style="list-style-type: none"> Sharing of NUS Safety & Health Management System with Nagoya University & Ehime University delegates Benchmarking of NUS Occupational Health & Safety Management System by Universitas Indonesia
2013	<ul style="list-style-type: none"> Sharing of NUS Safety & Health Management System with Ehime University Sharing of NUS Safety & Health Management System with The University of Tokyo Sharing of NUS Safety & Health Management System with Universiti Kebangsaan Malaysia Study visit by University of Brunei Darussalam Visit by Office of Environment, Health & Safety (OEHS), Massachusetts Institute of Technology Study visit by Indian Institute of Technology Gandhinagar, India
2012	<ul style="list-style-type: none"> Study visit by Education Faculty Disaster Association (EDUFA), Korea Conduct training for staff from the Environment & Safety Management Centre (ESMC) of Nagoya University OSHE hosts team from Massachusetts Institute of Technology Sharing of Safety Training System and Safety & Health Management System with Nagoya University
2011	<ul style="list-style-type: none"> OSHE hosted a Roundtable Discussion on International Safety & Health Collaboration in Research & Educational Institutions Sharing of Safety & Health Management System with Massachusetts Institute of Technology Sharing of Safety & Health Management System with Universiti Brunei Darussalam

Table 6.4.2 International visits hosted by OSHE



Study visit by Education Faculty Disaster Association, Korea, 2012
 Sharing of NUS Safety & Health Mangement System with The University of Tokyo, 2013
 Sharing of NUS Safety & Health Mangement System with Nagoya University & Ehime University, 2014



Benchmarking visit by University Kebangsaan Malaysia, 2013
 Benchmarking of Safety & Health Mangement System by Universitas Indonesia, 2014
 Visit by Massachusetts Institute of Technology, 2015

Building Fire Safety Excellence Award

The Building Fire Safety Excellence Award is an annual award given by OSHE to NUS buildings that demonstrate excellent management in fire safety. The Building Fire Safety Excellence Award programme takes into account the results of the building fire drill, the building fire safety compliance inspection and the operational readiness of the building fire safety committee. The number of buildings in the highest award category of Platinum in the Building Fire Safety Award Programme has increased markedly over the years (Table 6.4.3 and Figure 6.4.2).

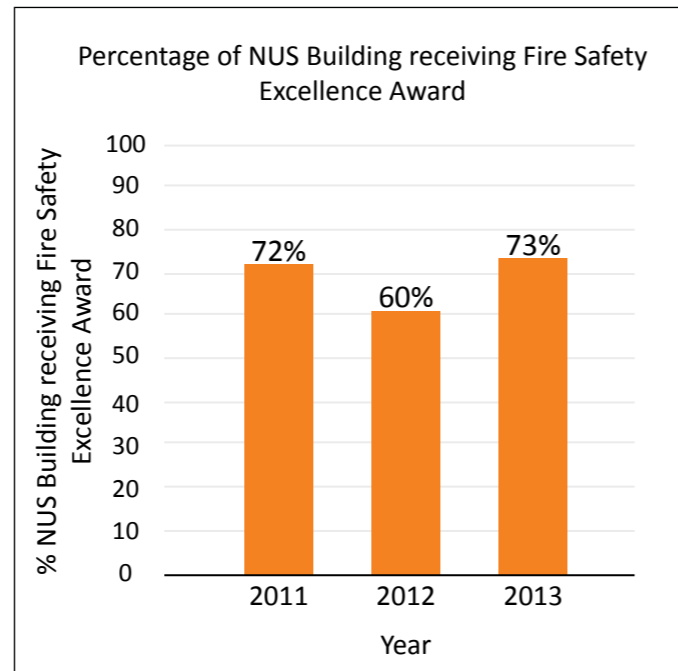


Figure 6.4.2 Percentage of NUS buildings receiving Fire Safety Excellence Award (Platinum, Gold and Silver)

Award	WY2008		WY2009		WY2010		WY2011		WY2012		WY2013	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Platinum	-	-	-	-	7	8%	29	31%	29	30%	46	31%
Gold	23	29%	52	58%	39	43%	27	29%	24	25%	18	29%
Silver	11	14%	4	4%	14	16%	11	12%	5	5%	5	12%
No Award	44	56%	34	38%	30	33%	26	28%	38	40%	26	28%
Total	78	100%	90	100%	90	100%	93	100%	96	100%	95	100%

Table 6.4.3 NUS Building Fire Safety Excellence Award

Laboratory Safety & Health Management Certification Scheme

Figure 6.4.3a shows the number of PIs certified under the Laboratory Safety & Health Certification Scheme from 2008 to 2013. Figure 6.4.3b shows high PI certification rate of 99.8% at the end of 2013.

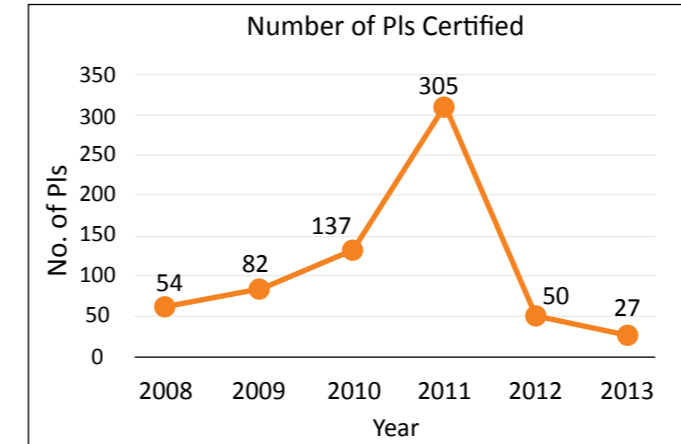


Figure 6.4.3a Laboratory Safety & Health Certification Scheme – Number of PIs audited and certified each year

New Programmes, Standards and Guidelines Developed and Launched

OSHE introduces new programmes, standards and guidelines to meet the needs of the University. Table 6.4.4 shows the new programmes introduced each year from 2010 to 2014.

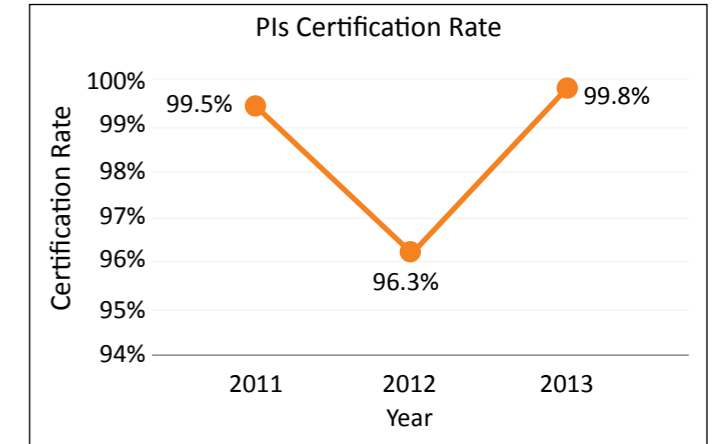


Figure 6.4.3b Laboratory Safety & Health Certification Scheme - Percentage of certified PIs

Year	New programmes / standards / guidelines
2014	<ul style="list-style-type: none"> Accident & Incident Reporting and Investigation Standard NUS Lifting Safety Standard NUS Work at Height Standard
2013	<ul style="list-style-type: none"> Fume Cupboard Performance - Certification Specifications Manual for Personnel with Research Animal Contact
2012	<ul style="list-style-type: none"> NUS Laboratory Laser Safety Manual NUS Laboratory Ionizing Radiation Safety Manual First Aid and First Aiders Standards NUS Research Diving Safety Manual
2011	<ul style="list-style-type: none"> NUS Office Ergonomics Manual NUS Laboratory Ergonomics Manual
2010	<ul style="list-style-type: none"> NUS General Laboratory Safety Manual NUS Construction Safety Programme Manual NUS Laboratory Design Standard

Table 6.4.4 New programmes, standards and guidelines developed and launched



NUS Service Class - Recognition for Service Excellence Award 2008



OSHE received the WSH Performance Awards 2009 (Silver) from Workplace Safety & Health Council and Ministry of Manpower



Campus Safety Health & Environmental Management Association (CSHEMA) presented Complete Safety Award of Commendation 2011 to OSHE



OSHE awarded the Distinguished (Silver) Award at the International Convention for ICQCC, 2011



Distinguished guests at OSHE's 10th Anniversary dinner, 2012



Keynote address by Professor Barry Halliwell at SHE Conference 2013



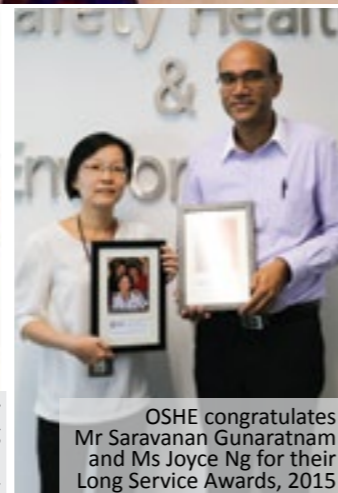
Mr Saravanan Gunaratnam presenting a token of appreciation to Dr Lim Cheh Peng on behalf of EHSO of MIT and SMART, 2013



Ms Oh Siew Kee and Dr Tessy Joseph receiving the LIQC's Best Impact on Productivity Award 2012 from Professor Barry Halliwell



Dr Peck congratulating Mr Hairulnizam Bin Ishak for being conferred the The Commendation Medal at National Day Award, 2014



OSHE congratulates Mr Saravanan Gunaratnam and Ms Joyce Ng for their Long Service Awards, 2015



OSHE receiving Outstanding VOICE Participation (3rd Prize) 2013



006 Safety Agents winning Gold Award at LIQC 2014



OSHE winning the NUS Service Class Outstanding Award For Service Excellence 2014



OSHE receiving Outstanding VOICE Participation (2nd Prize) 2014



OSHE winning the NUS Service Class Outstanding Award For Service Excellence 2014



OSHE winning the NUS Service Class Outstanding Award For Service Excellence 2014



AAALAC	Association for Assessment and Accreditation of Laboratory Animal Care	IQT	Innovation & Quality Team
ABSL	Animal Biosafety Level	ISHP	Institutional Safety & Health Professionals
AED	Automated External Defibrillator	IT	Information Technology
AIMS	Accident & Incident Management System	IVLE	Integrated Virtual Learning Environment
AIRS	Accident & Incident Reporting System	KM	Knowledge Management
ASHPA	Annual Safety & Health Performance Award	KPI	Key Performance Indicator
A*STAR	Agency for Science, Technology and Research	KRA	Key Result Area
AVA	Agri-Food and Veterinary Authority	LIQC	Learning Institution's Quality Conference
BCM	Business Continuity Management	LO	Laboratory Officer
BCP	Business Continuity Planning	LSDS	Laboratory Safety Data System
BSL	Biosafety Level	MAO	Management Assistant Officer
CCA	Co-Curricular Activities	MIT	Massachusetts Institute of Technology
CCE	Computer Centre	MOH	Ministry of Health
CEM	Crisis & Emergency Management	MVV	Mission, Vision and Values
CERT	Company Emergency Response Team	NA(CWC)	National Authority (Chemical Weapons Convention)
CM	Comparative Medicine	NEA	National Environmental Agency
CO	Countersigning Officer	NUS	National University of Singapore
CPR	Cardiopulmonary Resuscitation	NUSSC	NUS Service Class
CrisPIE	Crisis Prevention Information Exchange	NUSSU	NUS Student Union
CSHEMA	Campus Safety, Health and Environmental Management Association	OCA	Office of Campus Amenities
DfS	Design for Safety	OCS	Office of Campus Security
EHS	Environment, Health and Safety	OED	Office of Estate Development
EM	Emergency Management	OEO	Organisational Excellence Office
EPS	Executive & Professional Staff	OES	Office of Environmental Sustainability
FISHL	Faculty and Institutional Safety and Health Licence	OFM	Office of Facilities Management
FSHO	Faculty Safety & Health Officer	OH	Occupational Health
FTE	Full Time Equivalent	OHR	Office of Human Resource
GL	Group Leader	OPRAS	Online Project Risk Assessment System
GMAC	Genetic Modification Advisory Committee	OrgCS	Organisational Climate Survey
HMMS	Hazardous Material Management System	ORMI	Online Regulated Materials Inventory
HoD	Head of Department	OSA	Office of Student Affairs
HR	Human Resource	OSHE	Office of Safety Health and Environment
IACUC	Institutional Animal Care and Use Committee	PDG	Professional Development Group
IAQ	Indoor Air Quality	PFM	Petroleum and Flammable Material
IBC	Institutional Biosafety Committee	PI	Principal Investigator
ICSC	Institutional Construction Safety Committee	PRA	Project Risk Assessment
IH	Industrial Hygiene	PSM	President Staff Meeting
IHL	Institutes of Higher Learning	QOH	Quality of Hire
ILSC	Institutional Laboratory Safety Committee	RA	Research Assistant
iORC	Integrated Online Research Compliance	RCI	Regulated Chemical Identifier
IQ	Innovation and Quality	RF	Research Fellow

RMSC	Risk Management Steering Committee
RO	Reporting Officer
S&H	Safety & Health
SCDF	Singapore Civil Defence Force
SGH	Singapore General Hospital
SHDSC	Safety & Health and Data Steering Committee
SHIP	Safety & Health Improvement Project
SHM	Safety & Health Management
SHMS	Safety & Health Management System
SINGLAS	Singapore Laboratory Accreditation Scheme
SISO	Singapore Institution of Safety Officers
SMART	Singapore-MIT Alliance for Research and Technology
SOP	Standard Operating Procedure
SPF	Singapore Police Force
SSTS	Structured Safety Training System
STAR	Safety Team Award & Recognition
STF	Slip, Trip and Fall
TWSH	Total Workplace Safety & Health
UCI	University Campus Infrastructure
UHC	University Health Centre
UIC	Unit Incident Commander
UTD	University Town Development
VOICE	Valued Online Ideas Contributed by Employees
VP(CI)	Vice President (Campus Infrastructure)
WSH	Workplace Safety & Health
WSHC	Workplace Safety & Health Council
YNC-DCO	Yale-NUS College – Design & Construction Office



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