

# **CURRICULUM, TRAINING AND ASSESSMENT GUIDE**

|                  |                                  |
|------------------|----------------------------------|
| Competency Unit  | : Monitor Noise and Vibration    |
| TSC Title        | : Noise and Vibration Monitoring |
| TSC Code         | : WPH-WSH-5068-1.1               |
| Version Number   | : 3.0                            |
| Effective Date   | : 1 Sep 2023                     |
| Next Review Date | : Sep 2028                       |
| Developer        | : WDA/SSG                        |
| Custodian        | : WSH Council                    |

## **Copyright © 2024 WSH Council**

All rights reserved. This document is provided for the explicit use and guidance of parties approved by WSH Council as information resource only. Any other use of this document or parts thereof, including reproduction, publication, distribution, transmission, re-transmission or public showing, or storage in a retrieval system in any form, electronic or otherwise, for purposes other than that expressly stated above without the express permission of WSH Council is strictly prohibited.

## Table of Contents

|                                                                                                                                         |           |
|-----------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Purpose of Guide .....                                                                                                                  | 3         |
| <b>CHAPTER 1: THE OCCUPATIONAL HYGIENE PROFESSIONALS WSQ<br/>FRAMEWORK AND WSQ SPECIALIST DIPLOMA IN<br/>OCCUPATIONAL HYGIENE .....</b> | <b>4</b>  |
| 1.1 Overview of the Occupational Hygiene Professionals WSQ Framework                                                                    | 4         |
| 1.2 Overview of WSQ Specialist Diploma in Occupational Hygiene.....                                                                     | 4         |
| <b>CHAPTER 2: UNIT-SPECIFIC INFORMATION: MONITOR NOISE AND<br/>VIBRATION.....</b>                                                       | <b>5</b>  |
| 2.1 Purpose and Focus of Competency Unit.....                                                                                           | 5         |
| 2.2 Target Audience .....                                                                                                               | 5         |
| 2.3 Recommended Learning Hours (RLH) .....                                                                                              | 5         |
| 2.4 Credit Exemption.....                                                                                                               | 5         |
| <b>CHAPTER 3: KEY DELIVERY ADVICE .....</b>                                                                                             | <b>6</b>  |
| 3.1 Content Coverage .....                                                                                                              | 6         |
| 3.2 Sequence of Coverage.....                                                                                                           | 6         |
| 3.3 Training Provider Requirements.....                                                                                                 | 7         |
| 3.4 Total WSH Presentation Slides .....                                                                                                 | 7         |
| 3.5 Learning Strategies and Delivery Methods.....                                                                                       | 7         |
| 3.6 Recommended Class Size and Facilitator-Learner Ratio.....                                                                           | 9         |
| 3.7 Training Venue Requirements.....                                                                                                    | 10        |
| <b>CHAPTER 4: KEY ASSESSMENT ADVICE .....</b>                                                                                           | <b>12</b> |
| 4.1 Assessment Strategies.....                                                                                                          | 12        |
| 4.2 Assessment Instruments and Tools .....                                                                                              | 15        |
| 4.3 Recommended Assessor to Candidate Ratio.....                                                                                        | 15        |
| 4.4 Issuance of “Safety Pass” and the “Certificate of Successful<br>Completion” .....                                                   | 15        |
| <b>CHAPTER 5: EQUIPMENT, FACILITIES AND WSH REQUIREMENTS .....</b>                                                                      | <b>17</b> |

|                                                                                                |                                                                                    |           |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------|
| 5.1                                                                                            | Equipment and Facilities Requirements .....                                        | 17        |
| 5.2                                                                                            | Workplace Safety and Health Requirements for Training Delivery and Assessment..... | 17        |
| <b>CHAPTER 6: ADULT EDUCATOR REQUIREMENTS.....</b>                                             |                                                                                    | <b>19</b> |
| 6.1                                                                                            | Trainer/Facilitator Requirements .....                                             | 19        |
| 6.2                                                                                            | Developer Requirements.....                                                        | 20        |
| 6.3                                                                                            | Assessor Requirements .....                                                        | 20        |
| <b>CHAPTER 7: SUMMARY OF MANDATORY SECTIONS / INFORMATION.....</b>                             |                                                                                    | <b>22</b> |
| <b>CHAPTER 8: RESOURCE INFORMATION .....</b>                                                   |                                                                                    | <b>23</b> |
| Glossary of Terms .....                                                                        |                                                                                    | 25        |
| List of Acronyms.....                                                                          |                                                                                    | 26        |
| Version Control Record .....                                                                   |                                                                                    | 27        |
| Annex A - Instructional Strategy Selection Chart .....                                         |                                                                                    | 28        |
| Annex B - Occupational Hygiene Professionals Competency Map and Qualifications Framework ..... |                                                                                    | 29        |
| Annex C - Evidence Sources Checklist .....                                                     |                                                                                    | 31        |
| Annex D - Performance Statement Checklist .....                                                |                                                                                    | 32        |
| Annex E - Evidence Plan Checklist .....                                                        |                                                                                    | 33        |
| Annex F - Written Assessment Checklist .....                                                   |                                                                                    | 34        |
| Annex G - Suggested Format for Recording and Reporting Assessment .....                        |                                                                                    | 35        |

## Purpose of Guide

This Guide is designed for accredited Training Providers and Adult Educators who are responsible for the design and delivery of programmes within the Specialist Diploma in Occupational Hygiene of the WSQ Occupational Hygiene (OH) Professionals Framework. This Guide aims to provide essential curriculum, training and assessment design advisory information, to guide developers, trainers and assessors in the interpretation and translation of competency standards into training and assessment programme. The Guide also contains training and assessment requirements stipulated by industry, and WSQ accreditation information for compliance. It is divided into 3 parts:

- Part I** - Provides an overview of the domain of Occupational Hygiene, the OH Professionals WSQ framework and the WSQ Specialist Diploma in OH qualification
- Part II** - Provides unit specific information, key delivery and assessment advice, equipment list and adult educator requirements for this competency unit under the OH Professionals WSQ framework
- Part III** - Provides a broad spectrum of information pertaining to the mandatory sections and includes the supporting information and documents related to this competency unit

## **PART I**

### **CHAPTER 1: THE OCCUPATIONAL HYGIENE PROFESSIONALS WSQ FRAMEWORK AND WSQ SPECIALIST DIPLOMA IN OCCUPATIONAL HYGIENE**

This chapter describes the overview of the OH Professionals WSQ Framework and the Specialist Diploma in OH, covering these components:

#### **1.1 OVERVIEW OF THE OCCUPATIONAL HYGIENE PROFESSIONALS WSQ FRAMEWORK**

The framework's key purpose is, "To drive improvements in workplace health (WH) management and raise WH standards through quality professional development of competent and motivated Occupational Hygiene (OH) Professionals to assist employers, occupiers and other stakeholders in the anticipation, recognition, evaluation and control of Occupational Hygiene risks at the workplace."

A study was also done on the local OH landscape and there were a few courses accredited by the Singapore Ministry of Manpower (MOM) and National Environment Agency (NEA) which were found useful and relevant to this framework.

As such the development of this framework is closely referenced to particular MOM and NEA accredited courses. This framework has been validated and endorsed by industry practitioners and forms the benchmarks for competency-based training and assessment.

#### **1.2 OVERVIEW OF WSQ SPECIALIST DIPLOMA IN OCCUPATIONAL HYGIENE**

The WSQ OH Professionals Framework consists of a single qualification titled 'WSQ Specialist Diploma in Occupational Hygiene (SDOH).' It is pegged at competency Level 5 in the WSQ Qualification Level system.

With reference to the competency map, a candidate must achieve the Statement of Attainment (SOA) for the competency units under the qualification in order to be awarded the WSQ SDOH which consists of:

- All 8 Core Units;
- 2 Electives Units from Group 1 Elective Units; and
- 1 Elective Unit from Group 2 Elective Units

## PART II

### CHAPTER 2: UNIT-SPECIFIC INFORMATION: MONITOR NOISE AND VIBRATION

#### 2.1 PURPOSE AND FOCUS OF COMPETENCY UNIT

On completion of this unit, the learner will have the knowledge and be equipped with the application skills in monitoring noise and vibration and be able to apply them at the workplace. This includes:

- Apply the basic principles in of noise and vibration monitoring
- Provides fundamental knowledge and skills in noise and vibration monitoring
- Typical noise monitoring and assessment of monitoring results

#### 2.2 TARGET AUDIENCE

The target audience of this competency unit may include:

- Persons who want to attain the qualification recognised by the Singapore Ministry of Manpower to advise occupiers and employers on noise and vibration monitoring at the workplaces
- Workplace Safety and Health (WSH) professionals such as WSH Coordinators, Officers, and bors
- Occupational Hygiene (OH) professionals such as OH Technicians etc.
- Occupational health professionals such as occupational health nurse and physicians
- Other professionals in OH-related fields such as ergonomics, human factors, occupational psychology, noise monitoring and control, acoustics, was well as engineering and facility management specialists who would like to gain more knowledge on noise monitoring at the workplace

#### 2.3 RECOMMENDED LEARNING HOURS (RLH)

This section proposes the total hours of competency-based training and assessment for one of the core **Competency Unit: Monitor Noise and Vibration** taking into account the time required for directed learning activities. Directed learning is broadly defined as trainer/assessor-directed & purposefully instructed to trainees to complete as part of instructional design of a structured training & assessment programme.

The specification of the RLH for **Competency Unit: Monitor Noise and Vibration** is **24 hours**.

#### 2.4 CREDIT EXEMPTION

Candidates who have successfully undertaken the MOM accredited course titled “Noise Monitoring Course” will be granted unit exemption for this WSQ unit. Documentary evidence will have to be submitted to the training provider before exemption can be granted.

## CHAPTER 3: KEY DELIVERY ADVICE

This chapter describes the following components for one of the core **Competency Unit: Monitor Noise and Vibration** only.

### 3.1 CONTENT COVERAGE

In developing the programme for this **Competency Unit: Monitor Noise and Vibration**, TPs should always make cross references to the Performance Statements (PS), Underpinning Knowledge (UK), Range of Application and Evidence Sources sections as stipulated in the said unit. Depending on the context, as a guide, at least 50% of the Range of Application should be covered.

Individuals taking this competency unit may come from the different organisations from various key industries. TPs are advised to contextualise their programmes to better cater to trainee needs, based on the organisation that they come from. Contextualisation of the programme content normally revolves around the range of application of the competency unit.

### 3.2 SEQUENCE OF COVERAGE

The coverage for the **performance statements** and **underpinning knowledge** as specified in the competency standard for this unit should follow the sequence below:

| Performance Statements                                                                                                                                                                             | Underpinning Knowledge *                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>Establish the objectives for noise and vibration monitoring in accordance with workplace noise and vibration-related legal and other requirements.</li></ul> | <ul style="list-style-type: none"><li>Objectives for noise and vibration monitoring (Synthesis)</li><li>Workplace noise and vibration-related legal and other requirements (Application)</li></ul> |
| <ul style="list-style-type: none"><li>Identify noise and vibration hazard sources and the ill health effects from relevant information sources.</li></ul>                                          | <ul style="list-style-type: none"><li>Noise and vibration hazard sources (Application)</li><li>Ill-health effects of noise and vibration hazards (Assessment)</li></ul>                            |
| <ul style="list-style-type: none"><li>Conduct noise monitoring to evaluate noise and vibration exposure levels in accordance with recognised standard measurement methods and equipment.</li></ul> | <ul style="list-style-type: none"><li>Equipment used for measurement (Application)</li><li>Standard measurement methods of noise and vibration hazard (Application)</li></ul>                      |
| <ul style="list-style-type: none"><li>Analyse the noise monitoring results and submit report to stakeholders in accordance with legal and other requirements.</li></ul>                            | <ul style="list-style-type: none"><li>Occupational Noise and Vibration Exposure Limits (Application)</li></ul>                                                                                     |

|                                                                                                                                                               |                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Support the implementation of Hearing conservation programmes in accordance with organisational procedures.</li> </ul> | <ul style="list-style-type: none"> <li>Hearing conservation programmes (Comprehension)</li> </ul> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|

\* The verb in the bracket “( )” after each underpinning knowledge indicates the cognitive level using Bloom’s Cognitive Domain.

### 3.3 TRAINING PROVIDER REQUIREMENTS

Training Providers are required to fulfill the following requirements:

- ISO 29993 certification;
- bizSAFE Level 3 certification;
- Blended learning
  - Have developed an SOP to conduct online training and assessment (with online proctoring for supervisor and above courses) when required to do so.
  - For each WSH course, the Training Provider must have at least:
    - 1 full time Principal/Director;
    - 1 full time WSH Approved Adult Educator/ Trainer/Facilitators for each WSH course<sup>1</sup>; and
    - 2 approved full time/associate Adult Educator/ Trainer/Facilitators for each of the language.

Training Providers are to inform the WSH Council when they withdraw their training provider status for any WSH course(s), or have their status suspended or terminated by any authority.

Training Providers are to comply with the instruction by either (i) SkillsFuture Singapore (SSG), Ministry of Manpower (MOM) or the WSH Council to stop conducting any WSH Course(s) when an investigation is ongoing, or a non-compliance is being verified. Further actions would be taken when fraudulent acts or significant non-compliances are established.

### 3.4 TOTAL WSH PRESENTATION SLIDES

Total WSH presentation slides will be issued upon approval of the Training Provider. The materials are provided strictly for the explicit use and guidance of training providers for the conduct of this course. Any other use of the materials or parts thereof, reproduction, publication, distribution, transmission, re-transmission, or storage in a retrieval system in any form, electronic or otherwise, for purposes other than that expressly stated above without the express permission of WSH Council is strictly prohibited.

### 3.5 LEARNING STRATEGIES AND DELIVERY METHODS

Curriculum developers are recommended to adopt the following structure for thinking about and planning a learning strategy:

- Summarise the learning strategy



- In this learning strategy, what learning principles are being applied?
- What learning theories or learning design theories underpin this strategy?
- How will this strategy resolve the identified learning problems? What is it about the learning strategy that will cause people to change in a way that resolves the learning problem?
- How would you describe the experience that learners will go through? How will this experience support their learning?
- What methods or tactics are most likely to be used to support this strategy?
- How will interface and media support this strategy?
- How will this strategy engage learners' interests?
- How will this strategy assess learners' progress or increased competence?

(extracted from [www.networked-learning.com](http://www.networked-learning.com), accessed 19 Sep 2010)

An example of instructional strategy selection for cognitive, affective and psychomotor domains is given in **Annex A**.

A non-exhaustive list of recommended delivery methods is provided below.

| <b>Delivery strategies</b> | <b>Applications</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Presentation</b>        | This can be applied almost throughout this unit to introduce basic concepts and theory for the underpinning knowledge. It can also be used to show photographs, videos and graphics as an effective mean of explaining concepts and describing items.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Discussion</b>          | Learners can be asked to discuss topics such as: <ul style="list-style-type: none"> <li>• Interpretation of applicable legal requirements</li> <li>• Challenges faced in noise monitoring and ways to overcome them</li> <li>• Sharing about experience such as various situations that can be encountered during the conduct of noise measurement</li> </ul>                                                                                                                                                                                                                                                                                                                               |
| <b>Demonstration</b>       | This will be useful in showing the learners: <ul style="list-style-type: none"> <li>• The methods of inspecting and calibrating an equipment, such as a noise meter</li> <li>• The setup of measuring equipment</li> <li>• The steps involved in measuring noise from a machine and personal noise monitoring</li> <li>• Factors that can affect noise reading, such as by introducing a noise disturbance and demonstrating how the meter respond and the counter actions necessary</li> </ul> <p>Note that it is very important to consider logistical arrangement and safety and health aspects of a demonstration to address all these concerns before such strategy is to be used.</p> |
| <b>Practice</b>            | Learners may be asked to practice on: <ul style="list-style-type: none"> <li>• Calculation of dosage, addition / subtraction of noise and other quantities after they have been taught the methods.</li> <li>• Calibration, set up and use of sound level meter and dosimeter</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                    |

| <b>Delivery strategies</b>            | <b>Applications</b>                                                                                                                                                                                                                                                                                                              |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Observation and Feedback</b>       | <ul style="list-style-type: none"> <li>• One group of learners or the adult educator may demonstrate the setup equipment and conduct a measurement or sampling while the other learners and give feedback thereafter</li> <li>• Learners may be asked to make observation at their workplace on hazard identification</li> </ul> |
| <b>Written Exercise</b>               | Learners may be asked to: <ul style="list-style-type: none"> <li>• Sketch a noise map</li> <li>• Respond to question with written answers or perform calculations of concentration, flow rates etc.</li> <li>• Fill up the blanks in a diagram or short paragraph with the missing information</li> </ul>                        |
| <b>Case Study</b>                     | Get the learners to work in groups. Issue them with a case study featuring a noise monitoring situation at the workplace. Get them to determine the methods that will be most effective for the assessment of noise exposure                                                                                                     |
| <b>Workplace Delivery / Practices</b> | Learners may be asked to:<br>Conduct a noise monitoring at their workplace, or a simulated workplace<br>Generate noise monitoring report                                                                                                                                                                                         |

Where relevant and appropriate, the learning activities for the unit should be designed to shape or cultivate the expected attitudes of the candidates and to prepare them for their role in the sector.

### Industry Requirements

Following learning method is mandated by the industry for this competency unit: **Monitor Noise and Vibration.**

Demonstration by the trainer on:

- The methods of calibrating noise sound level meter and noise dosimeter
- The setup of noise measuring equipment
- The steps involved in measuring noise from a machine and personal noise monitoring

Practice by the learners on

- Calibration, set up and use of sound level meter and noise dosimeter
- Practice on calculation of Leq 8-hr.

### **3.6 RECOMMENDED CLASS SIZE AND FACILITATOR-LEARNER RATIO**

The recommended class size: 10 – 20. The maximum class size is 20.

For practical session, the group should not be more than 5.

### 3.7 TRAINING VENUE REQUIREMENTS

- 3.7.1 TP shall ensure that the classroom has adequate chairs and writing tables that are reasonably and comfortably spaced for the class of 20, to be conducive to the learning process and the purpose of conducting the assessment.
- 3.7.2 The classroom must have adequate lighting and ventilation. Emergency exit routes must be clearly marked out and briefed to the course learners at the start of the course. Necessary equipment such as projectors, multimedia players, whiteboards, and flipcharts must be available.
- 3.7.3 There shall be sufficient space as necessary for the appropriate set-up demonstration of fall arrest equipment and assessment purposes. There shall be adequate safety control measures taken to ensure the safety of the Learner during training.
- 3.7.4 Unless prior approval has been granted by the CB, which had certified its WSH courses, each TP shall maintain and conduct its WSH course at its primary Training Venue. In addition, the TP shall ensure that the following are not shared with any other TP:
- (a) their approved Training Venue/s; and
  - (b) Any other equipment or loads, which are used for the conduct of the WSH course.
- 3.7.5 In the event, where the TP wishes to conduct its WSH theory course(s) at a venue, other than the approved Training Venue, the TP must inform the CB, which had certified its WSH course(s) at the approved Training Venue/s, of its intent to effect such a change, and it must also demonstrate to the CB that:
- (a) It has an approved Training Venue at the registered address;
  - (b) That the proposed venue is conducive for learning; and
  - (c) That there are no safety and health concerns in relation to the proposed venue/s.
- The TP may conduct its WSH theory course(s) at a venue other than the approved Training Venue/s only after obtaining the CB's approval.
- 3.7.6 The requirement stated at Para 3.7.5 shall apply to a TP for single and multiple usage.
- 3.7.7 Where the CB has granted approval to the TP to conduct the WSH theory course(s) at an alternate venue, the TP must ensure that:
- a) All training and assessment records are kept by the TP, for courses conducted, at the alternate venue. Such records shall include the following documents:
    - i. Photographs of the alternate venue;
    - ii. Photographs of the WSH theory course(s) being conducted at the alternate venue;
    - iii. Layout plan of the alternate venue; and

- iv. Leasing documents;
- b) The records mentioned in sub-paragraph 3.7.7(a) above, are continually updated;
- c) The alternate venue is only used for the conduct of WSH theory course(s). No practical training/assessment shall be allowed at the alternate venue, unless approval has been granted by the Authorities; and
- d) The alternate venue is not occupied and or used by another LSP or WSH approved training provider at any time.

3.7.8 The TP must ensure that all Training Venues (including alternate venues) have been approved by the Urban Redevelopment Authority (URA) or the Housing & Development Board ("HDB"), either as a Commercial School (theory based only) or for Industrial Training (theory and practical), before it applies to be certified by the CB.

Note: Tenancy agreement (e.g. from JTC Corporation or other Developers) does not constitute a URA approval. Only correspondence with letterheads bearing the office of the relevant government authorities granting the approval shall be recognised.

3.7.9 Paragraph 3.7.8 shall not apply to TP who is applying for a once-off use of the theory training premises.

3.7.10 The TP is to note that a CB's approval of any practical training venue is conditioned upon its safe and adequacy of the training facilities and equipment. The TP shall comply with all relevant legislations including but not limited to legislations involving land use, building, fire and safety.

## CHAPTER 4: KEY ASSESSMENT ADVICE

This chapter describes the following components:

A description on the general guidelines and requirements for conducting assessment is given in the reference WSQ resource websites in Part II of this document.

### 4.1 ASSESSMENT STRATEGIES

A non-exhaustive list of assessment strategies and methods indicating the possible assessment methods or combination of assessment methods, as illustrated in below, can be used as a planning guide for determining the appropriate assessment strategy for the respective performance statements and underpinning knowledge in each Specialist Diploma in Occupational Hygiene competency unit.

|                                   |
|-----------------------------------|
| Individual / Group Project report |
| Interview                         |
| Written Assessment                |
| Case Study                        |
| Practical Performance             |

In this Competency Unit: Monitor Noise and Vibration, the following assessment methods are suggested:

| <u>Assessment Methods</u> | <u>Application</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <u>Evidence Sources</u>                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Demonstration</u>      | The competent candidate must demonstrate, in a simulated environment, how to identify and access the noise and vibration hazard source and viable measuring methods. They will also be responsible to generate a compilation of garnered results and sound immediate attention to any suspicious reading. The demonstration should include the selection of equipment used for measurement, inspection, and the operation of that equipment in accordance to standards or measurement for noise and vibration hazards | <u>Process Evidence</u> <ul style="list-style-type: none"><li>• Measurement of noise and vibration hazards according to standards for measurement of noise and vibration hazards</li><li>• Set up of a noise meter and readings from several noise sources from differing positions.</li><li>• Set up and use of individual noise dose meters.</li><li>• Measurement of octave band levels of a noisy environment.</li></ul> |
| <u>Written Report</u>     | The competent candidate must submit a written report on the                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>Process Evidence</u>                                                                                                                                                                                                                                                                                                                                                                                                      |

| <u>Assessment Methods</u>  | <u>Application</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <u>Evidence Sources</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | <p>monitoring and results of noise and vibration hazards at a workplace. Interpretation and analysis of the results, as well as the format of the report should be based on relevant legal and other requirements and standards.</p>                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• Preparing for noise monitoring</li> <li>• Selecting the appropriate noise and vibration monitoring methods</li> <li>• Validating and using noise and vibration measuring equipment, including calibration</li> <li>• Following acceptable methods to ensure representative measurements</li> <li>• Observing personal safety during noise monitoring</li> <li>• Comparing and analysing SPL or dB and rms results</li> <li>• Using appropriate noise and vibration labels</li> <li>• Evaluating noise and vibration monitoring results</li> <li>• Keeping records of noise monitoring and hearing conservation programmes</li> </ul> |
| <u>Written Questioning</u> | <p>Learners may be asked on questions relating to the content of written report for clarification of content, confirmation of competency, verification of knowledge and checking of report authenticity.</p> <p>Learn can also be asked on the underpinning knowledge covered in the unit, for instance, on <i>objectives for noise and vibration monitoring, workplace noise and vibration-related legal and other requirements, noise and vibration hazard sources, ill-health effects of noise and vibration hazards, conduct noise monitoring</i>, etc.</p> <p>Written questions may be given at the end of facilitated training</p> | <p><u>Knowledge Evidence</u></p> <ul style="list-style-type: none"> <li>• Explain the Fundamentals concepts in occupational noise and vibration monitoring</li> <li>• Differentiate types and categories of occupational noise and vibration exposure limits and their respective meanings</li> <li>• Differentiate between types of monitoring methods</li> <li>• Name the types of equipment and methods for measurement of noise and vibration</li> </ul>                                                                                                                                                                                                                  |

| <u>Assessment Methods</u> | <u>Application</u>                                                                                                                                                                                                                                                                                                          | <u>Evidence Sources</u> |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                           | for each hazard or end of a training day to check knowledge learnt in that contact period. Written questions can also be given as at the end of course as summative assessment. The answers to each written questions should be short, not exceeding 5 lines. Written questions to be close book and individual assessment. |                         |

### Industry Requirements

The following assessment methods are mandated by the industry for this unit.

Written assessment on what is 'excessive exposure' to noise in accordance with the WSH (Noise) Regulations.

The number of attempts a candidate is allowed to be assessed in the written assessment is ONE. The candidate certified "NOT YET COMPETENT" after the assessment, the candidate must be re-coursed.

MOM/WSH Council officers shall conduct audits with or without notice on WSQ WSH TPs.

To facilitate marking of the assessment papers, TPs shall install the Automated Marking System (AMS) and its associated hardware.

The TP personnel who is authorised to use the AMS to scan and mark the test via AMS must also ensure that the assessment results are updated in SSG's Skills Connect system.

To facilitate uploading of the assessment results, TPs shall install the Automated Marking System (AMS) and its associated hardware.

The TP personnel who is authorised to use the AMS must also ensure that the assessment results are updated in SSG's TPGateway.

TPs are to upload the test results to MOM/ WSH Council no later than 5 calendar days after completion of the courses. All errors must be rectified within 24 hours for re-submission of the affected results to MOM/ WSH Council via WSH TRS. This is in addition to the uploading of assessment results to SSG via TPGateway

Authorities (i.e. MOM/WSH Council) may request from TPs information on the course. TPs are to ensure that the information given to the Authorities are accurate and updated.

*Note: For system(s) or requirement(s) administered by the relevant authorities, i.e. MOM/WSH Council, the TP shall fulfil the requirements and follow up with the agencies accordingly.*

## 4.2 ASSESSMENT INSTRUMENTS AND TOOLS

Assessment instruments and tools will be required to conduct the assessment planned. Examples of such templates include:

- An Evidence Sources Checklist to serve as a reporting snapshot of the types of evidence gathering that may be used. **(see Annex C)**
- A Performance Statement Criteria Checklist to record the performance statement been assessed **(see Annex D)**
- An Evidence Plan Checklist to list the down the expected evidence to be collected vis-à-vis sources of evidence. **(see Annex E)**
- Written Assessment Checklists as an instrument for the recording of answers to questions concerning the performance statements and underpinning knowledge. **(see Annex F)**
- A Recording and Reporting Assessment Table Format as an instrument for the concise recording of competency and re-assessment information concerning the Competency Unit. **(see Annex G)**

## 4.3 RECOMMENDED ASSESSOR TO CANDIDATE RATIO

- This section states the ratio of assessor to candidate. This ratio is dependent on the complexity of job performance, safety requirements and experience of the Assessor.
- The recommended assessor-candidate ratio for the various assessment strategies are shown as follows:

|                            |         |
|----------------------------|---------|
| Quiz                       | 1 to 20 |
| Formative skill assessment | 1 to 5  |
| Written test               | 1 to 20 |

## 4.4 ISSUANCE OF “SAFETY PASS” AND THE “CERTIFICATE OF SUCCESSFUL COMPLETION”

- 4.4.1 “Safety Pass/Card” is to be issued, in accordance with the format shown in Annex C, to candidate who is assessed “Competent” in this Competency Unit for the SOC.
- 4.4.2 “Certificate of Successful Completion” is to be issued, in accordance with the format shown in Annex D, to candidate who is assessed “Competent” in this Competency Unit.



- 4.4.3 The issuance of the “Certificate of Successful Completion” is optional for LSPs/TPs who have already issued the “Safety Pass” to candidate who is assessed “Competent” in this Competency Unit.

## CHAPTER 5: EQUIPMENT, FACILITIES AND WSH REQUIREMENTS

### 5.1 EQUIPMENT AND FACILITIES REQUIREMENTS

For this unit, the following equipment may be required:

- Sound level meter (Type I or II) for survey and recording purposes
- Data logger and recorders (Optional)
- Real-time analyser (Optional)
- personal dosimeters
- Acoustical calibrator
- Vibration Analyser
- Noise source (e.g. a vacuum machine, pre-recorded noise)
- Hearing protectors

Most of the equipment will be for demonstration and hands on for the learners to get familiar with the equipment. Depending on the context of training, the training provider may include assessment requiring learner to demonstrate competency in setting up and using the equipment to take some readings.

The unit does not require specific facilities.

### 5.2 WORKPLACE SAFETY AND HEALTH REQUIREMENTS FOR TRAINING DELIVERY AND ASSESSMENT

Although training and assessment should be done in a manner that is as realistic as possible, due consideration shall be given to ensure the occupational safety and health of the learners, trainers, assessors and all persons involved such as actors in the role play etc. Training and assessment centres should set a policy that commit to safety and health. Following are some measures that should be adopted whenever applicable:

Ensure that environment and equipment used for training and assessment are safe prior to training or assessment sessions.

Assess the risks of training and assessment activities, especially simulation, demonstration and role play, and take reasonably practicable measure to eliminate or minimise risks.

Establish and implement relevant safety and health procedures, including action to be taken in case of emergency.

Provide and ensure personal protective equipment are worn by the trainers, assessors and learners.

Assign and communicate on the measures to be taken to minimise safety and health risks; and the safety and health responsibilities and accountabilities to trainers, assessor, learner and other persons involved on

Maintain safety and health records, such as report of hazards, dangerous occurrence, near-miss, incident and accident.

Participants should only be required to undertake instruction and assessments in environments that comply with WSH regulations of Singapore.

Some suggested strategies that could apply to this training programme are:

- establish policies for safety and health
- establish roles and responsibilities with respect to safety and health
- specify procedures for safety and health
- communicate safety and health instructions to trainers, assessors, participants and administrative staff

There should be an emphasis on the interaction between everyone involved in the learning process. Mutual consultation should cover all aspects of the learning process. Trainers and assessors should make the participants aware of the WSH issues throughout the Competency Units in theoretical and practical situations. For more information on WSH regulations of Singapore please access <http://www.mom.gov.sg> and <http://www.wshc.gov.sg>.

## CHAPTER 6: ADULT EDUCATOR REQUIREMENTS

This chapter articulates the Adult Educator (AE) requirements covering these components:

### 6.1 TRAINER/FACILITATOR REQUIREMENTS

This section articulates the AE requirements covering these components:

#### ***Domain Knowledge Requirements***

The trainer must have a Degree or post graduate degree in Occupational Health / Industrial Hygiene such as MSc (Safety Health and Environmental Technology) or in related disciplines such as Engineering, Physics. Those qualified as a Certified Industrial Hygienist (CIH)/ Certified Occupational Hygienist (COH) or have attained equivalent certifications will have an added advantage. Those who have successfully undertaken the Noise Monitoring Course or Industrial Noise Control Course by MOM approved training providers or the competency units on Monitor Noise and Vibration or Control Noise and Vibration under this framework will also have an added advantage.

#### ***Domain Work Experience***

The trainer must have at least 5 years' WSH experience in Occupational Hygiene or Workplace Health. Experience as an Approved WSH Officer, Noise Monitoring Officer, Noise Control Officer is an added advantage. The trainer must also be able to provide evidence of maintaining currency, for example, through recent work in the industry as WSH occupational hygienist, manager, consultant or trainer, or professional development or active membership of a professional association in the relevant mentioned disciplines.

#### ***WSQ Trainer's Pedagogic Requirements***

The trainer must have at least 2 years of training experience in a workplace health related programme over the last 4 years. The trainer must have been certified competent and awarded the Advanced Certificate in Training and Assessment (ACTA) or equivalent qualifications in training or Advanced Certificate in Learning and Performance (ACLP) or Diploma in Adult Continuing Education (DACE) or Diploma in Design and Development of Learning for Performance (DDDLP).

All trainers/adult educators are required to attain 10 hours (minimum) annually by attending Continuing Professional and Development (CPD) courses conducted by appointed training providers. For more details, refer to Train-the-Trainer (T<sup>3</sup>) Programme in WSH Council website ([www.wshc.sg](http://www.wshc.sg))

The trainer for the course is not permitted to be the assessor for the same course learners during the assessment.

## 6.2 DEVELOPER REQUIREMENTS

This section articulates the AE requirements covering these components:

### ***Domain Knowledge Requirements***

The developer must have a Degree or post graduate degree in Occupational Health / Industrial Hygiene such as MSc (Safety Health and Environmental Technology) or in related disciplines such as Engineering, Physics. Those qualified as a Certified Industrial Hygienist (CIH)/ Certified Occupational Hygienist (COH) or have attained equivalent certifications will have an added advantage. Those who have successfully undertaken the Noise Monitoring Course or Industrial Noise Control Course by MOM approved training providers or the competency units on Monitor Noise and Vibration or Control Noise and Vibration under this framework will also have an added advantage.

### ***Domain Work Experience***

The developer must have at least 5 years' WSH experience in Occupational Hygiene or Workplace Health. Experience as an Approved WSH Officer, Noise Monitoring Officer and Noise Control Officer is an added advantage. The developer must also be able to provide evidence of maintaining currency, for example, through recent work in the industry as WSH occupational hygienist, manager, consultant or trainer, or professional development or active membership of a professional association in the relevant mentioned disciplines.

### ***WSQ Developer's Pedagogic Requirements***

- The developer must have at least 2 years of training experience in a workplace health related programme over the last 4 years. The developer must have been certified competent and awarded the Advanced Certificate in Training and Assessment (ACTA) or equivalent qualifications in training or Advanced Certificate in Learning and Performance (ACLP) or Diploma in Adult Continuing Education (DACE) or Diploma in Design and Development of Learning for Performance (DDDLP).
- With effect from 1 October 2015, a Diploma in Adult and Continuing Education (DACE) or Diploma in Design and Development of Learning for Performance (DDDLP) is required.

## 6.3 ASSESSOR REQUIREMENTS

This section articulates the AE requirements covering these components:

### ***Domain Knowledge Requirements***

The assessor must have a Degree or post graduate degree in Occupational Health / Industrial Hygiene such as MSc (Safety Health and Environmental Technology) or in related disciplines such as Engineering, Physics. Those qualified as a Certified Industrial Hygienist (CIH)/ Certified Occupational Hygienist (COH) or have attained

equivalent certifications will have an added advantage. Those who have successfully undertaken the Noise Monitoring Course or Industrial Noise Control Course by MOM approved training providers or the competency units on Monitor Noise and Vibration or Control Noise and Vibration under this framework will also have an added advantage.

### ***Domain Work Experience***

The assessor must have at least 5 years' WSH experience in Occupational Hygiene or Workplace Health. Experience as an Approved WSH Officer, Noise Monitoring Officer and Noise Control Officer is an added advantage. The assessor must also be able to provide evidence of maintaining currency, for example, through recent work in the industry as WSH occupational hygienist, manager, consultant or trainer, or professional development or active membership of a professional association in the relevant mentioned disciplines.

### ***WSQ Assessor's Pedagogic Requirements***

The assessor must have at least 2 years of training experience in a workplace health related programme over the last 4 years. The assessor must have been certified competent and awarded the Advanced Certificate in Training and Assessment (ACTA) or its equivalent.

## PART III

### CHAPTER 7: SUMMARY OF MANDATORY SECTIONS / INFORMATION

This chapter summarizes all the mandatory sections and required information, for easy reference. TPs / Adult Educators are expected to note the information indicated in the following Sections and to comply with the stated requirements, where appropriate:

| <u>Section</u> | <u>Title</u>                                                                            |
|----------------|-----------------------------------------------------------------------------------------|
| 2.3            | Recommended Learning Hours (RLH)                                                        |
| 3.1            | Content Coverage on Percentage of Items under Range of Application and Evidence Sources |
| 3.3            | Learning Strategies and Delivery Methods-Industry Requirements                          |
| 3.4            | Recommended Class Size and Trainer-Trainee Ratio                                        |
| 4.1            | Assessment Strategies - Industry Requirements                                           |
| 4.3            | Recommended Assessor to Candidate Ratio                                                 |
| 6.1            | Trainer Requirements                                                                    |
| 6.2            | Developer Requirements                                                                  |
| 6.3            | Assessor Requirements                                                                   |

## CHAPTER 8: RESOURCE INFORMATION

This chapter indicates the various literatures, journals, articles and researched information on the competency unit 'Monitor Noise and Vibration' and within the domain of Occupational Hygiene. The Harvard Referencing Guide is adopted. An illustration is given below:

### Reference

Plog, Barbara A , 2001. Fundamentals of Industrial Hygiene. 5th ed. USA: National Safety Council .

Industrial Noise Control: Fundamentals & Applications by Lewis H. Bell and Douglas H. Bell, 2nd edition 1994, Marcel Dekker. ISBN 0-8247-9028-6

Guidelines for Noise Control and Vibration by Ministry of Manpower, 2003

Guideline on Boundary Noise Limit for Centralised Air conditioning and ventilation systems in Non-Industrial Buildings by National environment Agency  
OHTA Approved Training Materials:

Red Magma. 2010. W503 Noise- Measurement and its Effects. [ONLINE] Available at: <http://www.ohlearning.com/training/training-materials/w503-noise--measurement-and-its-effects.aspx>. [Accessed 16 May 11].



## **PART IV**

## GLOSSARY OF TERMS

This section presents the list of terms and abbreviations used in this document as well as terms frequently encountered in the training and assessment.

**Assumed Attitudes, Skill and Knowledge:** Attitudes, skills and knowledge that the individual should preferably have to confidently undertake the unit and to be successful subsequently on the job

**Competency Category:** The broad area or function in which competency are mainly found. This information is use to provide additional contextual information on the background of the competency standard.

**Competency Unit:** Describes a particular work role, duty or function, which forms the smallest group of skills, knowledge and abilities that are to be recognised separately for certification.

**Certification Body:** A Certification Body (CB) is an organization accredited by the Singapore Accreditation Council (SAC) to assess and certify a WSH Training Provider's compliance to ISO 29993:2017 and MOM/WSH Council requirements.

**Credit Value:** A value assigned to the competency unit by WDA based upon the WSQ Credit System.

**CTAG:** Known as Curriculum Training and Assessment Guide (CTAG) is prepared by the Singapore Workforce Development Agency (WDA) to aid accredited Training Providers in the design and delivery of competency-based training programme for the respective competency units

**Directed learning:** The trainer/assessor-directed and purposefully instructed to trainees to complete as part of instructional design of a structured training & assessment programme.

**Evidence Sources:** Types of proof (product, process and knowledge evidences) and individual may produce to demonstrate competent performance.

**National Accreditation Recognition (NAR):** IOHA National Accreditation Recognition scheme. A system for ensuring comparability of professional levels of Occupational Hygiene qualifications

**Occupational Hygiene:** The practice of anticipation, recognition, evaluation and control of workplace health hazards and risks to prevent ill health and protect the wellbeing of persons at work. Such health hazards may include chemical, physical and biological; and those related to human factors. It is also commonly known as "Industrial Hygiene".

**Performance Statements:** The critical aspects of job performance, stating the evaluative criterion and expected outcome of tasks

**Range of Application:** Ranges, contexts or circumstances under which competent

performance may be demonstrated. It gives further references to specific areas or terms in the Performance Statements and Underpinning Knowledge.

**Recommended Learning Hour (RLH):** The total hours of competency-based training and assessment, taking into account the time required for directed learning activities. The RLH includes examples as follows:

- Facilitated training and assessment
- E-learning and assessment
- Structured On-Job-Training (OJT)
- Practicum or Project Work if any

**Underpinning Knowledge:** Knowledge that is acquired during the course of training and is essential to support competent performance. It may include principles, processes, methods, procedures, legislative / legal requirements.

#### **LIST OF ACRONYMS**

|      |                                                 |
|------|-------------------------------------------------|
| ATP  | Accredited Training Provider                    |
| ACTA | Advanced Certificate in Training and Assessment |
| ABIH | American Board of Industrial Hygiene            |
| BOHS | British Occupational Hygiene Society            |
| CB   | Certification Body                              |
| CIH  | Certified Industrial Hygienist                  |
| CS   | Competency Standard                             |
| CPE  | Certified Professional Ergonomist               |
| CTAG | Curriculum, Training and Assessment Guide       |
| GSDD | Generic Skills Development Division, WDA        |
| MOM  | Ministry of Manpower                            |
| NEA  | National Environment Agency                     |
| NAR  | National Accreditation and Recognition          |
| OH   | Occupational Hygiene                            |
| IOHA | International Occupational Hygiene Association  |
| OHTA | Occupational Hygiene Training Association       |
| PPE  | Personal protective equipment                   |
| PS   | Performance Statement                           |
| RLH  | Recommended Learning Hours                      |
| SDOH | Specialist Diploma in Occupational Hygiene      |
| UK   | Underpinning Knowledge                          |
| WDA  | Singapore Workforce Development Agency          |
| WH   | Workplace Health                                |
| WPLN | Workplace Literacy and Numeracy                 |
| WSH  | Workplace Safety and Health                     |
| WSQ  | Singapore Workforce Skills Qualifications       |

## VERSION CONTROL RECORD

| Version | Effective Date | Status / Changes           |
|---------|----------------|----------------------------|
| 1.0     | 1 Aug 2011     | -                          |
| 1.1     | 1 June 2012    | Changes to AE requirements |
| 2.0     | 21 Jan 2022    | Updates                    |
| 3.0     | 1 Sep 2023     | Updates                    |

## ANNEX A - INSTRUCTIONAL STRATEGY SELECTION CHART

**Instructional Strategy Selection Chart**

| <b>Instructional Strategy</b>                                                                                                                    | <b>Cognitive Domain</b><br>(Bloom, 1956) | <b>Affective Domain</b><br>(Krathwohl, Bloom, & Masia, 1973) | <b>Psychomotor Domain</b><br>(Simpson, 1972) |
|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|----------------------------------------------|
| Lecture, reading, audio/visual, demonstration, or guided observations, question and answer period                                                | 1. Knowledge                             | 1. Receiving phenomena                                       | 1. Perception<br>2. Set                      |
| Discussions, multimedia CBT, Socratic didactic method, reflection. Activities such as surveys, role playing, case studies, fishbowls, etc.       | 2. Comprehension<br>3. Application       | 2. Responding to phenomena                                   | 3. Guided response<br>4. Mechanism           |
| On-the-Job-Training (OJT), practice by doing (some direction or coaching is required), simulated job settings (to include CBT simulations)       | 4. Analysis                              | 3. Valuing                                                   | 5. Complex response                          |
| Use in real situations. Also may be trained by using several high level activities coupled with OJT.                                             | 5. Synthesis                             | 4. Organize values into priorities                           | 6. Adaptation                                |
| Normally developed on own (informal learning) through self-study or learning through mistakes, but mentoring and coaching can speed the process. | 6. Evaluation                            | 5. Internalizing values                                      | 7. Origination                               |

The chart does not cover all possibilities, but most activities should fit in. For example, self-study could fall under reading, audio visual, and/or activities, depending upon the type of program you design.

(extracted from <http://www.nwlink.com/~donclark/hrd/strategy.html>, accessed 19 Sep 2010)

## Annex B - OCCUPATIONAL HYGIENE PROFESSIONALS COMPETENCY MAP AND QUALIFICATIONS FRAMEWORK

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Key Purpose:</b><br>To drive improvements in workplace health (WH) management and raise WH standards through quality professional development of competent and motivated Occupational Hygiene (OH) Professionals to assist employers, occupiers and other stakeholders in the anticipation, recognition, evaluation and control of occupational hygiene risks at the workplace                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |
| <b>Entry Requirements</b><br><br><b>Literacy, Numeracy and Science Requirements</b><br><br>- ES WPLN Level 6, or<br><br>- Grade C6 in GCE 'O' Level for English and Mathematics and<br><br>- Grade C6 in GCE 'O' Level Science (Chemistry and Physics)<br><br><b>Assumed Attitude, Skills and Knowledge (ASK)</b><br><br><b>Working Experience</b><br><br>Recommended to have at least 2 years of working experience in any industry<br><br><b>Attitude</b><br><br>Self-directed, with an analytical mind and a meticulous approach to problem-solving. Passionate and committed to ethical practice in Occupational Hygiene. Receptive to change in the light of new evidence.<br><br><b>Key Industries</b><br><br>Chemical, Process, Pharmaceutical, Manufacturing, Healthcare, Marine, Construction, Education and Research & Development | <b>Competency Category</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Core Units</b>                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                             | <b>Elective Units</b>                                                                                                                                                                                                                         | <b>Qualification:</b><br><b>Specialist Diploma in Occupational Hygiene</b><br><br><b>Requirements:</b><br><br>8 Core Units<br>+ 2 Electives Units from Group 1 + 1 Elective Unit from Group 2<br><br><b>Occupational Title</b><br>OH Officer<br><br><b>Recommended Learning Hours (RLH)</b><br><br>Total: 308-344 hours |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Physical Hazards</b><br><br>Include hazards arising from heat, cold, radiation, noise and vibration at the workplace. These hazards can cause varying forms of strain and injury to the body.                                                                                                                                                                                                                                                                                                                                                                                                                                    | - Interpret Basic Workplace Health Practices (OH-GE-501C-1)                                                                                                                                                        | - Monitor Noise and Vibration (OH-PH-501C-1)<br><br>- Control Noise and Vibration (OH-PH-502C-1)                                                                                                                                                                                                                                            | <b>Elective Units (Group 1)</b><br><br>- Assess and Control Thermal Stressors (OH-PH-503E-1)<br><br>- Manage Radioactive Materials and Irradiating Apparatus (OH-PH-504E-1)<br><br>- Control Hazards in Handling Laser Devices (OH-PH-505E-1) |                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Chemical Hazards and Biological Hazards</b><br><br>Include hazards arising from exposure to chemical substances that may be hazardous to health of persons at work if inhaled, swallowed, or absorbed through the skin. These chemical substances may be present in the workplaces in solid, liquid or gaseous states.<br><br>Also include hazards arising from exposure to substances of biological origin at the workplace. The sources of these hazards include bacteria, viruses, insects, plants, birds, animals, and humans, and their products which may present a potential risk to the health and well-being of humans. | - Measure Exposure and Assess the Risks due to Hazardous Substances (OH-CB-501C-1)<br><br>- Evaluate Health Effects due to Hazardous Substances (OH-CB-502C-1)<br><br>- Manage Hazardous Substances (OH-CB-503C-1) | - Manage Asbestos and Other Fibres Risks (OH-CB-504E-1)<br><br>- Manage Skin Exposure Risks (OH-CB-505E-1)<br><br>- Assess Confined Space for Safe Entry and Work (OH-CB-506E-1)<br><br>- Manage Indoor Air Quality (OH-CB-507E-1)<br><br>- Evaluate and Control Biological Hazards (OH-CB-508E-1)                                          |                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Human Factors</b><br><br>Include hazards arising from human-machine interface, job design, psychological and psychosocial variables at the workplace. These can cause injury to the worker's musculoskeletal system and also lead to psychophysical stress.                                                                                                                                                                                                                                                                                                                                                                      | - Evaluate Ergonomics-Related Hazards (OH-HF-501C-1)                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Non-Technical Skills</b><br><br>These skills will enable learners to generate feasible, efficient and innovative solutions to solve work problems, enhance productivity and capitalise on new opportunities, as well as to work and communicate effectively in a diverse team environment and negotiate for mutually beneficial outcomes.                                                                                                                                                                                                                                                                                        | - Compose Technical Report (OH-NT-501C-1)                                                                                                                                                                          | <b>Elective Units (Group 2)</b><br><br>- Lead Workplace Communication and Engagement (ES-IP-401G-1)<br><br>- Solve Problem and Make Decision at Managerial Level (ES-ACE-402G-1)<br><br>- Apply Systems Thinking in Problem Solving and Decision Making (ES-ACE-501G-1)<br><br>- Plan, Prepare for and Deliver Presentations (WP-IC-505E-1) |                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |
| <b>Map Summary</b><br>Core Units: 8<br>Elective Units: 12<br>Total Units:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Legend</b><br><div><div>Core Units</div><div>Elective Units (Group 1)</div><div>Elective Units (Group 2)</div><div>Imported Units</div></div>                                                                   |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |

Ver 1.1 (updated June 2012)

## Occupational Roles/Competent Persons Regulated by MOM/NEA<sup>i</sup>

| Competency Units                                                  | RLH | Credit Value | Courses Accredited by MOM/NEA                    |                  | Occupational Roles/ Competent Persons                                  |
|-------------------------------------------------------------------|-----|--------------|--------------------------------------------------|------------------|------------------------------------------------------------------------|
|                                                                   |     |              | Unit Title                                       | Duration (hours) |                                                                        |
| <b>Core Units</b>                                                 |     |              |                                                  |                  |                                                                        |
| Interpret Basic Workplace Health Practices                        | 40  | 4            | -                                                | -                | -                                                                      |
| Monitor Noise and Vibration                                       | 24  | 2            | Noise Monitoring Course                          | 24               | Noise Monitoring Officer                                               |
| Control Noise and Vibration                                       | 16  | 2            | Industrial Noise Control Course                  | 20               | Noise Control Officer                                                  |
| Measure Exposure and Assess the Risks due to Hazardous Substances | 40  | 4            | Sampling & Monitoring of Airborne Contaminant    | 24               | Competent persons for sampling and monitoring of airborne contaminants |
| Evaluate Health Effects due to Hazardous Substances               | 40  | 4            | -                                                | -                | -                                                                      |
| Manage Hazardous Substances                                       | 40  | 4            | Management of Hazardous Substances               | 28               | HS licensee                                                            |
| Evaluate Ergonomics-Related Hazards                               | 40  | 4            | -                                                | -                | -                                                                      |
| Compose Technical Report                                          | 8   | 1            | -                                                | -                | -                                                                      |
| <b>Elective Units – Group 1</b>                                   |     |              |                                                  |                  |                                                                        |
| Assess and Control Thermal Stressors                              | 40  | 4            | -                                                | -                | -                                                                      |
| Manage Radioactive Materials and Irradiating Apparatus            | 30  | 3            | Basic Ionising Radiation Safety (General) Course | 16               | L5/L6 (non-NDT work) licensee                                          |
| Control Hazards in Handling Laser Devices                         | 20  | 2            | Basic Laser Radiation Safety Course              | 16               | N3 licensee                                                            |
| Manage Asbestos and Other Fibres Risks                            | 40  | 4            | Asbestos Removal and Management                  | 16               | -                                                                      |
| Manage Skin Exposure Risks                                        | 40  | 4            | -                                                | -                | -                                                                      |
| Assess Confined Space for Safe Entry and Work                     | 40  | 4            | Confined Space Safety Assessor Course            | 39               | Confined Space Safety Assessor                                         |
| Manage Indoor Air Quality                                         | 28  | 3            | Management of Indoor Air Quality                 | 20               | -                                                                      |
| Evaluate and Control Biological Hazards                           | 24  | 2            | -                                                | -                | -                                                                      |
| <b>Elective Units – Group 2</b>                                   |     |              |                                                  |                  |                                                                        |
| Lead Workplace Communication and Engagement                       | 16  | 2            | -                                                | -                | -                                                                      |
| Solve Problem and Make Decision at Managerial Level               | 16  | 2            | -                                                | -                | -                                                                      |
| Apply Systems Thinking in Problem Solving and Decision Making     | 16  | 2            | -                                                | -                | -                                                                      |
| Plan, Prepare for and Deliver Presentations                       | 16  | 2            | -                                                | -                | -                                                                      |

The OH Professionals WSQ Framework is largely referenced to the mandatory courses for competent persons accredited by Ministry of Manpower (MOM) and National Environment Agency (NEA)

RLH: Recommended Learning Hours: This refers to the total hours of competency-based training and assessment, taking into account the time required for directed learning activities

## ANNEX C - EVIDENCE SOURCES CHECKLIST

### Evidence Sources Checklist

|                                    |  |
|------------------------------------|--|
| Name of Candidate and Organisation |  |
| Name of Assessor                   |  |
| Date & Venue of Assessment         |  |

| Summary of evidence sources for the Competency Unit(s) |                  |                              |           |                     |                                          |              |                          |                  |              |
|--------------------------------------------------------|------------------|------------------------------|-----------|---------------------|------------------------------------------|--------------|--------------------------|------------------|--------------|
| Competency Unit(s):                                    |                  |                              |           |                     |                                          |              |                          |                  |              |
| Performance Statements (PS)                            | Evidence Sources |                              |           |                     |                                          |              |                          |                  |              |
|                                                        | Work Observation | Written activities / reports | Interview | Workplace Documents | 3 <sup>rd</sup> Party Report / Feed-back | Case Studies | Journal / Diary / Resume | Training Records | Testimonials |
| PS 1                                                   |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
| PS 2                                                   |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
| PS 3                                                   |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
| PS 4                                                   |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
| PS 5                                                   |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |
|                                                        |                  |                              |           |                     |                                          |              |                          |                  |              |



## ANNEX D - PERFORMANCE STATEMENT CHECKLIST

### Performance Statement Checklist

|                                    |  |
|------------------------------------|--|
| Name of Candidate and Organisation |  |
| Name of Assessor                   |  |
| Date & Venue of Assessment         |  |
| Competency Unit(s)                 |  |

| Assessment Strategy |                            | Performance Statement Assessed | Result |     | Remarks |
|---------------------|----------------------------|--------------------------------|--------|-----|---------|
|                     |                            |                                | C      | NYC |         |
| 1.                  | Work Observation           |                                |        |     |         |
|                     |                            |                                |        |     |         |
|                     |                            |                                |        |     |         |
|                     |                            |                                |        |     |         |
|                     |                            |                                |        |     |         |
| 2.                  | Written Test               |                                |        |     |         |
|                     |                            |                                |        |     |         |
|                     |                            |                                |        |     |         |
| 3.                  | Written Management reports |                                |        |     |         |
|                     |                            |                                |        |     |         |
|                     |                            |                                |        |     |         |
| 4.                  | Presentation               |                                |        |     |         |
|                     |                            |                                |        |     |         |
|                     |                            |                                |        |     |         |
|                     |                            |                                |        |     |         |
| 5.                  | Others                     |                                |        |     |         |
|                     |                            |                                |        |     |         |

## ANNEX E - EVIDENCE PLAN CHECKLIST

### Evidence Plan Checklist

| Evidence Plan                                          |                          |                          |
|--------------------------------------------------------|--------------------------|--------------------------|
| <b>Name of candidate &amp; Organisation</b>            |                          |                          |
| <b>Name of assessor</b>                                |                          |                          |
| <b>Competency Unit(s)</b>                              |                          |                          |
| <b>Sources of Evidence</b>                             | <b>Expected Evidence</b> | <b>Received</b>          |
| Research Project                                       |                          | <input type="checkbox"/> |
| Work Observation                                       |                          | <input type="checkbox"/> |
| Written Activities /                                   |                          | <input type="checkbox"/> |
| Personal Statement/Resume                              |                          | <input type="checkbox"/> |
| Workplace Documents (verified)                         |                          | <input type="checkbox"/> |
| Training Records                                       |                          | <input type="checkbox"/> |
| Case Studies                                           |                          | <input type="checkbox"/> |
| Projects                                               |                          | <input type="checkbox"/> |
| Journal/Diary                                          |                          | <input type="checkbox"/> |
| Testimonials                                           |                          | <input type="checkbox"/> |
| <b>Skills development activities</b>                   |                          |                          |
|                                                        |                          |                          |
| <b>Arrangements</b>                                    |                          |                          |
|                                                        |                          |                          |
| <b>Agreement</b>                                       |                          |                          |
| <input type="checkbox"/> Evidence to be submitted by:  |                          |                          |
| <input type="checkbox"/> Interview date:               |                          |                          |
| <input type="checkbox"/> I agree to the evidence plan: |                          |                          |
| <input type="checkbox"/> Candidate                     | _____ (name)             | _____ (signature)        |
| <input type="checkbox"/> Assessor                      | _____ (name)             | _____ (signature)        |

## ANNEX F - WRITTEN ASSESSMENT CHECKLIST

### Written Assessment Checklist

| Record of Interview Questions                                                                                                                    |  |                                                    |         |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------|---------|
| Name of Candidate & Organisation                                                                                                                 |  |                                                    |         |
| Name of assessor                                                                                                                                 |  |                                                    |         |
| Date and Venue of Assessment                                                                                                                     |  |                                                    |         |
| Competency Unit(s)                                                                                                                               |  |                                                    |         |
| Questions                                                                                                                                        |  | <b>Satisfactory Response</b><br><b>Yes      No</b> | Remarks |
| Q1.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q2.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q3.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q4.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q5.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q6.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q7.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q8.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q9.                                                                                                                                              |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| Q10.                                                                                                                                             |  | <input type="checkbox"/> <input type="checkbox"/>  |         |
| The candidate's underpinning knowledge and understanding was:<br>Satisfactory <input type="checkbox"/> Not satisfactory <input type="checkbox"/> |  |                                                    |         |
| Signed by the candidate: _____ Date: _____                                                                                                       |  |                                                    |         |
| Signed by the assessor: _____ Date: _____                                                                                                        |  |                                                    |         |
| Feedback to candidate:                                                                                                                           |  |                                                    |         |
|                                                                                                                                                  |  |                                                    |         |
|                                                                                                                                                  |  |                                                    |         |
|                                                                                                                                                  |  |                                                    |         |
|                                                                                                                                                  |  |                                                    |         |
|                                                                                                                                                  |  |                                                    |         |

## ANNEX G - SUGGESTED FORMAT FOR RECORDING AND REPORTING ASSESSMENT

### Suggested Format for Recording and Reporting Assessment

|                                  |  |
|----------------------------------|--|
| Competency Unit(s)               |  |
| Name of Candidate & Organisation |  |
| Name of assessor                 |  |
| Date and Venue of Assessment     |  |

| Assessment Criteria For...               | Competent | Not Yet Competent |
|------------------------------------------|-----------|-------------------|
| {Performance Statement 1}                |           |                   |
| {Performance Statement 2}                |           |                   |
| {Performance Statement 3}                |           |                   |
| {Underpinning knowledge 1}               |           |                   |
| {Underpinning knowledge 2}               |           |                   |
| <b>Feedback to participant:</b>          |           |                   |
| Assessor's Signature : _____ Date: _____ |           |                   |

#### Re-assessment information

| Date of re-assessment _____<br>Item/s to be re-assessed | Competent | Not Yet Competent |
|---------------------------------------------------------|-----------|-------------------|
|                                                         |           |                   |
|                                                         |           |                   |
|                                                         |           |                   |
|                                                         |           |                   |
|                                                         |           |                   |
| Assessor's Signature : _____ Date: _____                |           |                   |

---

## ANNEX H - FORMAT OF SAFETY PASS

### Format of Safety Pass

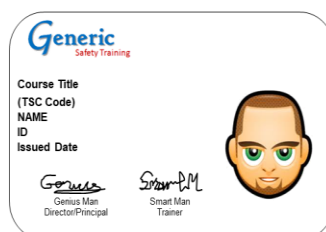
Training Providers are to issue a Safety Pass to workers who have successfully completed and passed the course. Issue of Certificate of Course Completion is Optional.

Do note that the reference below is intended only to present the format of the pass and should not be used as an actual template for direct printing.

Guidelines for the credit card size pass for MOM WSH courses by TPs

3  $\frac{3}{8}$  × 2  $\frac{1}{8}$  inch (85.60 × 53.98 mm)

Front view



Font Type: Arial  
Font size (Course title): Recommended 8pt or larger  
Font size (Others): Recommended 6pt or larger  
Photo size: 3.1cm X 2.4cm

- Pass should contain no less than the information depicted in the guide
- TP may use their own reference format for serial number
- Course Title should be the title as indicated in the WSQ Framework(CS/CTAG). The Technical Skills and Competency (TSC) Code and Title, should also be printed in parentheses ( ) aligned to the title reflected in either the Competency Standards (CS) or TSC. However, it is not required to print the TSC Course name if it is the same as the SC/CTAG title
- ID should be FIN, NRIC Passport Number or any unique official identifier
- Course Venue should reflect address of training centre (not business office, etc) which pass holder attended
- Trainer signature should reflect the trainer that conducted the course

1. Use of card is governed by terms and conditions of < Name of Training Provider>
2. < Name of Training Providers> is a SkillsFuture Singapore Agency's Training Provider at the date of issuance of the pass
3. This card is not transferrable
4. The course is conducted @ < Course venue>
5. Holder of the card has been certified competent in the <Course Title> on the issued date as indicated in front.
6. This card will expire <xx> years from the date of issue.
7. This card is the property of < Name of Training Provider> and must be returned on request.
8. Card shall be retained if it has been tampered with, misused or replaced.
9. This card is issued by < Name of Training Provider>. If found, please return to < Name of Training Provider>. at <Address of < Name of Training Provider>..
10. For enquiries, please contact < Name of Training Provider> > at <hotline>

Font size : Recommended 6pt or larger

Training Providers are to issue a Safety Pass to workers who have successfully completed and passed the course. Issue of Certificate of Course Completion is Optional.

37

- 
- Certificate should contain no less than the information depicted in the guide
  - TP may use their own reference format for serial number
  - ID should be FIN, NRIC Passport Number or any unique official identifier
  - For TP Course, Course Title should be the corresponding title as indicated in WSQ System Framework(CS/CTAG). The Technical Skills and Competency (TSC) Code and Title should be printed in parentheses ( ) aligned to the title reflected in either the Competency Standards (CS) or TSC. However, it is not required to print the TSC course name if it is the same as the CS/CTAG Title
  - Course Venue should reflect address of training centre (not business office, etc) which pass holder attended
  - Certificate should indicate that <<Name of TP>> is a Training Provider (TP) approved by SkillsFuture Singapore for <<Course Title of corresponding course>>
  - Trainer signature should reflect the trainer that conducted the course
  - Management of safety certificate should be in accordance to the requirements under TP scheme