

Specification of Competency Standards
for the Testing, Inspection and Certification Industry
Unit of Competency

Functional Area - Testing Operations

Title	Perform on-site indoor air quality measurement and analysis
Code	105789L4
Range	This unit of competency (UoC) covers the abilities to carry out indoor air quality analysis independently by applying the knowledge of indoor air quality (IAQ) objectives and measuring analytes of IAQ parameters in the premises under investigation and in testing laboratories.
Level	4
Credit	6 (For Reference Only)
Competency	<p>Performance Requirements</p> <p>1. Possess knowledge of indoor air quality (IAQ) objectives, physical / chemical natures of indoor air-borne particles and their measurement principles</p> <ul style="list-style-type: none"> • Identify the IAQ objectives for offices and public places and general guidelines for setting indoor sampling and monitoring locations. • Specify the sampling requirements for indoor air quality measurements. • Identify relevant types of air handling unit (AHU) system and possess knowledge of air-conditioning engineering. • Describe the assessment methods for IAQ including real-time measurements and integrated sampling with subsequent laboratory analysis. • Apply the measurement principles of individual IAQ parameters. • Describe physical properties (e.g. sizes) of various air-borne particles including respirable suspended particulates (RSPs). • Identify the chemical nature and properties (e.g. density, water solubility) of various air-borne particles including: <ul style="list-style-type: none"> ○ total volatile organic compounds (TVOC), ○ formaldehyde, ○ carbon dioxide (CO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), ○ radon, ○ other air-borne particles as required by international and/or national standards. • Describe the working principles and operation of equipment used for indoor air quality measurements, e.g.: <ul style="list-style-type: none"> ○ psychrometer / hygrometer / anemometer for measurement of temperature, relative humidity and air movement, ○ real-time monitors / analysers for CO₂, CO, NO₂, O₃ and radon, ○ microbial air samplers, ○ air sampler for RSPs, ○ active or passive sampling followed by HPLC analysis for formaldehyde, ○ air sampling (by passivated canisters or solid sorbents) followed by mass selective detector (MSD) for TVOC, ○ active or passive sampling followed by FIA analysis for NO₂, ○ other equipment as required by international and/or national standards. • Apply the concepts of uncertainty and equipment calibration IAQ measurements. <p>2. Perform indoor air quality measurement and analysis</p> <ul style="list-style-type: none"> • Determine the number of sampling points and identify the monitoring sites within the premises under investigation according to the guidelines. • Apply appropriate test methods and measuring equipment in compliance with IAQ measurement requirements.

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	<ul style="list-style-type: none"> • Carry out routine performance and calibration checks of equipment according to manufacturer’s instruction and/or relevant standard to ensure they are ready for IAQ measurements. • Operate appropriate air sampling equipment and real-time monitors / analysers to carry out indoor air quality analysis independently in each monitoring site within the premises. • Monitor all the IAQ parameters (except air movement) outdoors in close proximity to the fresh air intakes of the investigation areas for evaluating the indoor air measurement data. • Record accurate and reliable IAQ measurement data by conducting sufficient measurements to determine the indoor air quality of the premises. <p>3.Exhibit professionalism</p> <ul style="list-style-type: none"> • Ensure integrity and confidentiality of measurement data and information by observing the relevant code of conduct.
Assessment Criteria	<p>The integrated outcome requirements of this UoC are the abilities to:</p> <ul style="list-style-type: none"> • determine the number and locations of monitoring sites within the premises under investigation according to the general guidelines, • carry out indoor air quality measurement and analysis independently by applying appropriate measuring equipment and air sampling followed by analysis in a testing laboratory, • record accurate and reliable measurement data to determine the indoor air quality in compliance with current IAQ standards and limits.
Remark	