

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

Functional Area - Testing Operations

Title	Perform environmental testing (microbiological)
Code	105814L4
Range	This unit of competency (UoC) covers the abilities to carry out microbiological tests on environmental samples independently and record accurate test data to evaluate the compliance of environmental samples against relevant regulatory limits.
Level	4
Credit	4 (For Reference Only)
Competency	<p>Performance Requirements</p> <p>1. Possess knowledge of microbiological parameters for environmental testing</p> <ul style="list-style-type: none"> <li>• Employ the principles and concepts underpinning microbiological tests for environmental samples, e.g.: <ul style="list-style-type: none"> <li>○ water, wastewater and cooling tower water: E. coli count, heterotrophic plate count, total coliform count, faecal coliform count, Legionellae bacteria count,</li> <li>○ air: airborne bacteria count.</li> </ul> </li> <li>• Identify test methods/standards for carrying out microbiological tests on different environmental samples.</li> <li>• Describe the working principles and operation of equipment and apparatus used for microbiological tests on environmental samples.</li> <li>• Describe the sampling requirements and sample preparation techniques with appropriate culture media and reagents for environmental testing.</li> <li>• Specify the requirements of microbiological tests for environmental samples as stipulated in test standards/methods, regulatory limits and guidelines.</li> </ul> <p>2. Perform microbiological tests on environmental samples</p> <ul style="list-style-type: none"> <li>• Prepare a representative test portion of the selected environmental sample to reduce the sample complexity and eliminate matrix effects.</li> <li>• Apply appropriate test methods/standards, equipment, culture media and reagents for microbiological tests on selected environmental sample.</li> <li>• Apply appropriate conditions to testing equipment.</li> <li>• Carry out routine performance check of equipment according to manufacturer's instruction and/or relevant standard.</li> <li>• Set up and optimise the equipment for microbiological tests on the environmental sample.</li> <li>• Carry out appropriate microbiological tests on selected environmental sample and reference culture independently according to the requirements of test methods/standards.</li> <li>• Record accurate and reliable test data and/or observations for evaluating the compliance of microbiological parameters in the environmental sample.</li> </ul> <p>3. Exhibit professionalism</p> <ul style="list-style-type: none"> <li>• Ensure microbiological tests are carried out in a safe and clean environment.</li> <li>• Ensure integrity and confidentiality of laboratory data and information by observing the code of conduct of the laboratory.</li> </ul>
Assessment Criteria	<p>The integrated outcome requirements of this UoC are the abilities to:</p> <ul style="list-style-type: none"> <li>• carry out microbiological tests on selected environmental sample independently by applying appropriate microbiological techniques and equipment according to the requirements of relevant test methods/standards,</li> </ul>

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

Functional Area - Testing Operations

	<ul style="list-style-type: none"><li>• record and document accurate test data and/or observations by verifying quality control check data,</li><li>• conclude the compliance of microbiological contaminants in selected environmental sample against the relevant specifications of regulatory limits.</li></ul>
Remark	Practitioners are required to have prior knowledge of the following UoCs: <ul style="list-style-type: none"><li>• Perform microbiological tests</li></ul>