



Australian Government

Assessment Requirements for MSS024010

Perform environmental biological techniques

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSS024010A Perform environmental biological techniques

Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- performing each of the following environmental biological techniques on at least two (2) occasions:
 - collecting biological samples in accordance with given instructions/procedures
 - using aseptic techniques to obtain/manipulate samples and prepare media
 - using standard techniques to grow cultures of environmentally significant microorganisms
 - setting up, cleaning and optimising the performance of light microscopes
 - conducting tests and microscopic examination of samples to identify and enumerate environmentally significant (micro)organisms and important components of plant/animal tissues
- interpreting instructions, manuals and applying workplace procedures
- logging, tracking and reporting biological samples from collection/receipt through to completion of a procedure
- identifying artefacts or image aberrations attributable to misalignment or obstruction of light paths or condensers used in bright field, dark ground, and phase contrast microscopy, or with other steps in microscopic examinations
- interpreting, recording and storing test results, including performing simple calculations/estimations
- preparing documentation that is concise, accurate and meets workplace requirements
- using personal protective clothing, safety equipment and procedures to prevent contaminating oneself, other people, the work area, equipment or the samples under test
- demonstrating safe sterilisation, disinfection, cleaning, spillage, decontamination and waste disposal techniques
- cleaning and storing laboratory equipment
- seeking advice when issues/problems are beyond scope of competence/responsibility.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- principles and terminology used in elementary microbiological testing, organism classification, microscopic examination and cell structure
- common sampling techniques for air, water, soil in a range of terrestrial and aquatic habitats
- relationship between sterile practices, hygiene procedures and the ability to obtain growth of microorganisms free of contamination
- importance of pure culture techniques and aseptic transfer to successful microbiological investigation and correct interpretation of results
- growth requirements of microorganism cultures (e.g. bacteria, fungi and yeasts)
- principles of infection control related to work health and safety (WHS), sampling and transfer of materials in microbiological investigations
- disinfection and sterilisation procedures used in the collection, processing and safe disposal of samples and materials
- cleaning and sanitising requirements of equipment and work area and effects of physical and chemical agents on microbial growth and death
- parts and functions of common microscopes, set-up procedures and common causes/solutions for sub-optimal performance (e.g. fringing)
- cell theory, basic structure and function of cells and organelles
- basic classes and classification of organisms
- cell physiology and processes, such as simple and facilitated diffusion, plasmolysis, osmosis, tonicity, active transport, energy production, mitosis, motility, phagocytosis and pinocytosis
- purposes and mechanisms of staining (e.g. Gram +ve and -ve)
- workplace and/or legal traceability requirements
- relevant hazards, controls and safety procedures – especially those associated with handling microorganisms.

Assessment Conditions

- Judgement of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.
- This unit of competency is to be assessed in the workplace, or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process such as workbooks, written assessments or interviews (provided a record is kept in each case).
- Holistic assessment methods include:
 - inspection of media/samples/cultures and review of data, results and records prepared by the candidate
 - feedback from supervisors that the candidate can safely perform the environmental biological techniques listed above and provide reliable test results within the agreed timeframe
 - oral and/or written questions to assess the candidate's knowledge sampling, safe handling, culturing, testing and examination of microorganisms, and their identification
 - observation of the candidate preparing/handling media/samples/cultures; optimising a light microscope for identified samples; classifying organisms and/or performing basic environmental microbiological testing.
- Access is required to all instruments, equipment, materials, workplace documentation, procedures, and specifications associated with this unit including, but not limited to:
 - standard microbiology laboratory with relevant equipment, materials and reagents
 - relevant sampling/testing equipment and materials
 - workplace procedures, sampling/test methods, equipment manuals, safety procedures
 - under duty of care requirements, off-the-job training providers will only use biological samples and organisms of a risk category that is compatible with their laboratory as defined in *AS/NZS 2243.3 Safety in laboratories - Microbiological aspects and containment facilities*.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment OR

- having consulted with an organisation providing environmental monitoring, management or technology related services about performing the competency being assessed within the last twelve months.

Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>