



Australian Government

MSL973004 Perform aseptic techniques

Release: 1

MSL973004 Perform aseptic techniques

Modification History

Release 1. Supersedes and is equivalent to MSL973004A Perform aseptic techniques

Application

This unit of competency covers the ability to perform aseptic techniques to maintain the integrity of both the sample source and the sample. It applies to sampling techniques in tissue culture and to generic microbiological procedures.

This unit of competency is applicable to laboratory assistants and technicians working in the field or laboratory in the biomedical, biological, food processing and environmental industry sectors.

While no specific licensing or certification requirements apply to this unit at the time of publication, laboratory operations are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked

Pre-requisite Unit

Nil

Competency Field

Testing

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Prepare for aseptic sampling or transfer	1.1	Ensure that any sampling procedure conforms with the requirements of the sampling plan
		1.2	Use specified personal protective equipment (PPE)
		1.3	Prepare the work area for safe and effective sample transfer
		1.4	Select equipment and materials specified by the procedure
		1.5	Organise equipment to minimise contamination during

			manipulations
		1.6	Label containers for clear identification
		1.7	Record details in relevant log or database
2	Transfer materials aseptically	2.1	Protect the integrity of the sample source by sterilising the sampling site and the mouth of transport or culture vessel
		2.2	Sterilise inoculating loops and/or pipette where used to prevent contamination
		2.3	Perform transfer while minimising opportunities for contamination and cross-infection
		2.4	After transfer, and before sealing the transport or culture vessel, flame the vessel mouth to maintain sterility
		2.5	Re-sterilise inoculating loops, minimising the generation of aerosols
		2.6	Perform quality control checks as required
		2.7	Label transport or culture vessels for clear identification
3	Maintain work area and equipment to prevent cross-infection and contamination	3.1	Place disposable and reusable items into relevant receptacles
		3.2	Clean and disinfect work area and equipment after use
		3.3	Transport disposable and reusable contaminated materials to relevant areas for disinfection, sterilisation and cleaning or disposal

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Standards, codes, procedures and/or workplace requirements

Standards, codes, procedures and/or workplace requirements include the latest version of one or more of:

- Australian and international standards covering the requirements for the competence of testing and calibration laboratories, laboratory safety, quality management and environmental management
- Australian standards covering the requirements for occupational personal protection; cleaning, disinfecting and sterilising reusable medical and surgical instruments and equipment; and maintenance of associated environments in health care facilities
- national work health and safety (WHS) standards and codes of practice, national environmental protection measures, and national measurement regulations and guidelines
- specific codes, guidelines and procedures, such as National Association of Testing Authorities (NATA) accreditation requirements, principles of good laboratory practice (GLP), Australia New Zealand Food Standards (ANZFS) Code, Australian code of good manufacturing practice for medicinal products (GMP), Australian Dangerous Goods Code and labelling of workplace substances
- workplace documents, such as standard operating procedures (SOPs); quality and equipment manuals; calibration and maintenance schedules; material safety data sheets (MSDS); safety procedures; material, client and product specifications; production and laboratory schedules; workplace recording and reporting procedures; and waste minimisation and safe disposal procedures
- workplace procedures and standard methods for preparing culture media, and operation and maintenance manuals for automated media preparation equipment

PPE

PPE includes, but is not limited to, one or more of:

- gloves, safety glasses, goggles, face guards, coveralls, gowns, body suits and respirators
- biohazard containers and laminar flow cabinets

Sample pot and transfer media and the subculturing and/or passaging of culture

Sample pot and transfer media and the subculturing and/or passaging of culture to include, but are not limited to, one or more of:

- sterile broth
- media for isolation of colony
- tissue culture media
- media for continuous culture systems

Samples

Samples include, but are not limited to, one or more of:

- body fluids and liquids
- water and soil
- sterile pharmaceuticals
- yeasts and moulds
- milk and yoghurt
- swabs and smears
- propagation tissue
- plant material
- fermented foods and beverages

Sterilisation techniques

Sterilisation techniques include, but are not limited to, one or more of:

- flaming
- high temperature, high pressure steam, boiling and autoclaving
- steam and membrane filtration
- microwave, radiation, gas and/or chemical treatments

WHS and environmental management requirements

WHS and environmental management requirements include:

- complying with WHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of samples
- accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health, where relevant

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSL973004A Perform aseptic techniques

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>

Assessment Requirements for MSL973004 Perform aseptic techniques

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Performance Evidence

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

- safely performing aseptic techniques that maintain the integrity of both the sample source and the sample on at least three (3) occasions using different samples
- preventing cross-contamination of sample source and sample
- manipulating laboratory equipment and glassware to prevent contamination of culture medium during transfer
- cleaning and disinfecting work surfaces and equipment to prevent cross-contamination of work area, personnel and environment
- performing quality control checks, including streaking out of cultures to a single colony and lawn cultures
- labelling and storing culture media according to workplace procedures
- recognising and reporting non-compliance, anomalies or out-of-specification results
- accurately recording data, labelling samples and completing workplace documentation
- consistently using appropriate personal protective equipment (PPE) and workplace procedures for aseptic transfer
- following workplace procedures for the sorting, collecting, treating, recycling and/or disposing of waste.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- growth requirements of microorganisms (bacteria, fungi, protozoans, viruses and multi-cellular parasites) and tissue in terms of their laboratory culture
- relationship between sterile practices, hygiene procedures and the ability to obtain growth free of contamination
- importance of pure culture techniques and aseptic transfer to the successful microbiological investigation and correct interpretation of laboratory results
- cleaning and sanitising requirements of equipment and work area, and effects of physical and chemical agents on microbial growth and death
- disinfection and sterilisation procedures used in the collection, processing and safe disposal of samples and materials
- principles of infection control related to work health and safety (WHS), and sampling and transfer of materials in microbiological investigations

- relevant hazards, such as accessing the sample from difficult or dangerous areas; injuries from sharps, burners, molten agar, dry ice and liquid nitrogen vapour; ultraviolet (UV) light sources; and exposure to hazardous substances and/or infectious agents
- relevant WHS and environment requirements.

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).
- This unit of competency may be assessed with:
 - MSL943002 Participate in laboratory or field workplace safety
 - MSL973003 Prepare culture media
- Holistic assessment methods include:
 - observation of the candidate aseptically transferring a range of samples
 - review of quality assurance results and examination of samples transferred by the candidate
 - written and/or oral questioning about aseptic transfer techniques, typical quality problems, common hazards and safe work practices.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
 - a standard laboratory
 - appropriate equipment, such as:
 - transfer equipment, such as inoculating loops, pipettes (quantitative and qualitative), flasks, tubes and spatulas
 - Bunsen burners and bench incinerators
 - anaerobic jars
 - incubators, water baths, refrigerators, freezers and dry ice and liquid nitrogen cylinders, if required
 - laminar flow units and biohazard cabinets
 - autoclave or pressure cooker
 - swabs

- a continuous culture system
- appropriate materials, such as:
 - solid and/or liquid media
 - supplied media, such as media manufactured in the workplace or raw material supplies for media
 - disinfecting and sterilising agents and materials, such as methylated spirits, ethanol and ether
 - disposable equipment and clothing
 - tissue culture media
 - growth media in broths, plates, deeps or slopes
 - receptacles for safe disposal of wastes and for processing of reusable materials
 - bar coding material and labels
- workplace schedules, procedures and standard methods, MSDS and documented safe work practices.
- 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 competence 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 a laboratory about performing the competency being assessed within the last twelve months.

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