Australian Government

Department of Education, Employment and Workplace Relations

MSL933004A Perform calibration checks on equipment and assist with its maintenance

Release: 1

MSL933004A Perform calibration checks on equipment and assist with its maintenance

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to perform setup, pre-use and in-house calibration checks on equipment and assist with its maintenance.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory assistants working in all industry sectors. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Perform setup and pre-use checks of laboratory equipment	1.1. Perform laboratory equipment setup and pre-use checks in accordance with enterprise procedures 1.2. Perform safety checks in accordance with relevant enterprise and instrumental procedures 1.3. Identify faulty or unsafe components and equipment and report to appropriate personnel 1.4. Complete instrument log books/records to meet enterprise requirements
2. Perform calibration checks	2.1. Start up equipment according to operating procedures 2.2. Use specified standards for calibration check 2.3. Check equipment as per calibration procedures and schedules 2.4. Record all calibration data accurately and legibly 2.5. Compare data with specifications and/or previous records to identify non-compliant equipment 2.6. Quarantine out of calibration equipment
3. Assist with equipment maintenance	3.1. Ensure all equipment work areas are clean during and after equipment use 3.2. Perform basic maintenance in accordance with enterprise procedures 3.3. Clean and store equipment according to enterprise and/or manufacturer's specifications/procedures 3.4. Identify and replace, repair or dispose of damaged/worn equipment as appropriate
4. Maintain records	4.1. Record and report information on unsafe or faulty equipment according to enterprise procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- performing setup, pre-use checks and shutdown procedures
- performing calibration checks of basic equipment using standard procedures
- obtaining readings of the required accuracy and precision
- identifying non-compliant equipment from specifications and/or previous checks
- recognising non-standard behaviour of instruments
- assisting with maintaining equipment in working order by performing basic maintenance tasks
- following all relevant occupational health and safety (OHS) requirements
- following enterprise recording and reporting procedures

Required knowledge

Required knowledge includes:

- operational principles and methods for equipment use
- basic sources of error in equipment operation and their control
- role and importance of correct calibration
- basic equipment maintenance procedures
- enterprise communication and reporting procedures
- relevant OHS and environment requirements

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • perform setup pre-use checks and shutdown procedures • perform calibration checks of basic equipment using standard procedures • obtain readings of the required accuracy and precision • recognise non-standard behaviour of instruments • assist with maintaining equipment in working order by performing basic maintenance tasks • follow all relevant OHS requirements • follow enterprise recording and reporting procedures.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL973001A Perform basic tests*. Resources may include: • standard laboratory equipped with appropriate equipment and reference materials • enterprise procedures and standard methods, equipment manuals • calibration check standards and procedures • maintenance procedures.
Method of assessment	The following assessment methods are suggested: • review of the quality of test data/results achieved by the candidate over time • inspection of records and workplace documentation completed by the candidate • feedback from peers and supervisors • observation of the candidate performing calibration checks and basic maintenance tasks In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those

EVIDENCE GUIDE	
	aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Manufacturing and construction materials testing** Laboratory assistants perform calibration checks and operate a range of laboratory equipment to ensure the quality of products. For example, the labelling on fertilisers specifies the total percentage of nitrogen [N or N(t)], the total percentage of phosphorus [P or P(t)] in all forms and the total percentage of potassium [K]. A 5-10-5 fertiliser contains 5% N, 10% P and 5% K. During the manufacture of fertiliser, an assistant in a quality control laboratory measures the concentration of nitrogen, phosphorus and potassium using standard analytical methods to ensure that the final products are within prescribed specifications. The assistant must pay particular attention to the equipment calibration check. If the equipment is out of calibration no amount of testing skill will result in accurate results. Selling out of specification fertiliser could result in a product recall or claims from users against the manufacturer. **Biomedical and environmental services** Laboratory assistants are quite often involved in routine collections and culturing of cells. Bacterial cells are often cultured and grown to large populations in order to provide material from which to extract biological materials. A quick method of determining when the cell growth has yielded enough cells is to determine the absorbance of the cell culture by measuring absorbance at 600 nm. An absorbance of 1 to 1.5 will give a good cell harvest. This method relies on the assistant being able to perform calibration checks on an ultraviolet-

EVIDENCE GUIDE	
	visible (UV-VIS) spectrometer. **Food and beverage processing** A laboratory assistant in the quality control laboratory of a fruit canning company is required to perform calibration checks and maintain and operate a range of equipment, including a pH meter. Canned pears, for example, are routinely checked for pH to ensure safe heat processing. While checking the calibration of the pH meter with the standard buffer solutions, the laboratory assistant found that stable pH readings could not be obtained. On closer inspection, it was found that the pH probe was damaged. This was reported to the supervisor. The probe was replaced and the meter was re-checked for calibration in readiness for routine testing. **Construction Materials Testing** A laboratory assistant has been allocated the task of performing in-house calibration checks on the laboratory's equipment. He/she has previously prepared a wall chart for the year that shows when the required calibration checks fall due in accordance with the NATA Field Application Document (FAD) for construction materials testing. The assistant consults the wall chart and notes that this month's calibration checks include checking the: • ice points of the liquid-in-glass thermometers • working sieves against the reference set • compaction hammers for compliance with specifications • repeatability of the balances. A full calibration of one of the laboratory's nuclear density gauges is also required. He/she then telephones the local calibration authority to book the nuclear gauge in for calibration and prepares to perform the other in-house checks.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to Industry codes of practice and Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards such as:
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	• Australian code of good manufacturing practice for medicinal products (GMP)
	• National Association of Testing Authorities (NATA) Field Application Documents (FADs)
	• calibration check and maintenance schedules
	• enterprise recording and reporting procedures
	• equipment manuals
	• equipment start up, operation and shutdown procedures
	• material safety data sheets (MSDS)
	• material, production and product specifications
	• national measurement regulations and guidelines
	• OHS national standards and codes of practice
	• principles of good laboratory practice (GLP)
	• production and laboratory schedules
	• quality manuals
	• standard operating procedures (SOPs)

Typical equipment and instruments	Typical equipment and instruments may include: • balances, pipettes, burettes and volumetric glassware

RANGE STATEMENT	
	• colorimeters/spectrometers and polarimeters • compaction rammers and soil classification equipment • conductivity meters and pH meters • disintegration apparatus, thermometers, incubators and water baths • instrument chart recorders, penetrometers, force measuring equipment and tensiometer • melting point apparatus, viscometers and hardness testing equipment • mixing and separating equipment such as centrifuges, rifflers and splitters, and mixers • noise meters and blasting meters • optical microscopes
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Maintenance

Competency field

Competency field	

Co-requisite units

Co-requisite units		