



Australian Government

MSS025010 Assist with odour source assessment

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSS025010A Assist with odour source assessment

Application

This unit of competency covers the ability to assist air quality scientists and engineers with assessing odour emissions from sites and the effectiveness of odour abatement systems. Personnel use site sampling and monitoring plans, workplace procedures and/or standardised methods to collect odour samples and conduct olfactometry measurements using panellists in the laboratory.

This unit of competency is applicable to environmental technicians working in a range of industry sectors, such as environmental services (e.g. sampling and monitoring of air, odours and air quality consultancy); environmental compliance, auditing and inspection; chemical, food and by-product process manufacturing; solid waste management; water treatment and wastewater management; agricultural/livestock activities; landfill operations and rendering operations.

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

Pre-requisite Unit

Nil

Competency Field

Monitoring

Unit Sector

Environmental

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1 **Clarify site monitoring requirements with supervisor**

1.1 Examine available information about the site's history, current activities/processes, previous odour assessments, topography, prevalent meteorological conditions and complaint records.

- 1.2 Visit the site with supervisor to clarify issues with the proponent and community representatives, as appropriate.
 - 1.3 Collect and review information about site process operations and conditions.
 - 1.4 Identify potential odour sources at the site and current controls.
 - 1.5 Review relevant legislative, regulatory and licensing requirements or workplace procedures/test methods.
- 2 **Prepare for source monitoring**
 - 2.1 Select, or design, appropriate sampling and monitoring strategies in consultation with supervisor.
 - 2.2 Confirm details of relevant odour sampling/monitoring plans, need for site permits and access to the site.
 - 2.3 Confirm data format and quality requirements.
 - 2.4 Review relevant standards and/or specified workplace procedures/test methods.
 - 2.5 Assemble required sampling and monitoring equipment and check that all reusable items are clean, fit for purpose and calibrated correctly.
 - 2.6 Ensure that all required supplies and equipment are transported safely to and from the site.
- 3 **Prepare standardised or in-house odour panellists**
 - 3.1 Confirm the specifications for panellists with supervisor and client, as necessary.
 - 3.2 Conduct standardised selection to determine odour threshold and ongoing olfactometry performance of individuals.
 - 3.3 Conduct standardised or in-house selection to assess and compare sensitivity against internal criteria.
 - 3.4 Select panellists in consultation with supervisor.
 - 3.5 Train selected panellists in the use of objective odour observation techniques, odour descriptors, olfactometry

- procedures and test equipment.
- 3.6 Record the process and results used to establish and maintain a register of reliable panellists.
- 4 **Collect and store odour samples for source monitoring**
- 4.1 Check that process/meteorological conditions are consistent with sampling design conditions and report any deviations.
- 4.2 Set up sampling equipment and conduct pre-use checks to ensure reliable operation.
- 4.3 Collect samples in accordance with standard methods or workplace procedures.
- 4.4 Store samples for subsequent analysis to ensure their ongoing integrity and traceability.
- 4.5 Identify and report any defects or abnormalities in samples.
- 4.6 Record all sample information in accordance with standard methods or workplace procedures.
- 5 **Conduct laboratory olfactometry measurements**
- 5.1 Set up dynamic olfactometer and related equipment and conduct pre-use checks to ensure reliable operation.
- 5.2 Ensure that panellists fully understand the test procedures.
- 5.3 Conduct tests in accordance with standard method.
- 5.4 Monitor panellist's performance for indications of odour fatigue, adaption of their senses to the surrounding ambient air and/or bias.
- 5.5 Analyse the conduct of the measurements and reliability of results before confirming data acceptability.
- 6 **Maintain a safe work environment**
- 6.1 Ensure safety through the use of specified safety equipment, safe work procedures and personal protective clothing.
- 6.2 Handle all samples and equipment in accordance with

		workplace safety procedures.
	6.3	Minimise generation of waste and environmental impacts.
	6.4	Collect and dispose of all wastes safely.
	6.5	Report hazards and incidents to designated personnel using workplace procedures.
7	Record data and report results	7.1 Record details of the testing process and data in accordance with standard method or workplace procedures. 7.2 Process data and report results in accordance with standard method or workplace procedures. 7.3 Record approved data in accordance with specified format and quality requirements. 7.4 Maintain confidentiality and security of workplace information and data.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Legislation, regulations, standards, codes, workplace procedures and requirements include the latest

- federal legislation, such as the Environment Protection and Biodiversity Conservation Act, and National Environmental Protection Measures
- state/territory government legislation and local government by-laws, policies, regulations and plans dealing with land use, acquisition, planning and protection; environmental protection, pollution and contaminated sites

version of one or more of:

- legislation, standards and codes of practice for work health and safety (WHS)
- Australian and international standards covering olfactometry and stationary source emissions (e.g. AS/NZS 4323 Stationary source emissions series); and occupational personal protection (e.g. HB 9-1994 Occupational personal protection)
- registration/licensing and/or accreditation requirements
- site plans, maps and specifications, client and/or regulatory/certifying body requirements
- workplace procedures for sampling, monitoring, checking calibration of dynamic olfactometers
- workplace documents, such as standard operating procedures (SOPs); work schedules; recording and reporting procedures; equipment manuals and warranties; supplier catalogue and handbooks; field notebooks or log books; emergency and safety procedures; safety data sheets (SDS); waste minimisation, containment, processing and safe disposal procedures.

Odour sources include one or more of:

- wastewater treatment plants and sludge ponds
- solid waste recycling plants
- landfill and landfill gas treatment plants
- chemical plants
- composting operations, food and by-product processing, such as rendering and tanning plants
- agriculture/livestock facilities, such as poultry and pig farming, cattle feedlots and mushroom farms

Odour source geometries include point, area, volume and fugitive sources.

Site information includes one or more of:

- location of site and nearby buildings, topography and meteorological records
- complaints, and previous odour assessments at site and nearby locations
- other industrial activities or potential odour sources in the surrounding area
- industrial process inputs/outputs, flow diagram and process flowchart
- unit operations and typical variability, nominal and upset conditions
- pollution control equipment and techniques for industrial processes
- air emission control systems, such as scrubbers, bag filters,

	- stacks and bio filters - forced or natural ventilation within odorous buildings - parameters of emission sources, such as location, geometry and release parameters for processes - operational conditions and period of operation - batch or continuous operation for units upstream from the emission source - predictable variations in process conditions, production rates and weather interaction.
Complaint records include one or more of:	- date and time of the complaint, and complainant details - odour characteristic and weather conditions - actions undertaken to verify the complaint - actions undertaken to fix the issue - back communication/information to complainant.
Odour sampling/monitoring plans include one or more of:	- monitoring protocol with details of purpose, duration, scope, available resources, detailed procedures and data quality requirements - site map showing key community features, plant boundaries, possible/confirmed odour sources and topography - monitoring at the source with sampling locations, sampling conditions (process and meteorology), type of sampling, coding and numbers of samples - data collection forms (e.g. source location, geometry, operational conditions, sampling strategy and design deviations).
Odour sampling and laboratory monitoring equipment include one or more of:	- sampling bags, such as Teflon, Tedlar and Nalophan - portable wind tunnel sampling systems - fluxhood/fluxchamber/isolation chamber sampling systems - sorbent sampling tubes and stainless steel canisters for collecting volatile organic compounds (VOCs) - tubing, pumps, carbon filters and diluter - sweep gases for sample collection, such as nitrogen - tracer gas for calibration, such as carbon monoxide (CO) - reference material, such as 1-butanol - dynamic olfactometers for laboratory use.
Pre-use checks of sampling and monitoring	- cleanliness of reusable items - leak testing of sample bags, preparation of VOC canisters and sampling equipment

- equipment include one or more of:**
- pump pressures and flow rate of sweep gases calibration checks
 - olfactometer range, accuracy, precision and lowest detection limit (LDL)
 - n-butanol storage
 - cleanliness of the measurement room of the olfactometry laboratory.
- Selection and training for laboratory panellists include one or more of:**
- use of the reference material (n-butanol) to determine odour threshold and performance of individuals in relation to normative values
 - use of standard dynamic olfactometry procedures
 - effects of alertness, attention, fatigue and health status
 - odour descriptor assignation
 - odour panel calibration results (AS/NZS 4323.3) and traceability of the panellist tests.
- Odour laboratory condition requirements include:**
- no stray source odours (e.g. renovation, furniture, equipment and stored chemicals)
 - effective ventilation with filtered air conditioning
 - temperature control
 - no direct sunlight exposure
 - noise-free room.
- Odour monitoring data include one or more of:**
- emission source characteristics, such as air velocity, dimensions of a vent or area, temperature, humidity, partial pressure, adjustments made for high temperature and/or high pressure and/or high humidity flows, and ventilation rates
 - sampling data, such as sampling start/end times, type of equipment, sampling location within the source, meteorological and process conditions, ambient temperature, pressure and humidity, diluter use and dynamic dilution rate, sampling flow rates, and any deviations from the requirements of the standard or internal procedure
 - laboratory measurement data, such as identification of the panellist, temperature of the room, date and time of the measurement, chemical analyser and olfactometer operational parameters, odour panel calibration result, set of dilutions over the measurements rounds, average dilution for the panel at the odour threshold, odour concentration result and uncertainty, and any deviation from the requirements of the standard or internal procedure.

Odour control strategies include one or more of:

- physical, such as adsorption, absorption, photo ionisation, masking and neutralisation
- chemical, such as scrubbing, oxidation and incineration
- biological, such as biofiltration using bacteria
- combined, such as bioscrubbers.

WHS and environmental management requirements include:

- compliance with relevant federal/state/territory WHS legislation at all times
- assuming that samples are potentially hazardous and applying standard precautions
- accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and state/territory Departments of Health, where relevant.

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998>

Assessment Requirements for MSS025010 Assist with odour source assessment

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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:

- collecting and preparing odour samples from at least one (1) site in accordance with standard methods or workplace procedures
- selecting and training odour panellists for olfactometry measurements in accordance with standard methods or workplace procedures on at least one (1) occasion (under supervision)
- conducting laboratory olfactometry measurements in accordance with standard methods or workplace procedures on at least two (2) occasions
- planning and preparing for field/laboratory activities, including researching and summarising legislative/regulatory requirements, site history and operations, existing data and complaints, and/or reports
- accurately interpreting legislative/regulatory requirements, client requests, sampling/monitoring plans, test methods and workplace procedures
- undertaking site reconnaissance and identifying potential odour sources and current controls (under supervision)
- selecting/designing appropriate sampling and monitoring strategies (under supervision)
- selecting and checking all required field/laboratory equipment, test instruments and materials
- using sampling equipment to obtain reliable, representative odour samples in accordance with sampling/monitoring procedures and paying close attention to any pre-treatment, containers, preservation, storage, labelling and traceability requirements
- identifying atypical odour samples and taking appropriate action
- selecting panellists by using standardised tests and given criteria to determine their odour threshold and ongoing olfactometry performance (under supervision)
- providing accurate information about use of objective odour observation techniques, odour descriptors, olfactometry procedures and test equipment to olfactometry panellists
- listening and communicating effectively with clients and panellists
- using olfactometry equipment correctly and closely monitoring panellist's performance and testing environment to obtain valid and reliable data
- identifying/rectifying basic equipment faults
- processing odour data and analysing the conduct of measurements and reliability of results before confirming their acceptability
- providing accurate, complete records of odour sampling, site observations and olfactometry data including any errors and/or unexpected variations

- presenting odour results in the required format and timeframe and reporting on their significance
- seeking advice when issues/problems are beyond scope of competence/responsibility
- working safely for the protection of self and others.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- scientific terminology, such as olfactometry, odour threshold, odour intensity, hedonic tone, odour character or quality, odour nuisance, dilution to threshold, odour concentration, odour units (ou) and commonly used odour descriptors
- basic principles of atmospheric chemistry, odorous compound families and meteorology
- calculation of flow rates, dilution factors, odour emission rates and uncertainties
- basic details of chemical/process engineering relevant to site
- regulatory/licensing requirements that apply to site
- nature of odour complaints, possible health effects, typical community concerns and environmental issues about odour
- workplace procedures for odour sampling/monitoring and test methods, selection of odour panellists
- set-up and operation of sampling equipment and dynamic olfactometers in the laboratory, function of key components, simple troubleshooting and calibration checks
- control of the olfactory testing environment (e.g. conditions that can dull sensitivity)
- likely causes of variation in odour results and their control
- reporting requirements, protocols for the confidentiality and security of information and communicating with the community and media
- relevant hazards, health, safety 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).
- Holistic assessment methods include:

- review of odour data, results and records prepared by the candidate
- feedback from supervisors that the candidate consistently follows workplace procedures and standard test methods, works safely and provides reliable results within the agreed timeframe
- feedback from panellists and/or clients about the candidate's ability to respond to enquiries and provide accurate information
- oral and/or written questions to check the candidate's understanding of odour sampling, odour measurements and calculations, conducting olfactometry testing and instructing panellists.
- Access is required to all instruments, equipment, materials, workplace documentation, procedures, and specifications associated with this unit including, but not limited to:
 - odour sampling and measuring equipment
 - standard laboratory with facilities, equipment, materials and reagents required for olfactory testing
 - work program, workplace procedures, codes of practice, site maps, odour sampling/monitoring plans, test methods and field protocols.
- 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

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