



Australian Government

Department of Education, Employment and Workplace Relations

MSS025010A Assist with odour source assessment

Release: 1

MSS025010A Assist with odour source assessment

Modification History

Not applicable.

Unit Descriptor

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, enterprise procedures and/or standardised methods to collect odour samples and conduct olfactometry measurements using panellists in the laboratory. Note that odour field assessment using olfactometry panellists and community volunteer observers is covered in *MSS025011A Assist with odour field assessment*.

Application of the Unit

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
- rendering operations.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 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 enterprise 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 enterprise 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 |

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| 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 enterprise 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 enterprise 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 |

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| | | 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 enterprise 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 enterprise procedures |
| 7 | Record data and report results | 7.1 | Record details of the testing process and data in accordance with standard method or enterprise procedures |
| | | 7.2 | Process data and report results in accordance with standard method or enterprise procedures |
| | | 7.3 | Record approved data in accordance with specified format and quality requirements |
| | | 7.4 | Maintain confidentiality and security of enterprise information and data |

Required Skills and Knowledge

Required skills

Required skills include:

- listening and communicating effectively with clients and panellists
- negotiating with stakeholders and reaching satisfactory agreements, where possible
- organising field sampling and laboratory testing activities efficiently
- interpreting and analysing information, procedures and attending closely to detail
- providing accurate information about odours and odour monitoring, instructing odour olfactometry panellists
- applying odour sampling and monitoring procedures (e.g. labelling, storing, transporting and traceability of samples)
- using sampling equipment (e.g. pre-use checks) and olfactometry instruments correctly and safely, and identifying/rectifying basic equipment faults
- responding effectively to changed or unforeseen circumstances
- seeking advice when issues/problems are beyond scope of competence/responsibility
- working safely for the protection of self and others

Required knowledge

Required knowledge includes:

- understanding of chemical/process engineering relevant to site
- 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
- calculating flow rates, dilution factors, odour emission rates and uncertainties
- regulatory/licensing requirements that apply to site
- nature of odour complaints, possible health effects, typical community concerns and environmental issues about odour
- basic principles of atmospheric chemistry, odorous compound families, meteorology
- enterprise procedures and test methods for odour sampling and monitoring
- 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 health, safety and environment requirements

Evidence Guide

Overview of assessment	Competency must be demonstrated in the ability to perform consistently at the required standard.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include: • accurately interpreting client requests, enterprise procedures and legislative/regulatory requirements • selecting suitable panellists under supervision • communicating effectively with clients and panellists • collecting and preparing odour samples in accordance with standard methods or enterprise procedures • using olfactometry equipment to obtain reliable data • processing odour data and confirming its acceptability • communicating the significance of odour results, including the discussion of any errors and/or unexpected variation to appropriate personnel • reporting results and completing all records in the required format and timeframe • working safely.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or a simulated workplace environment. Assessment should emphasise a workplace context and procedures found in the candidate's workplace. This unit of competency may be assessed with: • <i>MSS025002A Assess the environmental risk or impact of a project activity or process</i> • <i>MSS025004A Provide environmental information to customers</i> • <i>MSS025011A Assist with odour field assessment.</i> The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team.

	Resources may include: • odour sampling and measuring equipment • standard laboratory with facilities, equipment, materials and reagents for required measurements • enterprise procedures, standard test methods and equipment manuals.
Method of assessment	The following assessment methods are suggested: • review of odour data, results and records prepared by the candidate • feedback from peers and supervisors that the candidate consistently follows enterprise procedures, standard test methods and works safely • feedback from clients and panellists about the candidate's handling of enquiries and information • oral/written questioning associated with odour sampling, odour measurements and calculations • observation of the candidate collecting odour samples and conducting olfactometry testing and/or instructing panellists. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those 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. 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.
Guidance information for assessment	

Range Statement

Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used
Legislation, standards, codes,	Legislation, standards, codes, procedures and/or

procedures and/or enterprise requirements	enterprise requirements may include: • federal legislation, such as: • Environment Protection and Biodiversity Conservation Act 1999 • The Environmental Protection Act 1986 • state/territory government legislation and regulations and local government by-laws, policies, and plans dealing with: • land use, acquisition, planning and protection • environmental protection • pollution and contaminated sites • Australian and international standards, such as: • AS/NZS 4323.3:2001 Stationary source emissions - Determination of odour concentration by dynamic olfactometry • AS/NZS 4323.4:2009 Stationary source emissions - Area source sampling - Flux chamber technique • SAA HB 9 Occupational personal protection • data quality procedures • enterprise procedures for sampling, monitoring, checking calibration of dynamic olfactometers • equipment manuals and warranties, supplier catalogue and handbooks • material safety data sheets (MSDS) • occupational health and safety (OHS) national standards and codes of practice
Odour sources and geometries	Odour sources may include: • waste water treatment plants, 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 may include: • point, area, volume and fugitive sources
Information about the site and industrial activities	Information about the site and industrial activities collected by air quality scientists and engineers may include: • 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	Complaint records may include: • 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	Odour sampling/monitoring plans may include: • 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	Odour sampling and laboratory monitoring equipment may include:

	• 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 equipment	Pre-use checks of sampling and monitoring equipment may include: • cleanliness of reusable items • leak testing of sample bags, preparation of VOC canisters and sampling equipment • 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	Selection and training for laboratory panellists may include: • 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 4323.3:2001 Stationary source emissions - Determination of odour concentration by dynamic olfactometry) and traceability of the panellist tests
Odour laboratory condition requirements	The odour testing environment in the laboratory requires an odour-free environment and includes: • 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	Odour monitoring data may include: • 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	Odour control strategies may include: • 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
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
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Unit Sector(s)

Environmental

Custom Content Section

Not applicable.