



Australian Government

Department of Education, Employment and Workplace Relations

MSS027007A Coordinate air quality management activities

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit of competency covers the ability to oversee the day-to-day air quality management activities for a site, project or an ongoing program. Personnel are required to interpret and implement an air quality management plan, organise specified management activities, verify the quality of monitoring data and investigate and rectify unexpected or unacceptable results, monitor compliance with relevant air quality objectives or standards, and provide reports. They work under the supervision of an environmental scientist or engineer, site manager or enterprise environmental manager.

Application of the Unit

This unit of competency is applicable to environmental site coordinators, environmental managers and senior environmental officers working in a range of industry sectors, such as:

- environmental services involved with sampling and monitoring of ambient air, indoor air and workplace air parameters
- environmental compliance, auditing and inspection.

Note that the term ‘manager’ is used to refer to management of a function, project and/or program and does not necessarily imply line management.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MSS025009A Perform sampling and testing of air OR

MSS025016A Perform sampling and testing of stationary emissions

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 1 | Confirm scope of air quality management activities with manager | 1.1 | Review legislative, regulatory and licensing requirements and approvals that apply to site/project/program |
| | | 1.2 | Review current air quality management plan, including objectives, known issues, specified management activities and any required changes |
| | | 1.3 | Review previous air quality records and reports, if available |
| | | 1.4 | Confirm that site set-up, sampling methods, instrumentation and enterprise procedures are in accordance with relevant standards and guidelines |
| | | 1.5 | Clarify own scope of responsibility/authority for achieving specific outcomes and the roles of other key personnel |
| | | 1.6 | Identify resources available to conduct air quality management activities |
| 2 | Organise air quality management activities | 2.1 | Develop a consolidated schedule to ensure all activities can be conducted efficiently with the available resources |
| | | 2.2 | Develop checklists/clear work instructions to enable personnel to perform assigned tasks efficiently and with minimal errors |
| | | 2.3 | Ensure that personnel who conduct sampling, monitoring and/or field testing are competent to undertake their assigned tasks |
| | | 2.4 | Ensure air sampling/monitoring/testing equipment is regularly calibrated and maintained and that adequate stocks of consumables are available |
| | | 2.5 | Ensure air samples are handled in accordance with the sampling method and chain of custody requirements and dispatched promptly for |

- analysis
- 2.6 Arrange for source emission testing according to licence requirements (if relevant to site/project/program)
 - 2.7 Conduct, or arrange for, regular site inspections to monitor the effectiveness of air quality management actions (if relevant to site/project/program)
 - 2.8 Advise relevant personnel when specified air quality management actions are not being implemented effectively (if relevant to site/project/program)
 - 2.9 Conduct, or arrange for, additional monitoring/inspections after atypical events, legitimate complaints or government requests
- 3 Verify air quality data
- 3.1 Identify relevant job instructions, data and technical records in enterprise information management system
 - 3.2 Confirm that technical records provide sufficient information to ensure traceability/chain of custody for the monitoring activities involved
 - 3.3 Compare data with expected values and identify any outliers
 - 3.4 Inspect data records to identify any gaps and to check the integrity of data entry, transfers, alterations and calculations
 - 3.5 Notify manager when data is incomplete or contains significant errors, and clarify what action to take
- 4 Determine if results are acceptable and within expectation
- 4.1 Compare results with expected values and/or relevant standards and identify any significant differences or trends
 - 4.2 Check the reliability of results by examining data or results from other monitoring stations, repeat

- measurements and/or tests of duplicate samples
- 4.3 Assess the significance of any recorded atypical environmental or meteorological conditions
 - 4.4 Check that all calculations are free from error
 - 4.5 Check that estimations of uncertainty are reasonable and consistent with the sampling method, relevant standards or guidelines
 - 4.6 Report results that meet enterprise data quality standards and are consistent with expectations
- 5 Investigate/rectify unexpected or unacceptable results
- 5.1 Examine records of pre-use checks and calibration performance to ensure that the sampling equipment, reagents/standards and/or monitoring/test instruments used meet specifications and enterprise requirements
 - 5.2 Establish whether human, environmental and/or meteorological factors could have affected the reliability of results
 - 5.3 Check for obvious sources of interference that may have occurred during measurements or analysis of samples
 - 5.4 Retrieve stored samples (if available) and assess whether they are atypical or contaminated
 - 5.5 Arrange for control tests using the same or new samples to check unexpected results, if relevant
 - 5.6 Report unexpected results that meet enterprise data quality standards
 - 5.7 Identify possible root causes of unacceptable results and appropriate preventative/corrective actions
 - 5.8 Report investigation outcomes and recommendations for improvements in accordance with enterprise procedures
 - 5.9 Seek manager's advice when challenges are beyond own technical competence or when input from environmental specialists may be required

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| 6 | Keep management informed about air quality performance | 6.1 | Provide regular reports about air quality performance including instances of potential/actual non-conformance and incidents and the actions taken in each case |
| | | 6.2 | Report opportunities and recommendations for improvements in air quality monitoring or management in accordance with enterprise procedures |
| 7 | Maintain air quality records | 7.1 | Ensure all air quality records are legible, accurate and satisfy enterprise/legislative requirements |
| | | 7.2 | Store air quality records to enable easy access and review by authorised personnel in accordance with enterprise procedures |
| | | 7.3 | Regularly review air quality records to identify any significant trends and impacts |
| | | 7.4 | Identify any problems with the maintenance and security of air quality records and resolve them promptly. |

Required Skills and Knowledge

Required skills

Required skills include:

- accessing, interpreting and applying relevant legislative/regulatory requirements, standards, codes, guidelines and equipment manuals
- explaining relevant air quality standards, sampling/monitoring methods, equipment operating procedures and enterprise air quality management actions clearly and concisely
- verifying the accuracy and completeness of air quality data, results and technical records
- using statistical tests (e.g. to determine data acceptability, estimate uncertainties, examine trends and infer relationships)
- recognising unexpected or unacceptable data and results
- analysing records of sampling, monitoring and/or calibration activities to identify potential causes of unacceptable/unexpected data and results
- recommending appropriate preventative/corrective actions to control potential/actual non-conformances or incidents
- solving complex technical problems, including identifying and rectifying instrument faults
- responding effectively to complaints and requests for information
- seeking advice when issues/problems are beyond scope of competence/responsibility
- maintaining records and providing accurate, complete and timely reports
- working safely and monitoring the safety of others

Required knowledge

Required knowledge includes:

- types and properties of air pollutants relevant to job role, such as particulates, inorganic gases, organic gases, photochemical smog and greenhouse gases
- legislative/regulatory requirements, standards, codes and guidelines dealing with air quality
- air quality management terminology, concepts and principles
- enterprise air quality management plans, procedures (and air quality issues, control measures and mitigation/management actions for site/project, if relevant)
- detailed scientific and technical knowledge of the samples, sampling/monitoring methods, equipment, materials and instrumentation used to generate the air quality data, including calibration, fault-finding and troubleshooting
- expected values for air quality parameters, relevant national environment protection measure standards and goals, or statutory environmental quality concentration limits or similar
- problem-solving techniques and cause analysis
- impacts of common human, environmental and/or meteorological factors on data quality
- sources of interference, uncertainty, limitations of methods, purpose of reference conditions

- and sources of variability (e.g. stack conditions)
- enterprise procedures for identifying assessing environmental risks/impacts, responding to complaints and environmental incidents, and record management and reporting air quality data
 - interpersonal communication, negotiation and conflict resolution techniques
 - relevant health, safety and workplace emergency response procedures

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	<p>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:</p> <ul style="list-style-type: none"> • planning and implementing the day-to-day air quality management activities for a site, project or ongoing program • explaining air quality management plans, procedures, sampling/monitoring methods and operation of monitoring equipment clearly and accurately • verifying the accuracy and completeness of air quality data, results and technical records • investigating unexpected or unacceptable air quality results in a logical and efficient manner • reporting air quality results, performance and opportunities for improvements in accordance with enterprise procedures • maintaining air quality records in accordance with legislative/licensing/enterprise requirements.
Context of and specific resources for assessment	<p>This unit of competency is to be assessed in the workplace or a simulated workplace environment.</p> <p>Assessment should emphasise a workplace context and procedures found in the candidate's workplace.</p> <p>This unit of competency may be assessed with:</p> <ul style="list-style-type: none"> • <i>MSS027011A Select, commission and maintain environmental monitoring instruments.</i> <p>The competencies covered by this unit would be</p>

	<p>demonstrated by an individual working alone or as part of a team.</p> <p>Resources may include:</p> <ul style="list-style-type: none"> • site/project/program history • relevant legislation, codes, standards, enterprise environmental management policies, plans, actions, procedures, checklists and equipment manuals • air quality data sets, records and reports • sampling methods and description of monitoring set-up, access to monitoring, sampling and testing equipment • computer and relevant software or enterprise information management system.
<p>Method of assessment</p>	<p>The following assessment methods are suggested:</p> <ul style="list-style-type: none"> • review of air quality data files, results and records verified by the candidate • feedback from managers and site personnel regarding the candidate's ability to safely coordinate day-to-day air quality management activities • review of reports and recommended improvements to air quality monitoring or management prepared by the candidate • questions to assess understanding of procedures governing the validation of data; acceptability of data/results; sources of air quality data variability, interferences and uncertainty; and relevant preventative or corrective actions • analysis of case studies/reports of relevant air quality management issues and incidents • observation of the candidate providing air quality management information and/or instruction to other personnel. <p>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.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>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</p>

	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, procedures and/or enterprise requirements	<p>Legislation, standards, codes, procedures and/or enterprise requirements may include:</p> <ul style="list-style-type: none"> • federal legislation, such as: • Environment Protection and Biodiversity Conservation Act 1999 • 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 3580 series Methods for sampling and analysis of ambient air • AS 2365 series Methods for the sampling and analysis of indoor air • AS 2986 series Workplace air quality • National Environment Protection Measure (Ambient Air Quality) • enterprise sampling and monitoring protocols • equipment manuals and warranties, supplier catalogue and handbooks • government policy (e.g. environmental protection and impact assessment) • material safety data sheets (MSDS) • occupational health and safety (OHS) national standards and codes of practice • site-specific requirements
Air quality management activities	Air quality management activities will vary greatly with the type of site/project/program. They could involve either ambient air monitoring or source emission testing

	<p>and may include:</p> <ul style="list-style-type: none"> • determination of sampling point locations, sampling methods, number and type of samples, duration and frequency of sampling • specification of site sampling plans • specification of site equipment, such as instruments, and sampling ports/platforms to meet quality and safety requirements • arranging/conducting the set-up, calibration, (re)configuration, maintenance and troubleshooting of equipment • liaison with site personnel to coordinate process operations and sampling programs to ensure representative results • instruction and auditing of personnel to ensure monitoring, sampling and testing methods or procedures are followed • analysis and verification of results • investigation of unexpected and unacceptable results, including non-compliances • liaison/negotiation with regulators about licence conditions, and explanation of results and non-compliances • specification of air quality management actions for sites • site inspections to monitor the effectiveness of air quality management actions
<p>Ambient air parameters</p>	<p>Ambient air parameters may include:</p> <ul style="list-style-type: none"> • inorganic gases: <ul style="list-style-type: none"> • CO, CO₂, NO_x and SO_x • acid gases <ul style="list-style-type: none"> • H₂S • ozone • fluorides • organic gases: <ul style="list-style-type: none"> • methane and non-methane hydrocarbons • poly-aromatic hydrocarbons (PAHs) • organic oxidants and other photochemical smog compounds (e.g. poly-aromatic nitrates (PANs)) • air toxics: <ul style="list-style-type: none"> • benzene, toluene and xylenes • formaldehyde • Benzo(a)pyrene (PAH marker)

	<ul style="list-style-type: none"> • particulates: • deposited matter • suspended matter (PM₁₀, PM_{2.5} and PM₁) • particulate fluorides • lead
Indoor air parameters	<p>Indoor air parameters may include:</p> <ul style="list-style-type: none"> • inorganic gases, such as: • CO, CO₂ and NO_x • radon • organic gases, such as: • formaldehyde • PAHs • organic oxidants and other photochemical smog compounds (e.g. PANs) • particulates, such as: • suspended matter (PM₁₀, PM_{2.5} and PM₁) • microorganisms and spores
Occupational (workplace) air parameters	<p>Occupational (workplace) air parameters may include chemicals listed in the '<i>Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment</i>'. Concentration levels for action are:</p> <ul style="list-style-type: none"> • peak • short term exposure limit (STEL) • time weighted average (TWA)
Sampling equipment	<p>Sampling equipment may include:</p> <ul style="list-style-type: none"> • gas sample bags and gas sample bottles/containers • gas pipettes and gas syringes • air sampling pumps • sampling manifolds • passive diffusion samplers • impingers (with absorption solutions) • solid adsorbents • colour detection tubes • coated and uncoated filters • sampling trains in continuous gas monitors • pitot tubes • high volume samplers • dichotomous samplers • gas flow meters

Testing equipment	<p>Testing equipment may include:</p> <ul style="list-style-type: none"> • continuous gas monitors • ultraviolet (UV) absorption (e.g. ozone) • chemiluminescence (e.g. NO_x) • pulsed fluorescence (e.g. (SO_x)) • non-dispersive Infrared (e.g. CO) • flame ionisation detection (FID) (e.g. methane) • photo ionisation detection (PID) • integrating nephelometer methodologies (e.g. suspended particulates) • oxygen sensors (e.g. zirconia) • gas chromatographs • mass spectrometers • atomic absorption spectrophotometers • infrared spectrophotometers • UV-visible spectrophotometers • tapered element oscillating microbalance (TEOM) • beta gauges • particle counters • portable (handheld) gas monitors
Air quality reports	<p>Air quality reports may include:</p> <ul style="list-style-type: none"> • weekly and monthly environmental reports • non-conformance report form • contributions to regulatory agency reports (where required by permit, approval or licence conditions)
Air quality records	<p>Air quality records may include:</p> <ul style="list-style-type: none"> • digital photographs of air quality monitoring sites • data files • records required by permit, approval or licence conditions • records of monitoring equipment purchase, calibration, inspection, maintenance and service • records of complaints and government requests • records of air quality non-conformances, incidents, or significant impacts • contractor and supplier information • internal quality/environmental audit reports • electronic/hard copy correspondence • records of approved expenditure, orders
Air quality management actions	<p>Air quality management actions will vary greatly with</p>

	<p>the type of site and industrial processes involved and may include:</p> <ul style="list-style-type: none"> • use of adsorbers, filters and scrubbers • use of water and/or enclosing transfer points, operating equipment and discharge points to reduce dust • covering and/or watering stockpiles when not in use • keeping vehicle movements to engineered routes • using appropriate dust suppressants • limiting clearance/excavation areas to minimise ground disturbance • using mulch or vegetation cover to stabilise soils • prohibiting the burning of vegetation or waste • limiting or ceasing activities (e.g. dusty work) during unfavourable weather conditions (e.g. high wind) • use of wind breaks and wind fences to prevent migration of dust
<p>OHS and environmental management requirements</p>	<p>OHS and environmental management requirements:</p> <ul style="list-style-type: none"> • 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)

Environmental

Custom Content Section

Not applicable.