



Australian Government

Department of Education, Employment and Workplace Relations

MSS015012A Conduct an emissions audit

Release: 1

MSS015012A Conduct an emissions audit

Modification History

Not applicable.

Unit Descriptor

This unit of competency covers conducting an audit of emissions related to product or process in an organisation, or part or all of the value chain.

Application of the Unit

This unit applies to auditing emissions inside organisations and their value chains (e.g. supplier of goods or services or customer). The unit has been developed with manufacturing operations as a focus. However, because of the range of organisations in a typical manufacturing value chain it may also be applied to other types of organisations.

The audit may be conducted to assist in regulatory compliance or as part of a strategy to improve the sustainability of manufacturing operations.

The emphasis in the unit is on informing decision making in regards to emissions using material balancing techniques. While the unit does not preclude actual measurement of emissions it does not cover the measurement/testing or other technical skills to undertake physical measurement of emissions or environmental impact of the emissions. If required, these skills should be selected from the MSL09 Laboratory Operations Training Package or the Environmental Monitoring and Technology suite of qualifications. However, there is a requirement to present and organise data. The complexity of this requirement will vary according to the type and scale of the organisation's processes. Where required, appropriate mathematics and statistics units should be selected from the MEM05 Metal and Engineering Training Package or other appropriate Training Package.

It would typically be undertaken by a manager or technical specialist who had a major responsibility for sustainability as part of a broader work role, or sustainability may be their primary work responsibility. The manager or technical specialist may undertake this alone or as part of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 1 Identify all sources and uses of materials in process | 1.1 Identify all sources of materials external to the site |
| | 1.2 Identify all sources of materials within the site, where appropriate |
| | 1.3 Identify all uses of materials by the process overall |
| | 1.4 Identify all uses of materials by each process unit |
| 2 Calculate theoretical use of the materials | 2.1 Calculate theoretical net consumption of material for each process unit |
| | 2.2 Calculate overall material balance for process/site |
| | 2.3 Evaluate the need for material consumption by process and units within the process compared to alternative processes/units |
| 3 Measure actual use of materials | 3.1 Determine actual net material consumption for overall process/site |
| | 3.2 Determine actual net material consumption for each process unit |
| | 3.3 Calculate difference between theoretical and actual material consumption by unit and overall |
| | 3.4 Identify actual emissions by each process unit |
| 4 Develop strategies for reducing emissions | 4.1 Rank units by difference between theoretical and actual material consumption |
| | 4.2 Rank units by actual material consumption |
| | 4.3 Develop strategies to reduce material consumption |
| 5 Prepare a recommendation for an emissions reduction strategy | 5.1 Consult with key stakeholders |
| | 5.2 Identify strategies required to meet regulatory or |

similar requirements

5.3 Rank strategies by benefit/cost ratio

5.4 Short-list preferred emission reduction strategies

5.5 Prepare recommendation for reducing emissions

Required Skills and Knowledge

Required knowledge includes:

- nature of emissions:
 - point vs. disperse
 - identified source vs. fugitive
 - solid (both particulate and mass), liquid (solutions, emulsions and dispersed matter) and gas (including fumes and vapours)
- material balancing techniques for process and process steps (sometimes known as mass balancing)
- methods of measuring actual process amount/flows
- emission reduction strategies and methods along with costs, effectiveness and alternative disposal strategies caused
- cost-benefit analysis
- relevant legislation, regulations and protocols
- AS/NZS ISO 14000 Environmental Management Standards

Required skills include:

- mapping processes and material flows
- interpreting schematics and drawings
- calculating, manipulating and interpreting numerical data, including establishing series, means, correlations and rates of change
- ranking material consumption and emissions based on material balancing
- consulting with technical and operative staff on possible non-obvious sources of emissions (fugitive emissions)
- consulting and negotiating with stakeholders on implementation process for sustainability improvement
- preparing recommendations
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Evidence Guide

Overview of assessment	A person who demonstrates competency in this unit must be able to conduct an emissions audit, including use of material balancing techniques and preparation of recommendations for emission reduction.
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: • defining appropriate boundaries for the sustainability emissions audit • conducting material balance analyses for a site or value chain • identifying high emissions units/areas • undertaking benefit/cost ratio analyses • ensuring improvement strategies proposed reflect stakeholder needs and regulatory environment.
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 other relevant units addressing sustainability at the enterprise level or other units requiring the exercise of the skills and knowledge covered by this unit. • The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team.
Method of assessment	• 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

Emissions	Emissions refers to: the difference between material entering a process and product leaving the process
Materials	Materials include: - materials directly used and also materials which comprise components which are used - materials/resources which may be consumed to make a physical product - materials which may be consumed in delivering a service (e.g. fuel, energy and other consumables)
Theoretical consumption	Theoretical consumptions includes: consideration of the relevant physics, chemistry and biology of the process to determine theoretical yield as well as assuming zero defective product
Net consumption	Net consumptions refers to: the difference between materials consumed and produced, where relevant

Unit Sector(s)

Sustainability

Custom Content Section

Not applicable.