



Australian Government

Department of Education, Employment and Workplace Relations

FDFST4012A Apply water management principles to the food industry

Release: 2

FDFST4012A Apply water management principles to the food industry

Modification History

April 2012: Minor typographical corrections.

Unit Descriptor

This unit covers the skills and knowledge required to monitor and manage water quality and usage in a food processing operation.

Application of the Unit

This unit applies to quality assurance and technical staff who have responsibility for maintaining product safety, quality and efficiency of food processing operations that use water as part of the food production processes. The unit does not apply to the management of water used in a plant for non food production purposes e.g. for cleaning, showers, gardens etc. Responsible management of water for these purposes is covered under MSAENV472A Implement and monitor environmentally sustainable work practices.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

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. Identify the sources and quality of water available to food processing plants	1.1 Current and possible future sources and quality of raw water are identified
	1.2 The water quality requirements for required food processing operations are identified
	1.3 The suitability of water supplied from a range of sources, including water recycled from the food processing plant, is assessed
	1.4 The consumption of non recycled water is assessed and a reduction strategy formulated
2. Identify raw water pre treatment processes	2.1 The steps involved in water purification are documented and data on quality for supplied water is obtained
	2.2 Water disinfection methods and equipment for a range of food processing operations are identified and evaluated
3. Apply efficient and sustainable water management principles to the food processing industry	3.1 Opportunities for reducing water usage in the food processing operation is identified
	3.2 Sources and characteristics of waste water generated across the food processing operation are identified
	3.3 Methods for treating and recycling water for re-use in food processing operation are identified
	3.4 Opportunities to reduce the volume of waste water and improve treatment methods are identified
	3.5 Procedures for future water management are reviewed and critical limits set

Required Skills and Knowledge

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

Required skills include:

Ability to

- assess the suitability of water supplied from a range of sources, and water recycled within the food processing plant
- identify the water quality requirements for a range of food processing operations
- map the steps involved in water purification at municipal water treatment plants
- identify water disinfection methods, suitable for a range of food processing operations
- appraise suitable systems and equipment for water disinfection in the food processing industry
- identify the sources and characteristics of waste water generated across food processing operations
- identify methods for treating and recycling water and minimising potable water consumption
- identify legal requirements for water discharge.

Required knowledge includes:

Knowledge of:

- water quality requirements, including:
 - chemical specifications e.g. pH, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), heavy metals
 - microbiological specifications eg. BOD, presence of Fecal coliform, bacteria, Cryptosporidium, Giardia
- water purification processes in general
- water disinfection methodologies and systems suitable for the food processing industry including chlorination, ozonation and UV irradiation
- waste water treatment (relevant to a food processing plant) including primary, secondary and tertiary waste water treatment stages
- waste stream characteristics and classification in relation to the food processing industry
- methods of reducing, reusing and recycling water in a food processing operation, e.g. implementation and routine monitoring of waste reduction practices, use of consumable, returnable, refillable or reusable packaging
- State legislation and local bylaws governing prescribed wastes
- legal requirements for water discharge
- regulations relating to the processing and disposal of food waste
- the major requirements contained in the environmental protection legislation, including State environmental regulatory certification procedures, permits and waste discharge agreements.

Evidence Guide

<p>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.</p>	
<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to implement and review water and waste procedures for a food processing operation.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Critical aspects of assessment must include evidence of the ability to assess water quality for use in food processing, monitor water usage for a food processing operation, integrate water quality monitoring into process planning, and implement and review water management procedures in food processing.</p>
<p>Context of and specific resources for assessment</p>	<p>Assessment of performance requirements in this unit should be undertaken within the context of food technology. Competency is demonstrated by performance of all stated criteria, including the critical aspects and knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statements applicable to the workplace environment.</p> <p>Assessment must occur in a real or simulated workplace where the assessee has access to:</p> <ul style="list-style-type: none"> • production process and related equipment, manufacturers' advice and operating procedures • methods and related software systems as required for collecting data and calculating yields, efficiencies and material variances appropriate to production environment • tests used to report relevant product/process information and recorded results.
<p>Method of assessment</p>	<p>The following assessment methods are suggested:</p> <ul style="list-style-type: none"> • observation of candidate conducting a range of tests and procedures • written and/or oral questioning to assess knowledge and understanding • completing workplace documentation • third party reports from experienced practitioner • case studies • field Reports.

Guidance information for assessment	Evidence should be gathered over a period of time in a range of actual or simulated environments.
-------------------------------------	---

Range Statement

<p>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.</p>	
<p>Legislation</p>	<p>Legislation refers to any relevant Commonwealth and State Acts of Parliament, Statutes and Regulations including legislation and regulations covering:</p> <ul style="list-style-type: none"> • the use of water for commercial and industrial use • environmental protection • waste generation and disposal • food standards and food safety • occupational health and safety.
<p>Policies and procedures</p>	<ul style="list-style-type: none"> • Codes of practice, e.g. Manual Handling and Small Wastewater Treatment Plants • Australian and international standards e.g. ISO14000.
<p>Water sources</p>	<p>Water sources may include:</p> <ul style="list-style-type: none"> • reticulated supply from water authorities • municipal treatment plants • bores • dams • rainwater tanks • recycled water.
<p>Water quality requirements</p>	<p>Water quality requirements for food processing operations may include chemical, microbiological, physical and radiological specifications.</p>
<p>Treatment and disposal methods</p>	<p>Treatment and disposal may include on site storage and disposal; dilution; specifying/controlling discharge rates; recycle and reuse options; on site pre-treatment.</p>
<p>Waste management documentation</p>	<p>Waste management documentation may include information on applicable trade waste laws or other requirements; complaint records; training records; process information, process operation log book; inspection, maintenance and calibration records; relevant contractor and supplier information; incident reports. Information on emergency preparedness and response, records of significant trade waste impacts; audit results; management reviews; trade waste charging policy; industrial trade waste generators register.</p>

Unit Sector(s)

Technical.