



Australian Government

CPPSPS4001A Assess and treat water problems in swimming pools and spas

Release: 1

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Modification History

Version	Comments
1	This version first released with CPP07 Property Services Training Package Version 13.

Unit Descriptor

This unit of competency specifies the outcomes required to assess and treat water problems in swimming pools and spas. It includes assessing water quality, treating water problems, and completing and documenting water-treatment activities.

Application of the Unit

This unit of competency supports the work of swimming pool and spa technicians engaged in servicing domestic, commercial and public swimming pools and spas.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Nil

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 required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

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| 1 | Assess water quality. | <p>1.1 <i>Water quality parameters</i> are identified in line with regulatory and enterprise requirements.</p> <p>1.2 Samples to be collected to determine water quality are identified in line with regulatory and enterprise requirements.</p> <p>1.3 Equipment for water sampling and testing is identified and sourced in line with regulatory and enterprise requirements.</p> <p>1.4 Equipment is checked for availability and serviceability in line with enterprise procedures.</p> <p>1.5 <i>Tests</i> are conducted and associated sampling tested in line with regulatory and enterprise requirements.</p> <p>1.6 Samples for external analysis are prepared, packaged and sent to laboratory in line with regulatory and enterprise requirements.</p> <p>1.7 Test results are recorded in line with regulatory and enterprise procedures.</p> <p>1.8 Testing equipment is cleaned, checked and stored in line with enterprise procedures.</p> |
| 2 | Treat water problems. | <p>2.1 <i>Water problems</i> are identified and reported in line with regulatory and enterprise requirements.</p> <p>2.2 Established <i>treatment methods</i> are used to address water problems in line with work health and safety (WHS), regulatory and enterprise requirements.</p> |

- 2.3 Unexpected situations are dealt with safely in line with enterprise and regulatory procedures.
 - 2.4 Effectiveness of water treatment is monitored in line with regulatory, manufacturer and enterprise requirements.
 - 2.5 **Preventative measures** for minimising water problems are identified and reported to **appropriate person** in line with regulatory and enterprise requirements.
 - 2.6 Measures for responding to water contamination are implemented in line with legislative and enterprise procedures.
- 3 Complete and document water treatment activities.**
- 3.1 Treated swimming pool or spa is reinstated to operational condition in line with work instructions, regulatory requirements and enterprise procedures.
 - 3.2 Work area is restored to original condition and checked for safety hazards, waste is disposed of, and tools and equipment are cleaned and stored in line with WHS and enterprise requirements.
 - 3.3 Malfunctions, faults, wear or damage to swimming pool or spa are reported in line with enterprise procedures.
 - 3.4 Notification of work completion is made to relevant persons in line with enterprise procedures.
 - 3.5 Relevant documentation is completed and securely maintained in line with enterprise procedures.

Required Skills and Knowledge

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

Required skills

- communication skills to interact in an ethical manner with clients from diverse social, economic and cultural backgrounds
- decision-making and problem-solving skills to identify types and appropriate treatments for water quality problems in swimming pools and spas
- literacy skills to read and interpret regulatory and manufacturer guidelines for testing and treating water problems
- numeracy skills to perform calculations related to water treatment
- research skills to identify and locate information on ways of treating water problems in swimming pools and spas
- technology skills to use water sampling and testing equipment

Required knowledge

- chemical dosing: chemicals, procedures and benefits
- common swimming pool and spa water problems:
 - algae
 - bather discomfort
 - biofilm
 - chlorination problems
 - cloudy water
 - combined chlorine
 - disinfectant by-products
 - discoloured water
 - faecal accident/incident
 - foaming
 - metal fixture corroding
 - nitrates
 - phosphates
 - recreational water illnesses
 - scale
 - scum line
 - stains
 - water balance problems
- commonwealth, state or territory, and local government legislation and regulations, and

Australian standards impacting on identifying and treating water problems in swimming pools and spas related to:

- chemicals
- dangerous goods
- environment protection
- environmental health
- work health and safety
- waste disposal
- contamination response:
 - environmental
 - faecal
 - non-faecal
 - other
- disinfection:
 - chlorine chemistry
 - disinfectants
 - principles
- health effects of contaminated water in swimming pools and spas:
 - faecal incident response
 - faecal-related illnesses
 - recreational water illnesses
- pool water contamination:
 - bacteria
 - protozoa
 - virus
- testing:
 - for:
 - calcium hardness
 - chlorine demand
 - cyanuric acid
 - disinfection
 - hydrogen peroxide
 - metals
 - nitrates
 - non-halogen oxidisers
 - oxidation
 - oxidation reduction potential
 - pH
 - PHMB
 - phosphates

- salt
- temperature
- total alkalinity
- total dissolved solids
- water balance
- frequency
- methods:
 - colorimetric
 - electronic
 - titrimetric
 - turbidimetric
- procedures
- sampling
- test kit:
 - care
 - contents
- treatments for swimming pool and spa water problems:
 - algaecides
 - breakpoint chlorination
 - chemical disinfection
 - chlorination
 - corrosion prevention
 - discoloured water
 - filtration
 - oxidation
 - ozone
 - shock dosing
 - spa water treatment:
 - reasons for treatment techniques
 - treatment techniques: change spa water, determine and correct pH level, sanitise the spa, and determine and correct total alkalinity
 - superchlorination
 - ultraviolet (UV) systems
 - water replacement
- water balancing:
 - adjusted alkalinity
 - balance factors
 - calcium hardness
 - pH
 - principles

- saturation index
- temperature
- testing
- total alkalinity
- total dissolved salts
- water quality parameters

Evidence Guide

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.

Overview of assessment	This unit of competency could be assessed by sampling and testing water quality in swimming pools and spas and applying appropriate treatment to respond to identified water quality problems.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>A person should demonstrate the ability to:</p> <ul style="list-style-type: none"> • sample and test or arrange for laboratory testing of water samples from swimming pools and spas • identify and implement treatment processes for identified water problems in swimming pools and spas • comply with safety requirements when sampling, testing and treating water in swimming pools and spas • report on outcomes of testing and treating swimming pool and spa water.
Context of and specific resources for assessment	<p>Assessment of essential underpinning knowledge may be conducted in an off-site context and is to comply with relevant regulatory and Australian Standards' requirements.</p> <p>Resource implications for assessment include:</p> <ul style="list-style-type: none"> • relevant codes, standards and government regulations • a technical reference library with current publications on: <ul style="list-style-type: none"> • water quality parameters • water contamination • treatment processes for water problems in swimming pools and spas.
Method of assessment	<p>Assessment methods must:</p> <ul style="list-style-type: none"> • satisfy the endorsed Assessment Guidelines of the CPP07 Property Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. <p>This unit could be assessed on its own or in combination with other units relevant to the job function.</p>

Guidance information for assessment	<p>Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.</p> <p>Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.</p>
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Range Statement

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.

<i>Water quality parameters</i> for:	<ul style="list-style-type: none"> • private swimming pools and spas • public swimming pools and spas, including: <ul style="list-style-type: none"> • hydrotherapy and therapeutic exercise pools • wading and receiving pools associated with water slides • wave pools.
<i>Tests may include:</i>	<ul style="list-style-type: none"> • colorimetric – disinfection and pH • electronic – total dissolved solids and pH • titrimetric – disinfection, total alkalinity and calcium hardness • turbidimetric – cyanuric acid.
<i>Water problems</i> may include:	<ul style="list-style-type: none"> • algae • bather discomfort: <ul style="list-style-type: none"> • eye irritation • skin irritation • chlorination problems • cloudy water • discoloured water: <ul style="list-style-type: none"> • green or blue – green water • red-brown water • disinfectant by-products • faecal accident/incident • foaming • metal fixture corroding • microorganisms: <ul style="list-style-type: none"> • bacterial pathogens

	<ul style="list-style-type: none"> • protozoan pathogens • viral pathogens • yeast and fungal pathogens • scale • scum line • stains • water balance problems: <ul style="list-style-type: none"> • calcium hardness • pH • total alkalinity.
<i>Treatment methods</i> may include:	<ul style="list-style-type: none"> • breakpoint chlorination • chemical disinfection • chlorination • corrosion prevention • filtration • oxidation • ozone • physical removal of pool water • shock dosing • spa water treatment: <ul style="list-style-type: none"> • changing spa water • determining and correcting pH level • sanitising the spa • total alkalinity • super chlorination • UV systems.
<i>Preventative measures</i> include:	<ul style="list-style-type: none"> • pool and spa design • pool and spa maintenance • pool and spa operation.
<i>Appropriate person</i> includes:	<ul style="list-style-type: none"> • facility manager • owner • swimming pool and spa operator.

Unit Sector(s)

Competency field

Unit sector

Swimming pool and spa service

Custom Content Section

Not applicable.