

SKAPPO1

Maintain the quality of water in pool plant operations

Overview

This standard is about operating the pool plant to ensure optimum pool water quality and hygienic pool environment. The standard covers routine maintenance to ensure that the water quality, clarity and temperatures are safe and within the recommended ranges.

This standard is intended for any person that has responsibility for the routine maintenance and for running pool plant operations

The main outcomes of this standard are:

1. monitor and maintain pool plant operations
2. carry out incoming source water and pool water testing

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Performance Criteria

You must be able to:

Monitor and maintain pool plant operations

1. carry out your role in line with legal, manufacturers', industry lead bodies' and organisational procedures
2. carry out monitoring, checks and routine maintenance of pool plant operations to meet normal operational procedures for:
 - 2.1. filtration
 - 2.2. disinfection
 - 2.3. heating
 - 2.4. pressure
 - 2.5. measuring and control
 - 2.6. hydraulics
 - 2.7. water circulation and flow rates
 - 2.8. pool facility environmental controls
 - 2.9. calibration of automatic controls
 - 2.10 manual and automatic dosing
3. use pool plant chemicals in accordance to health and safety, legal, manufacturers' and organisational procedures
4. complete pool plant records in accordance to organisational procedures and report any issues to the relevant people

Carry out incoming source water and pool water testing

5. carry out the regular **tests, monitoring** and **sensory inspections** of pool water
6. monitor pool water quality to ensure most favourable water conditions
7. follow manufacturers' instructions for use and maintenance of pool water test equipment
8. carry out pool water **sampling** and record test results following normal operational procedures
9. take corrective action when pool water **tests and monitoring** results do not meet normal operational procedures and record all action taken

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Knowledge and Understanding

You need to know and understand:

Monitor and maintain pool plant operations

1. your personal responsibilities and liabilities under current health and safety legislation covering your job role
2. the **legal, organisational, industry lead bodies' and manufacturers' requirements** for pool plant operations
3. the **industry lead bodies'** and where to find recommendations, guidelines and approved codes of practice
4. the types of pools and their uses; types of pool tanks and finishes and the **measuring and control systems** for these and how this impacts on maintenance of pool water quality
5. the reasons for monitoring and maintaining the quality and temperature of the water
6. how disinfectants of pool water are selected and their operation
7. the different types, effects and suitability of primary and secondary disinfectants in water treatment
8. the different types of waterborne and airborne diseases and infections
9. how to carry out and interpret the water samples and **respond to the results**
10. the remedial action required in response to poor water quality
11. the different types of pool water filters and flow rates
12. the significance of pressure readings in the filtration process
13. the pool facility environmental implications of operating and managing pool plant operations
14. the need for an economic, energy efficient and effective pool plant
15. the monitoring procedures and **timelines** for effective operation
16. the maintenance procedures and **timelines** for effective operation of pool plant equipment
17. the procedures for testing pool emergency alarms
18. the procedures for reporting and action to take for faulty equipment and other issues
19. the emergency action plan for pool plant operations

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20. the records that must be completed, maintained and how long they should be made available

Carry out incoming source water and pool water testing

21. the principles of water treatment

22. the regular **tests**, checks and sensory inspections required for pool plant operations and the maintenance of water temperature and quality

23. the different temperatures required for various water activities

24. the **chemicals** used in pool plant operation, their associated hazards and risks and the control measures that must be put in place to ensure safe use

Scope/range related to Performance Criteria

Tests and monitoring

1. pH
2. free and total disinfectant levels
3. calculate combined disinfectant levels
4. total dissolved solids

Sensory inspections

1. water clarity
2. algae
3. scum lines
4. the cleanliness of the pool area and surround
5. irritant smells
6. surface water removal

Sampling

1. location
2. depth
3. frequency
4. documenting
5. equipment

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Scope/range related to Knowledge and Understanding

Legal, Organisational, Industry lead bodies and manufacturers' requirements

1. staffing structure and management systems – their impact on water quality
2. health and safety
3. operational protocols
4. operations and maintenance manual and schematic drawings

Industry lead bodies

1. Pool Water Treatment Advisory Group – PWTAG
2. British and European standards - BSI
3. National Health Agencies
4. Swimming Pool & Allied Trades Association – SPATA
5. Health and Safety Executive - HSE

Measuring and control systems

1. circulation system
2. filtration
3. primary and secondary disinfection
4. water temperature controls

Respond to the results

1. chemical imbalance
2. unsatisfactory microbiological results
3. notification from external agencies

Timelines

1. daily
2. weekly
3. monthly
4. 12 monthly
5. when required

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Tests

1. total alkalinity
2. calcium hardness
3. air and water temperatures
4. water balance
5. relative humidity
6. pool loading and characteristics
7. microbiological
8. sulphate
9. cyanuric acid
10. chlorides
11. source water
12. turbidity

Chemicals

1. disinfection
2. pH correction
3. additional chemicals used
4. coagulants and flocculants
5. cleaning materials

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Additional Information

Records that you may need to complete and maintain are included in the list below:

1. pre-opening and closing checks
2. pressure readings
3. water and air temperatures
4. relative humidity
5. water clarity
6. results of chemical and microbiological tests
7. chemical levels
8. circulation flow rates
9. alarms
10. incident report

Pool designs that impact on maintenance of pool water quality that you may need to know about:

1. conventional pools
2. free form pools
3. leisure pools (with a beach effect)
4. flumes and catch pools
5. hydrotherapy pools
6. school pools
7. spa pools
8. natural (green) bathing pools
9. interactive water features
10. paddling pools
11. domestic pools
12. outdoor pools

Factors that impact on maintenance of pool water quality that you may need to know about:

1. changing rooms
2. safe access for users
3. plant room
4. chemical storage
5. temperature and humidity
6. energy management
7. hydraulics and water circulation

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8. bather load
9. surface water removal
10. balance tanks
11. outlet and inlet safety
12. moveable floors and booms
13. valves
14. flow metres and pressure gauges
15. dye testing
16. more than one pool
17. equipment used within pools
18. condition of filter media bed

Hazards that may take place when dealing with chemicals could include:

1. spillage
2. storage
3. mixing
4. handling
5. transport
6. electrical
7. noise
8. lone working

Aspects of pool water quality could include the following types of pool contamination:

1. faeces
2. vomit
3. blood
4. chemical
5. physical
6. bacteriological

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Values

The following key values underpin the delivery of services in the sport and leisure sector

1. a willingness to learn
2. a willingness to take responsibility
3. a flexible working attitude
4. a team worker
5. a positive attitude
6. personal and professional ethics

Behaviours

The following behaviours underpin the delivery of services in the sport and leisure sector:

1. meeting the organisation's standards of behaviour and appearance
2. maintaining effective, hygienic and safe working methods
3. adhering to workplace, suppliers' and manufacturers' instructions for the safe use of equipment, materials and products

Skills

The following key skills underpin the delivery of services in the sport and leisure sector

1. the ability to follow instructions and self-manage
2. the ability to use verbal and non-verbal communication
3. the ability to read and understand written instructions

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Glossary

Algae

Simple form of microscopic plant life that thrives in sunlight and can make pool water cloudy

Calcium hardness

A measure of the calcium salts dissolved in pool water

Emergency action plan

The written plan which has been developed by the facility to deal with any emergencies which may occur

Filtration

Removal of colloidal and particulate matter by passing the pool water through filter media

Maintenance schedule

The manufacturers' guidelines for routine maintenance of plant and equipment

Normal operating procedures

The procedures which have been developed by the facility to cover normal operations on a daily basis

pH

A measure of the degree of acidity/alkalinity of water on a logarithmic scale of 0-14.0. A pH below 7.0 is acidic and above 7.0 is alkaline.

Primary Disinfection

Removal of a risk of infection, achieved primarily by maintaining the correct concentration of disinfectant in the water. Primary disinfection will kill bacteria and viruses, and provide a residual to prevent cross-contamination.

Remedial action

The action to be taken when there are faults, alarms or variations in the operation of the plant

Responsible person

The person with overall responsibility for the plant and the quality of the pool water - usually the line manager or supervisor

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Secondary disinfection

Secondary disinfection (UV or ozone) increases the kill of infectious organisms, especially *Cryptosporidium*; it is an additional disinfection that occurs to support the primary disinfection

Water circulation systems

The circulation system is hydraulically designed to allow pool water to be continually circulated to maintain the water to the required standard, through filtration and chemical treatment

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Developed by	SkillsActive
Version Number	2
Date Approved	January 2016
Indicative Review date	April 2021
Validity	Current
Status	Original
Originating Organisation	SkillsActive
Original URN	SKAC25
Relevant Occupations	Associate Professionals and Technical Occupations; Pool Plant Operators; Leisure and Recreation; Sports and Fitness Occupations; Spa Operators;
Suite	Pool Plant Operations
Key words	Operate plant; pool plant operations; monitor and maintain quality of water; pool water testing; sensory inspections; types of pools;