PC2 13 Operate plant to maintain the quality of pool water (Skills Active unit C25)

This unit is imported from SkillsActive unit C25.

(SQA Unit Code FG83 04)

Introduction Summary

This unit is about operating swimming pool plant. The unit covers start-up and shut-down, routine maintenance and ensuring that the water quality, clarity and temperature are safe and within the recommended ranges. The purpose of operating the plant could be to carry out routine maintenance to ensure:

- plant efficiency
- plant effectiveness
- plant economy

The unit is divided into three parts. The first part (page 2) gives some examples and explanations of some words we use in the unit. The second part (pages 3-5) describes the three things you have to do. These are:

PC13.1 Start up and shut down plant PC13.2

Maintain plant in working order PC13.3

Ensure the quality of water

The third part describes the knowledge and understanding you must have.

Target Group

The unit is targeted at those who have had training and experience relevant to plant operation. The unit is not for engineers who carry out more than routine maintenance.

What we mean by some of the words used in this unit.

Corrective action what the candidate should do when there are faults, alarms or variations in the operation of the plant

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

Guidelines those developed by the manufacturer or professional or regulatory bodies and possibly adapted by the facility

Health and safety legislation mainly the Health and Safety at Work Act but also other pieces of legislation or regulations which may be relevant to the plant, for example the Control of Substances Hazardous to Health regulations

Maintenance schedule the manufacturer's guidelines (possible adapted by the facility) for routine maintenance

Normal operating procedures the procedures which have been developed by the facility to cover normal (non-emergency) working

Plant effectiveness the plant's ability to maintain optimum operating conditions - and quality as required

Plant efficiency the plant's ability to maintain water temperature and quality whilst using the minimum amount of energy under the circumstances

Plant economy maintaining the overall plant running costs to an acceptable level

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

Element 13.1	Start up and shut down plant

What you must do

To meet the national standard, you must:

1. make sure the systems are correctly set for start-up and shut-down
2. begin the start-up and shut-down sequences following the manufacturer's instructions
3. monitor the systems for faults and alarms
4. take the correct action to deal with any faults and alarms promptly and according to guidelines
5. follow the emergency action plan in the event of any emergencies
6. complete all the necessary records accurately and legibly, and make them available to the responsible colleague when required
7. Ensure plant operates within the recommended parameters and standards laid down by the manufacturer or installer and in accordance with nationally accepted guidelines
8. follow all relevant legislation and other safety requirements at all times

What you must cover

This element covers the following types of:

systems

1. Circulation (including pumps)
2. Filtration (including strainers and filters)
3. Disinfection (including storage and dosing tanks, pumps)
4. Heating (including calorifiers, heat exchangers)
5. Coagulation (including dosing tanks, pumps)
6. Pressure gauges
7. Measuring (automatic dosing, testing)
8. Control (including calibration and control systems)

records

1. start up and shut down times
2. inlet and outlet pressures
3. water and air temperatures
4. results of chemical tests
5. variations from normal start-up and shut-down procedures
6. suggestions for improving normal operating procedures
7. Chemical levels (bulk and day tank levels and gas pressures – where appropriate)

Element 13.2 Maintain plant in working order

What you must do

To meet the national standard, you must:

1. carry out regular tests, visual and audible checks and routine maintenance according to the prescribed maintenance schedule and log sheet requirements
2. identify any items which need repair and report these to the responsible colleague
3. take the appropriate action when the normal operating procedures are not being met
4. log and report energy and water usage figures, taking appropriate action to deal with wasteful losses and leaks to maintain the efficiency and safety of the plant
5. monitor the alarms and respond to them following normal operating procedures and the emergency action plan
6. complete all the necessary records and make them available to the responsible colleague when required
7. follow all relevant legislation and meet recommended operating conditions-at all times

What you must cover

This element covers the following types of:

tests and checks

1. rates of energy use
2. rates of flow
3. levels of pressure
4. levels of temperature
5. measuring and control
6. alarms
7. energy saving devices
8. levels of chemicals in storage and dosing tanks

plant systems

1. filtration
2. disinfection

3. heating
4. pressure
5. measuring and control

routine maintenance to ensure

1. plant efficiency
2. plant effectiveness
3. plant economy

Element 13.3	Ensure the quality of water

What you must do

To meet the national standard, you must:

1. carry out the regular tests, monitoring and sensory inspections according to prescribed water test procedures
2. check the water clarity to ensure it remains in optimum condition
3. pay careful and ongoing attention to the alarms which monitor water quality
4. make sure that test equipment is free from contamination
5. take water samples in a way that conforms to Normal Operating Procedures -
6. take corrective action when normal operating procedures are not being met and in response to bacteriological test results. Remedial actions that may need to be taken in response to incidents including:
    - Faecal
    - Diarrhoeal
    - Vomit
    - Blood
    - Microbiological
7. complete all the necessary records accurately and legibly, and make them available to the responsible colleague when required
8. follow all relevant legislation and other safety requirements at all times

What you must cover

This element covers the following types of:

tests and monitoring

1. pH
2. free and combined disinfectant levels
3. air and water temperatures

4. relative humidity
5. fresh water dilution
6. pool loading

7. plant running time
8. microbiological

sensory inspections

1. water clarity
2. water quality
3. algae
4. foaming
5. dissolved particulate matter
6. scum lines
7. the cleanliness of the pool surround

samples

1. the calibration of automatic controls
2. water balance
3. total dissolved solids
4. alkalinity
5. calcium hardness
6. bacteria

What you must know and understand

To be competent in this unit, you must know and understand the following

For the whole unit

1. the manufacturer's instructions and the normal operating procedures for the plant
2. the chemicals commonly used in pool plant, their effects and the hazards associated with them and the control measures that must be put in place to ensure safe use
3. the emergency action plan for the plant
4. the records concerning the operation of the plant which need to be kept up
5. how to complete the necessary records
6. who is the responsible colleague to make records available to and report equipment needing repair

7. the basic requirements of the Health and Safety at Work Act and COSHH regulations as they apply to the operation of plant

Start up and shut down plant

8. the importance of following instructions for the operation of the plant
9. how to set the systems in preparation for start up and shut down
10. how to begin start up and shut down sequences
11. how to monitor the plant operation during start up and shut down
12. how to take corrective action when the normal operating procedures are not met during start up and shut down
13. the faults and alarms which may occur during start up and shut down

Maintain plant in working order

14. the importance of maintaining plant in good working order
15. the basic principles of filtration, disinfection, circulation, storage, boilers and heating equipment - and associated measuring and control equipment
16. the requirements of the maintenance schedule and logsheets
17. normal rates of energy use and flow, levels of pressure and temperature
18. how to carry out the routine tests and maintenance required
19. how to calculate, monitor and record energy and water usage figures
20. how to identify items needing repair and what to do when they are found
21. how to identify when the plant is not running properly
22. how to test alarms

Ensure the quality of the water

23. the importance of maintaining the quality and temperature of the water
24. the basic principles involved in maintaining water quality
25. the tests and checks which need to be carried out in order to check the quality and temperature of the water and how to do so
26. The remedial actions required for a range of chemical contaminants and biological releases into the pool.
27. the importance of uncontaminated test equipment and how to ensure equipment is not contaminated
28. how to take the samples required
29. the water temperatures which are appropriate for - a range of activities
30. the types of corrective action to take when water quality and temperature does not meet standards