
Overview

Measure, weigh and prepare compounds and solutions for laboratory use in accordance with approved procedures and practices.

You will be required to demonstrate that you can measure, weigh and prepare compounds and solutions in a laboratory environment in accordance with the relevant workplace procedures.

The activity is likely to be undertaken by someone in a science related work setting, including individuals working in hospitals, scientific laboratories, schools and universities.

Performance criteria

- You must be able to:*
- P1 ensure that your work is carried out in accordance with standard operating procedures
 - P2 wear the appropriate personal protection equipment (PPE) when handling materials
 - P3 use laboratory scales for accurately weighing out materials, using metric/imperial measures
 - P4 accurately measure pH and conductivity of solutions in the laboratory, using correctly calibrated meters
 - P5 measure out aliquots of liquids into tubes and microtrays for laboratory use and analysis
 - P6 measure liquids and solids for laboratory use and analysis
 - P7 communicate the required information about the work done, to authorised people, in accordance with departmental and organisational procedures

Knowledge and understanding

- You need to know and understand:*
- K1 the health and safety requirements of the area in which you are carrying out the laboratory activities
 - K2 the implications of not taking account of legislation, regulations, standards and guidelines when conducting laboratory activities
 - K3 the principles of Good Laboratory Practice (GLP) and/or Good Clinical practice (GCP)/Good Manufacturing Practice (GMP) applied in the workplace
 - K4 the importance of wearing protective clothing, gloves and eye protection when handling specimens/samples
 - K5 the importance of correct identification, and any unique organisational or laboratory numbers
 - K6 the lines of communication and responsibilities in your department, and their links with the rest of the organisation
 - K7 the limits of your own authority and to whom you should report if you have problems that you cannot resolve
 - K8 how to calculate mass/mole calculations in metric and/or imperial measures
 - K9 how to select the appropriate balance and scale for less than 100mg, 100mg to 5g, and 5g and above
 - K10 how to check that a pipette is clean, dry, free of chips and ready for use
 - K11 how to check the calibration on a pipette
 - K12 how to calibrate and check the calibration on a pH meter
 - K13 how to calibrate and check the calibration on a balance
 - K14 how to calibrate and check the calibration on a conductivity meter
 - K15 how to measure and weigh solids and liquids for laboratory use
 - K16 how to convert between different units of concentration
 - K17 how to calculate dilution factors and dilution volumes to make solutions from concentrated stock solutions
 - K18 the pH scale as a logarithmic scale for the measurement of the acidity of aqueous solutions, and the importance of pH to biological systems and processes
 - K19 how to choose the appropriate measuring equipment for the scale, accuracy and precision required for the task
 - K20 how to clean and maintain the pipettes, balances, pH meter probes and conductivity meter probes

Scope/range

1. use three of the following types of protective clothing and equipment:
 - 1.1 laboratory coat
 - 1.2 gloves
 - 1.3 other (please specify)
 - 1.4 face mask
 - 1.5 safety glasses

2. carry out weighing activities using balances (scales), using two of the following accuracies:
 - 2.1 grams
 - 2.2 milligrams
 - 2.3 micrograms

3. measure out aliquots of solutions, using four of the following:
 - 3.1 automated pipettes
 - 3.2 graduated cylinders/beakers/tubes
 - 3.3 volumetric flasks
 - 3.4 graduated/bulb pipettes
 - 3.5 other (please specify)
 - 3.6 syringes
 - 3.7 burettes

4. measure pH and/or conductivity, using two of the following:
 - 4.1 handheld pH meter
 - 4.2 combined pH/conductivity meter
 - 4.3 conductivity meter
 - 4.4 bench top pH meter
 - 4.5 other (please specify)

5. calibrate or check the calibration for two of the following:
 - 5.1 pH meter
 - 5.2 conductivity meter
 - 5.3 other (please specify)
 - 5.4 balance
 - 5.5 pipettes

6. calculate the concentrations of solutions, the amounts and volumes required, using four of the following:
 - 6.1 moles per litre
 - 6.2 parts per million
 - 6.3 other (please specify)
 - 6.4 grams per litre
 - 6.5 mass percent

7. make up known volumes of solutions to a specified concentration, using both of the following:

7.1 by measuring and dissolving the correct amount of solute in the correct volume of diluent/solvent

7.2 by dilution from a concentrated stock solution 8. weigh and prepare three of the following types of compound or solution:

8.1 powders/granulations that do not readily lose or gain weight (moisture or solvent)

8.2 solids that readily lose or gain weight (moisture or solvent)

8.3 liquid samples (by difference)

8.4 liquid samples (direct)

9. record details of the work, and communicate the details to the appropriate people, using:

9.1 verbal report plus one method from the following:

9.2 written or typed report (eg, laboratory notebook)

9.3 computer-based record

9.4 specific company documentation

9.5 electronic mail

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