

T Level Technical Qualification in Science

Occupational specialism assessment (OSA)

Laboratory Sciences

Assignment 1

Assignment brief

v1.2: Specimen assessment materials
20 November 2023
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Assignment brief

Assignment 1

Contents

Scenario	3
Task 1	4
Task 2	5
Task 3	6
Risk assessment guidance	7
Risk matrix	8
Literature list	11
Document information	12
Change History Record.....	12

Scenario

A commercial dairy that produces cheese has experienced problems of variable quality of product. This has been linked to the bacteriological quality of the raw milk used in the operation. A new storage routine is being trialled to reduce bacterial contamination.

The company wishes to compare the bacteriological quality of raw milk stored using the old and revised storage methods. Managers have identified total viable count as an appropriate method of measuring the levels of bacteria within the milk.

As a scientist working for this company, you have been asked to produce a standard operating procedure (SOP) for the total viable count technique (also known as aerobic or standard plate count) to determine the number of colony-forming units (CFU) in milk samples. The SOP will be used to compare milk samples from the different storage treatments.

There are 3 tasks in this assessment:

Task 1: Writing a literature review (that includes a literature search)

Task 2: Writing the SOP for the total viable count technique

Task 3: Writing a risk assessment for the SOP

Task 1

Carry out a literature search to determine suitable methods, and how to interpret results.

You will be provided with an online information package of literature sources. Search only these sources to find relevant material and to carry out your review.

Write a literature review which demonstrate how you have evaluated which literature to select for the task, including justifications for the literature selected.

Select key information that will be needed to write the SOP and to interpret the results, for example:

- information that would help to inform the methods, techniques and equipment used
- how results are determined
- the results expected
- safety considerations

Comment on the quality and reliability of the information used.

Reference any sources of information.

(28 marks)
(3 hours)

Task 2

Write a standard operating procedure (SOP) for use of the total viable count technique to determine the number of colony-forming units (CFU) in milk samples. The aim of the SOP is to allow comparison of the CFU of milk stored in 2 different ways.

Design and write your SOP.

Your SOP should follow safe working practices. You will be writing a full risk assessment in task 3.

Include a hypothesis in the introduction to your SOP.

Your SOP must include any necessary controls and should indicate how the data from the 2 milk storage methods will be recorded and analysed.

(58 marks)
(3 hours)

SAMPLE

Task 3

Write a risk assessment for the total viable count procedure described in your SOP (task 2).

Use the template provided.

(16 marks)
(1 hour)

SAMPLE

Risk assessment guidance

Complete the risk assessment template, including the following:

- identify and list any hazards that you feel apply to your activity
- identify the people that could be harmed by this hazard
- using the risk matrix provided, identify the risk level that this hazard presents
- think about the control measures that you can put in place to reduce the risk of the individual hazards
- using the risk matrix provided, identify the new risk level now that control measures are in place to manage the hazard and reduce the risk of injury - please note that the severity level will not always alter only the likelihood
- continue on a separate sheet if necessary
- sign and review the document

SAMPLE

Risk matrix

Risk matrix – evaluation of risks							Action level
Almost certain	5	5	10	15	20	25	20-25 STOP
Highly likely	4	4	8	12	16	20	
Likely	3	3	6	9	12	15	12-16 URGENT
Unlikely	2	2	4	6	8	10	8-10 ACTION
Extremely improbable	1	1	2	3	4	5	4-6 MONITOR
	X	1	2	3	4	5	1-3 NO ACTION
		Minimal	Minor injury	7 day + injury	Serious or major injury	Severe	
			Consequence				

Risk assessment form

Person carrying out risk assessment:		<table border="1"> <thead> <tr> <th>THOSE AT RISK</th> <th>KEY</th> </tr> </thead> <tbody> <tr> <td>Own staff</td> <td>OWN</td> </tr> <tr> <td>Venue staff</td> <td>VEN</td> </tr> <tr> <td>Organisers</td> <td>ORG</td> </tr> <tr> <td>Visitors</td> <td>VIS</td> </tr> <tr> <td>Public</td> <td>PUB</td> </tr> <tr> <td>Contractors</td> <td>CON</td> </tr> <tr> <td>All persons onsite</td> <td>AOS</td> </tr> </tbody> </table>	THOSE AT RISK	KEY	Own staff	OWN	Venue staff	VEN	Organisers	ORG	Visitors	VIS	Public	PUB	Contractors	CON	All persons onsite	AOS
THOSE AT RISK	KEY																	
Own staff	OWN																	
Venue staff	VEN																	
Organisers	ORG																	
Visitors	VIS																	
Public	PUB																	
Contractors	CON																	
All persons onsite	AOS																	
Persons responsible on site:																		
Venue:																		
Work activity:																		
Date of assessment:																		

Please read the guidelines prior to completing your risk assessment

Section 1

Hazard	Who might be harmed? (see 'those at risk', above)	Likelihood	Severity	Total risk level	Control measures (add any other control measures you will use)	Likelihood	Severity	Res. risk level

Hazard	Who might be harmed? (see 'those at risk', above)	Likelihood	Severity	Total risk level	Control measures (add any other control measures you will use)	Likelihood	Severity	Res. risk level

By signing the declaration below you have agreed that you will put the appropriate control measures in place to ensure that hazards are reduced and that the risks applicable to your stand are controlled.

Signed	
Print name	
Review date	

Literature list

www.gov.uk/government/publications/enumeration-of-organisms-in-food-and-dairy-samples-sample-preparation-procedures

www.ncbi.nlm.nih.gov/pmc/articles/PMC3609194/

ecoursesonline.iasri.res.in/mod/resource/view.php?id=101515

woodvets.co.uk/wp-content/uploads/2017/02/Bulk-Milk-Explanation.pdf

SAMPLE

Document information

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Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Post approval, updated for publication.		January 2021
v1.1	NCFE rebrand.		September 2021
v1.2	Sample added as a watermark	November 2023	20 November 2023