T Level Technical Qualification in Science

Occupational specialism assessment (OSA)

Food Sciences

Assignment 3

Mark scheme

v1.1: Additional sample material
21 November 2023
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Contents

Task 1: food risk assessment

Band	Mark	Descriptor
4	16–20	The student has produced a risk assessment that systematically and comprehensively evaluates all risks of changing the slicing blade and determines a hierarchy of risk with justification and makes realistic recommendations for improvement. The risk assessment is supported by details of relevant and current legislation certification and uses industry standard techniques for ranking risk.
3	11–15	The student has produced a risk assessment that describes all the risks of changing the slicing blade. The student has identified some risks as most serious/high priority, giving reasons and making appropriate suggestions for improvement. The risk assessment is supported by some details of relevant legislation and certification and uses industry standard techniques for ranking risk.
2	6–10	The student has produced a risk assessment that describes most of the risks for changing the slicing blade. The student has identified one risk as most serious/high priority and makes an appropriate suggestion for improvement. The risk assessment is supported by general reference to legislation and certification and attempts to use industry standard techniques for ranking risk.
1	1–5	The student has produced a risk assessment that lists some of the risks of changing the slicing blade. The student made general statements (rather than occupational knowledge in context) about risk and improvement. Uses common sense methods (rather than use of industry standard techniques) to rank risk.
0	0	No creditworthy material as described in bands 4 to 1.

Indicative content

- considered **all** steps in processing operations at Smithson's Foods
- risk of contamination as food is packaged by hand in the factory
- considered evidence of supplier assurance, quality checks and hazard analysis and critical control point (HACCP) plans
- any comments regarding risk of new machinery in the process (for example, mechanical hazard, risk of damage to belt, risk of loose parts, risk of not being fitted properly and screws/shrapnel coming loose)
- any comments regarding further information needed regarding people training for the new machinery, risk of hand guard in machine

- less amber and green products produced during trials so less risk of customer complaints
- more repack needed, so higher rejects, but throughput still higher, producing a better factory efficiency
- given a likelihood score, a severity score, and an overall risk level (for example, the likelihood of chicken contamination on the belt may be 1, the severity may be 3 and overall risk rating may be 3)
- quality checks only check one pack, issues could be missed or not enough visibility of data overall
- colder meat cut better, so lower risk of complaints when neater product made
- identified all additional information required that may improve the risk rating of a step, such as training, a HACCP plan that considers new machinery, improvement in quality check information

Content mapping:

S3.9: Apply the 8 stages of root cause analysis to investigate problems and/or customer complaint and recommend suggestions for improvement

S3.10: Carry out procedures for quality control testing and sensory analysis

K3.3: The principles of sensory evaluation used in food operations

K3.5: How to determine the sampling required as part of the sensory analysis panels

K3.6: How different procedures are used to measure quality control and sensory analysis in food operations

K3.7: The importance of maintaining specifications when carrying out sensory evaluation in food operations

Task 2: analysis of customer complaints

Criteria	Marks awarded
Identified trends and provided a summary	1 mark for each trend identified correctly: • foreign body was highest complaint in 2021 • presentation was the second highest complaint • pork medallions on line 2 had the most complaints • diced chicken breast on line 3 had the second highest amount of complaints **(maximum 3 marks)** 1 mark for an accurate summary of each trend: • foreign body had 15 complaints • presentation had 12 complaints • pork medallions had 12 complaints in total • diced chicken breast had 11 complaints **(maximum 3 marks)**
Given reasons for the complaints	1 mark for each coherent and logical reason given for the complaints: • foreign body was the most common occurring complaint type • foreign body was most associated with hard and blue plastic pieces found in the pack • foreign bodies were most associated with line 3 and soft plastic • foreign bodies complaints on line 4 led to a product recall due to hard plastic **(maximum 3 marks)**
Total marks:	9 marks

Band	Mark	Descriptor
4	10–12	The student has provided a logical priority order for resolving all the trends/complaint types, producing a logical root cause analysis for the correct highest priority complaint type, with well-reasoned justifications given for recommended preventative actions.
3	7–9	The student has provided a logical priority order for resolving all the trends/complaint types, producing a credible root cause analysis for the correct highest priority complaint type, with relevant explanation given for recommended preventative actions.

Band	Mark	Descriptor
2	4–6	The student has provided a priority order for resolving all the trends/complaint types, producing a straightforward root cause analysis for the student's highest priority complaint type, with some description given for recommended preventative actions.
1	1–3	The student has produced a basic root cause analysis for the student's chosen complaint type, with some but limited reference to possible preventative actions, based on general assertions (rather than occupational knowledge in context).
0	0	No creditworthy material as described in bands 4 to 1.

Indicative content

The 8 stages of root cause analysis have been broadly applied as follows and where appropriate:

- stage 1: define the incident
- stage 2: identify initial corrective action to contain and address the immediate consequences, for example, hard plastic – depot checks
- stage 3: categorise the incident by drawing up a fish bone diagram, focusing on the key factors that need to be taken into account, including packaging, ingredients, process, procedures, people
- stage 4: determine the root causes by utilising the 5 whys (for example, risks, probabilities and other factors):
    - for example, foreign body:
        - why did it happen?
        - why was blue plastic on the belt?
        - why could we not remove the blue plastic?
        - why did we not remedy this risk?
        - why did we not invest in the plant so that we would reduce plastic in the process?
- stage 5: identify management procedures that have failed, for example, complaints of plastic in the process:
    - planning and maintenance schedules
    - investment review
    - management commitment
- stage 6: define preventive actions and implement solutions to resolve problem/customer complaint (for example, more quality checks required to visually check for plastic)
- stage 7: review effectiveness of preventive actions, including validity of the solution (for example, planned review in 1 months' time)
- stage 8: sustain and maintain improvements, sharing outcomes and best practice where appropriate (for example, staff training planned subsequent to review)

As long as the student justifies their answer, there is no priority order to the answer to this question. As long as the rationale is sound, for example, the foreign body that lead to a product recall, so this is the highest priority. The pork medallions were the most complained about product so these are the second priority.

All trends/complaint types can be prioritised in any order, providing there is good justification for this.

Content mapping:

S3.8: Identify and resolve problems relating to quality issues and/or customer complaints using appropriate problem-solving techniques

S3.9: Apply the 8 stages of root cause analysis to investigate problems and/or customer complaint and recommend suggestions for improvement

K3.1: The purpose of using problem-solving techniques (for example, root cause analysis) when investigating and resolving problems within the food and drinks industry

K3.2: The importance of identifying and resolving problems relating to customer complaints and quality issues

Performance outcome (PO) grid

Task	PO1	PO2	PO3	PO4	Total
1	0	0	20	0	20
2	0	0	21	0	21
Total marks	0	0	41	0	41
% weighting	0	0	100	0	100

Document information

Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Additional sample material		01 September 2023
v1.1	Sample added as watermark	November 2023	21 November 2023