

Level 3 Diploma in Meat Hygiene and Inspection

May 2006

1070 Guided Learning Hours

Description:

The qualifications within the diploma are designed to equip individuals with the knowledge and understanding to enable them to work as members of the teams that carry out the official controls within meat plants specified in the Community Regulation 854/2004. The Level 3 Diploma in Meat Hygiene and Inspection meets the requirements for the professional qualifications of Official Auxiliaries (meat hygiene inspectors) specified to Annex 1, Section II, Chapter IV, B of 854/2004. It should be noted that these regulations stipulate that candidates for assessment must have received at least 500 hours of theoretical training and at least 400 hours of practical training covering the areas specified in the regulations

The Level 3 Diploma award is broken into 8 units:

- Unit 1 Introduction to food safety management
- Unit 2 Regulations and responsibilities in meat processing
- Unit 3a Post mortem inspection of poultry (boilers and hens)
- Unit 3b Post mortem inspection of poultry (turkeys)
- Unit 3c Post mortem inspection of poultry (ducks and geese)
- Unit 3d Post mortem inspection of poultry (game birds)
- Unit 4 Meat hygiene and regulation
- Unit 5 Aetiology, pathology and welfare in poultry
- Unit 6 Aetiology, pathology and welfare in red meat animals
- Unit 7 Post mortem inspection of red meat
- Unit 8 Principles of hygiene and HACCP regulatory auditing

Unit One: Introduction to Food Safety Management

Level 2

20 Guided Learning Hours (20 theory/0 practical)

Rationale

This core unit develops a broad knowledge and understanding of food safety and food hygiene thereby enabling individuals working in food processing to identify problem areas and to assess solutions to ensure that food safety hazards are controlled. It is likely that this unit will be taken early in the programme that leads to the qualifications in Meat Hygiene and Inspection.

Summary of Outcomes:

To achieve this qualification a candidate must:

1. **Explain the causes and effects of food borne illness and its importance to food safety, by being able to:**
 - explain how food hygiene contributes to food safety
 - review the socio-economic effects of food borne illness
 - state the role of microorganisms in food borne illness
 - describe acute and chronic symptoms of food borne illness.

2. **Identify hazards to food safety, by being able to:**
 - describe microbial, chemical and physical contamination
 - review significant organisms causing food borne illness and any special characteristics
 - describe sources, vehicles and routes of contamination
 - explain the multiplication and survival of microorganisms.

3. **Explain measures to control hazards to food safety, by being able to:**
 - outline the importance of high standards of personal hygiene and good food handling practices
 - review procedures for cleaning and disinfection, pest control and waste disposal
 - describe methods of food preservation, storage and stock control
 - discuss the importance of temperature control

4. **Explain the role and responsibilities of personnel for the supervision of food safety and compliance with relevant legislation, by being able to:**
- summarise HACCP based systems of food hygiene management
 - outline the role and responsibilities of the supervisor (person responsible) for food safety
 - state the importance of training and the identification of training/instruction needs
 - review legislation, current regulations and the powers of enforcing authorities
 - describe methods of monitoring and record keeping.

Content:

1. Causes and effects of food borne illness and its importance to food safety.

How food hygiene contributes to food safety: definitions of food hygiene, food safety, high risk food and safe food; role of good food hygiene in reducing levels of bacteria and preventing contamination and cross contamination.

The socio-economic effects of food borne illness: current trends and statistics relating to food borne illness and possible reasons for these; effects of food-borne illness on employers, employees and food businesses; individuals and groups most at risk from food borne illness.

The role of microorganisms in food borne illness: definitions of bacterial food poisoning, food borne illness, infective and toxic food poisoning; viral food poisoning.

Acute and chronic symptoms of food borne illness: general symptoms of food borne illness; incubation periods and symptoms associated with *Salmonella*, *Staphylococcus*, *Clostridia*, *Escherichia coli*, and *Campylobacter*; typical outbreaks caused by these bacteria; viral food poisoning; symptoms due to food allergies.

2. Hazards to food safety.

Microbial, chemical and physical contamination: definition of contamination; microbial contaminants to include bacteria, fungi (and fungal spores) and viruses; examples of physical contaminants; examples of chemical contaminants; examples of common allergens; detection of physical contaminants.

Microorganisms causing food borne illness: size, shape and structure of bacteria; *Salmonella*, *Staphylococcus*, *Clostridia*, *Escherichia coli*, *Campylobacter*; significance of toxin formation and spore production; mycotoxins.

Sources, vehicles and routes of contamination: Sources of food poisoning and food spoilage microorganisms; vehicles and routes of contamination; probable cause of contamination and cross contamination associated with food poisoning bacteria and viruses; sources of chemical and physical contamination; sources of

common allergens; review of methods for controlling and preventing contamination.

Multiplication and survival of microorganisms: Growth requirements of food poisoning bacteria; division and multiplication of bacteria; range of temperatures allowing growth of food poisoning bacteria; germination of bacterial spores and subsequent multiplication.

3. **Measures to control hazards to food safety.**

Personal hygiene and good food handling practices: requirements for maintenance of good personal hygiene; provisions of legislation with regard to personal hygiene; main points of "Food Handlers - Fitness for Work"; how poor standards of personal hygiene can pass on infections to consumers; hygiene and food handling practices during preparation, cooking and serving of food; probable causes of cross contamination and its prevention.

Cleaning and disinfection, pest control and waste disposal: definitions of cleaning, disinfection, sterilisation, detergent, disinfectant, sterilant and sanitiser; nature of chemicals used in cleaning, their possible effects on the consumer, food and food equipment; need for care in storage of chemicals; advantages and disadvantages of mechanical and manual washing systems, in-house and contract cleaning systems; "cleaning in place", "cleaning out of place" and "clean-as-you-go"; cleaning schedules and their importance in "due diligence" defence; cleaning to prevent cross contamination; pests associated with the food industry and their hazards; rats, mice, cockroaches, flies, pharaoh's ants, stored product insects, birds; action to prevent infestation; measures for control and elimination of established infestations; legal obligations of owners of premises; segregation and disposal of waste.

Food preservation, storage and stock control: principles of food preservation by heat, dehydration, acids, sugar, salt, chemicals, controlled atmosphere and temperature; effect of these processes on growth of bacteria; importance of checking food before storage or use; storage conditions for different foods; need to keep raw and cooked foods separate; stock rotation; date marking system for pre-packed food.

Temperature control: the temperature danger zone; reduction of microbial growth in food by time and temperature control; correct cooking, cooling, chilling, freezing, defrosting and re-heating of food; use of refrigerators and freezers; maintaining hot or cold temperatures of food; methods for assessing food temperature; need for temperature control during storage and transport of food.

4. **Role and responsibilities of personnel for the supervision of food safety and compliance with relevant legislation.**

HACCP based systems of food hygiene management: HACCP, terminology, principles and procedures; pre-requisites for HACCP; good hygiene practice and good manufacturing practice; Assured Safe Catering; risk assessment; specific controls for microbiological, physical and chemical hazards; food safety policies.

Role and responsibilities of the supervisor for food safety: monitoring of food handlers; maintenance of standards; reporting to management; training and supervision of staff; staff recruitment.

Training and the identification of training/instruction needs: purpose of training; benefits; legal requirements; training methods; training of new staff; training for new systems/procedures; refresher/remedial training.

Legislation, current regulations and the powers of enforcing authorities: relationship of European legislation to UK food safety legislation; legal status of Acts of Parliament, Regulations and Directives; importance and main provisions of the 2005 legislation (EC Directive 853/2004 'Hygiene of foodstuffs'); The Food Hygiene (England) Regulations 2006, The Food Hygiene in Scotland Regulations 2006, The Food Hygiene (Wales) Regulations 2006, The Food Hygiene Regulations (N. Ireland) 2006 or any superseding legislation relative to food safety requirements and the nature, substance and quality of food, examination and seizure of food, improvement and closure of unsatisfactory premises, power of entry of Authorised Officers and the defence of "due diligence"; outline of actions and responsibilities of Environmental Health Officers, Trading Standards Officers and other Authorised Officers in their role of enforcement of legislation; relevance of Codes of Practice produced by the food trade and government, and Industry Guides to Good Hygiene Practice produced by the government.

Monitoring and record keeping: importance of monitoring to food safety; monitoring of cleaning, hygiene, receipt of goods, staff, standards, stock, temperature; records such as temperature charts, staff training, receipt of goods, cleaning, maintenance, pest control, stock control; records required for "due diligence" defence.

Assessment:

This unit will be assessed by an examination consisting of 40 short answer questions to be completed in 90 minutes. The examination will be provided by RSPH

In order to be awarded a *Pass*, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the principles and concepts used in food safety management such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 60% or greater in the examination will be deemed to have achieved the criteria for a *Pass*.

Unit Two: Regulations and Responsibilities in Meat Processing

Level 2

10 Guided Learning Hours (10 theory/0 practical)

Rationale

This core unit provides an introduction to the regulatory framework within which the meat industry operates. Candidates should be able to recognise the legislation cited here and identify its principal purposes. It should be noted that the regulations to be considered will be those which are currently in effect, and those for which a future implementation date has been fixed.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Review the legal and regulatory aspects of the meat industry, by being able to:**
 - outline the legal responsibilities placed on food businesses.
 - describe the organisation of regulatory bodies
2. **Outline the importance of residue sampling, by being able to:**
 - outline the need for residue sampling
 - describe procedures for residue sampling in poultry
3. **State the importance of food safety in the meat industry, by being able to:**
 - define 'farm to fork'
 - outline strategies for the implementation of HACCP in meat plants

Content:

1. **Legal and regulatory aspects**

Legal responsibilities placed on food businesses. implications for the work of employees in meat plants of relevant parts of EC 852/2004 ('H1'), EC 853/2004 ('H2'), EC 854/2004 ('H3') to include the traceability of meat and meat products, Welfare of Animals (Slaughter or Killing) Regulations 1995 ('WASK'), Welfare of Animals (Transport) Order 1997 ('WATO'), Animal By-Products Regulations 2003 or any superseding legislation; legal responsibilities of food handlers; appropriate procedures for staff and businesses to ensure compliance with relevant legislation; outline of legal sanctions; role of the enforcing authorities.

Regulation: purpose and outline history of meat inspection and meat inspection services; duties and responsibilities of Official Veterinarian, Meat Hygiene Inspector and establishment staff who are part of the independent inspection team in meat premises; introduction to EU controls and enforcement procedures; consequences of non-compliance.

2. **Residue sampling**

Need for sampling: types of residues; sources of residues; importance of maximum residue limits; reasons for concern with respect to residues; testing and reference laboratories.

Procedures for residue sampling in poultry: sample request plans; suitability of animals for sampling; individual and batch sampling; tissues required for sampling; methods and procedures for obtaining samples; recording and labelling requirements; need to ensure traceability; dispatch of samples.

3. **Food Safety**

'Farm to fork': concept of 'farm to fork'; implications of 'farm to fork' for public health, animal health and animal welfare; outline of methods for the tracing of meat; reasons for and benefits of tracing meat; consumer issues with regard to the safety of meat.

Implementation of HACCP in a meat plant: necessary prerequisites for HACCP; HACCP implementation; evaluation of HACCP; operation of HACCP-based food safety management systems in meat plants; roles and responsibilities of plant staff.

Assessment:

This unit will be assessed by an examination consisting of 20 short answer questions to be completed in 45 minutes. The examination will be provided by the RSPH

In order to be awarded a *Pass*, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the principles and concepts of regulations and responsibilities in meat processing such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 60% or greater in the examination paper will be deemed to have achieved the criteria for a *Pass*.

Unit 3a: Post Mortem Inspection of Poultry (broilers and hens)

Level 2

70 guided learning hours (20 theory / 50 practical)

Rationale

This unit considers the post-mortem inspection of broilers and hens. Anatomy, physiology, pathology, production methods and inspection procedures are covered in sufficient depth to enable the successful candidate to identify meat unfit for human consumption and suggest possible reasons for the meat being unfit. This is one of four units on the post mortem inspection of poultry. In terms of outcomes and criteria these are identical. They differ only with respect to the types of bird considered and the associated pathological conditions and issues for the meat hygiene inspector. A person who takes just one of these units should spend 70 hours (20 theory and 50 practical in-plant) on it. However, people who take further versions of Unit 3, either concurrently or at a later stage, need spend only 22 hours (2 theory and 20 in-plant) on each of these further units.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Identify anatomical features of broilers and hens and state the function of major organs, by being able to:**
 - identify anatomical features of broilers and hens
 - outline the structure and function of the major organs of broilers and hens
2. **Outline methods for the production and processing of broilers and hens, by being able to:**
 - describe in outline production and processing methods
3. **Describe on-line inspection procedures for broilers and hens by being able to:**
 - recognise diseases of broilers and hens and their associated zoonoses
 - describe pathological conditions of broilers and hens
 - outline post mortem techniques.

Content:

1 Anatomical features of broilers and hens and the function of major organs

Anatomical features: identification and normal appearance of carcasses, parts of carcasses and organs; recognition of sex of carcasses; commonly used commercial terms of anatomical features.

Structure and function of major organs: structure and function of the major body systems of broilers and hens to include heart, lungs, digestive system, reproductive system and liver.

2. Processing methods for broilers and hens

Processing methods: outline of commonly used systems of broiler and hen production; role of food chain information; appreciation of the main steps in the processing of broilers and hens to include unloading, lairaging, hanging-on, stunning and slaughter, skin and feather removal, evisceration and dressing, chilling, packaging and dispatch, handling and disposal of unfit material.

3 On-line inspection procedures for broilers and hens

Diseases of broilers and hens: notifiable diseases of broilers and hens; post mortem detection of abnormalities and lesions due to infectious agents (bacteria, fungi, viruses) and parasites; effect on public health, animal health and animal welfare; zoonotic infections.

Pathological conditions: outline of pathological changes to organs due to dysfunction of body systems; comparison of normal and abnormal carcasses, meat and offal; organoleptic anomalies.

Post mortem techniques: post mortem inspection of broilers and hens; detection and rejection of poorly processed and contaminated birds (to include birds that are badly bled, overscalded, poorly feathered and partly eviscerated); abnormalities and lesions due to trauma; relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings; handling and disposal of unfit material; limitations of post mortem inspections; recording and reporting procedures.

Assessment:

This unit will be assessed by an examination consisting of 20 short answer questions to be completed in 45 minutes, and a practical assessment. Both parts must be passed in order to pass the unit.

The written paper will comprise two parts, A and B:

Part A will have 10 questions and these will be relevant to all types of poultry.

Part B will also have 10 questions and these will be specifically about broilers and hens.

The examination will be provided by the RSPH

In order to be awarded a *Pass* for the written examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of broilers and hens such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 50% or greater in *both* examination papers and an *overall* score of 60% will be deemed to have achieved the criteria for a *Pass*.

Candidates taking further versions of Unit 3 at the same examination session need attempt only one Part A but must take the Parts B for all the Units 3 attempted. A special paper will be provided for this purpose. In these circumstances the candidates must score at least 50% in Part A and, in order to pass a specific Unit 3, at least 50% in the relevant Part B with an overall score of at least 60% from the Part A and the relevant Part B. The candidates will be allowed a further 25 minutes for each Part B for which they have been entered at an examination session.

Candidates taking (or re-taking) further versions of Unit 3 at different examination sessions must attempt Part A and the relevant Parts B even if they have passed Part A on a previous occasion.

The practical examination will require candidates to recognise and identify anatomical features, organs, abnormalities and lesions due to infectious agents, pathological changes to organs due to dysfunction of body systems and abnormalities and lesions due to trauma of broilers and hens from specimens and / or photographic records. In order to be awarded a *Pass* for the practical examination candidates must be able to:

- identify anatomical features of broilers and hens
- recognise diseases of broilers and hens and their associated zoonoses
- describe pathological conditions of broilers and hens
- identify abnormalities and lesions due to trauma
- state the relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings
- correctly pass post mortem judgements on specimens or from photographic evidence.

To achieve these criteria the candidate must demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of broilers and hens such that the candidate will be able to satisfactorily work as part of a meat inspection team.

Unit 3b: Post Mortem Inspection of Poultry (turkeys)

Level 2

70 guided learning hours (20 theory / 50 practical)

Rationale

This unit considers the post-mortem inspection of turkeys. Anatomy, physiology, pathology, production methods and inspection procedures are covered in sufficient depth to enable the successful candidate to identify meat unfit for human consumption and suggest possible reasons for the meat being unfit. This is one of four units on the post mortem inspection of poultry. In terms of outcomes and criteria these are identical. They differ only with respect to the types of bird considered and the associated pathological conditions and issues for the meat hygiene inspector. A person who takes just one of these units should spend 70 hours (20 theory and 50 practical in-plant) on it. However, people who take further versions of Unit 3, either concurrently or at a later stage, need spend only 22 hours (2 theory and 20 in-plant) on each of these further units.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Identify anatomical features of turkeys and state the function of major organs, by being able to:**
 - identify anatomical features of turkeys
 - outline the structure and function of the major organs of turkeys
2. **Outline methods for the production and processing of turkeys, by being able to:**
 - describe in outline production and processing methods
3. **Describe on-line inspection procedures for turkeys, by being able to:**
 - recognise diseases of turkeys and their associated zoonoses
 - describe pathological conditions of turkeys
 - outline post mortem techniques.

Content:

1 Anatomical features of turkeys and the function of major organs

Anatomical features: identification and normal appearance of carcasses, parts of carcasses and organs; recognition of sex of carcasses; commonly used commercial terms of anatomical features.

Structure and function of major organs: structure and function of the major body systems of turkeys to include heart, lungs, digestive system, reproductive system and liver.

2. Processing methods for turkeys

Processing methods: outline of commonly used systems of turkey production; role of food chain information; appreciation of the main steps in the processing of broilers to include unloading, lairaging, hanging-on, stunning and slaughter, skin and feather removal, evisceration and dressing, chilling, packaging and dispatch, handling and disposal of unfit material.

3 On-line inspection procedures for turkeys

Diseases of turkeys: notifiable diseases of turkeys; post mortem detection of abnormalities and lesions due to infectious agents (bacteria, fungi, viruses) and parasites; effect on public health, animal health and animal welfare; zoonotic infections.

Pathological conditions: outline of pathological changes to organs due to dysfunction of body systems; comparison of normal and abnormal carcasses, meat and offal; organoleptic anomalies.

Post mortem techniques: post mortem inspection of turkeys; detection and rejection of poorly processed and contaminated birds (to include birds that are badly bled, overscalded, poorly feathered and partly eviscerated); abnormalities and lesions due to trauma; relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings; handling and disposal of unfit material; limitations of post mortem inspections; recording and reporting procedures.

Assessment:

This unit will be assessed by an examination consisting of 20 short answer questions to be completed in 45 minutes, and a practical assessment. Both parts must be passed in order to pass the unit.

The written paper will comprise two parts, A and B:

Part A will have 10 questions and these will be relevant to all types of poultry.

Part B will also have 10 questions and these will be specifically about turkeys

The examination will be provided by RSPH.

In order to be awarded a *Pass* for the written examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and

demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of turkeys such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 50% or greater in *both* examination papers and an *overall* score of 60% will be deemed to have achieved the criteria for a *Pass*.

Candidates taking further versions of Unit 3 at the same examination session need attempt only one Part A but must take the Parts B for all the Units 3 attempted. A special paper will be provided for this purpose. In these circumstances the candidates must score at least 50% in Part A and, in order to pass a specific Unit 3, at least 50% in the relevant Part B with an overall score of at least 60% from the Part A and the relevant Part B. The candidates will be allowed a further 25 minutes for each Part B for which they have been entered at an examination session.

Candidates taking (or re-taking) further versions of Unit 3 at different examination sessions must attempt Part A and the relevant Parts B even if they have passed Part A on a previous occasion.

The practical examination will require candidates to recognise and identify anatomical features, organs, abnormalities and lesions due to infectious agents, pathological changes to organs due to dysfunction of body systems and abnormalities and lesions due to trauma of turkeys from specimens and / or photographic records. In order to be awarded a *Pass* for the practical examination candidates must be able to:

- identify anatomical features of turkeys
- recognise diseases of turkeys and their associated zoonoses
- describe pathological conditions of turkeys
- identify abnormalities and lesions due to trauma
- state the relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings
- correctly pass post mortem judgements on specimens or from photographic evidence.

To achieve these criteria the candidate must demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of turkeys such that the candidate will be able to satisfactorily work as part of a meat inspection team.

Unit 3c: Post Mortem Inspection of Poultry (ducks and geese)

Level 2

70 guided learning hours (20 theory/50 practical)

Rationale

This unit considers the post-mortem inspection of ducks and geese. Anatomy, physiology, pathology, production methods and inspection procedures are covered in sufficient depth to enable the successful candidate to identify meat unfit for human consumption and suggest possible reasons for the meat being unfit. This is one of four units on the post mortem inspection of poultry. In terms of outcomes and criteria these are identical. They differ only with respect to the types of bird considered and the associated pathological conditions and issues for the meat hygiene inspector. A person who takes just one of these units should spend 70 hours (20 theory and 50 practical in-plant) on it. However, people who take further versions of Unit 3, either concurrently or at a later stage, need spend only 22 hours (2 theory and 20 in-plant) on each of these further units.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Identify anatomical features of ducks and geese and state the function of major organs, *by being able to:***
 - identify anatomical features of ducks and geese
 - outline the structure and function of the major organs of ducks and geese

2. **Outline methods for the production and processing of ducks and geese, *by being able to:***
 - describe in outline production and processing methods

3. **Describe on-line inspection procedures for ducks and geese, *by being able to:***
 - recognise diseases of ducks and geese and their associated zoonoses
 - describe pathological conditions of ducks and geese
 - outline post mortem techniques.

Content:

1. Anatomical features of ducks and geese and the function of major organs

Anatomical features: identification and normal appearance of carcasses, parts of carcasses and organs; recognition of sex of carcasses; commonly used commercial terms of anatomical features.

Structure and function of major organs: structure and function of the major body systems of ducks and geese to include heart, lungs, digestive system, reproductive system and liver.

2. Processing methods for ducks and geese

Processing methods: outline of commonly used systems of duck and geese production; role of food chain information; appreciation of the main steps in the processing of ducks and geese to include unloading, lairaging, hanging-on, stunning and slaughter, skin and feather removal, evisceration and dressing, chilling, packaging and dispatch, handling and disposal of unfit material.

3. On-line inspection procedures for ducks and geese

Diseases of ducks and geese: notifiable diseases of ducks and geese; post mortem detection of abnormalities and lesions due to infectious agents (bacteria, fungi, viruses) and parasites; effect on public health, animal health and animal welfare; zoonotic infections.

Pathological conditions: outline of pathological changes to organs due to dysfunction of body systems; comparison of normal and abnormal carcasses, meat and offal; organoleptic anomalies.

Post mortem techniques: post mortem inspection of ducks and geese; detection and rejection of poorly processed and contaminated birds (to include birds that are badly bled, overscalded, poorly feathered and partly eviscerated); abnormalities and lesions due to trauma; relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings; handling and disposal of unfit material; limitations of post mortem inspections; recording and reporting procedures.

Assessment:

This unit will be assessed by an examination consisting of 20 short answer questions to be completed in 45 minutes, and a practical assessment. Both parts must be passed in order to pass the unit.

The written paper will comprise two parts, A and B:

Part A will have 10 questions and these will be relevant to all types of poultry.

Part B will also have 10 questions and these will be specifically about ducks and geese.

The examination will be provided by the RSPH

In order to be awarded a *Pass* for the written examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of ducks and geese such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 50% or greater in *both* examination papers and an *overall* score of 60% will be deemed to have achieved the criteria for a *Pass*.

Candidates taking further versions of Unit 3 at the same examination session need attempt only one Part A but must take the Parts B for all the Units 3 attempted. A special paper will be provided for this purpose. In these circumstances the candidates must score at least 50% in Part A and, in order to pass a specific Unit 3, at least 50% in the relevant Part B with an overall score of at least 60% from the Part A and the relevant Part B. The candidates will be allowed a further 25 minutes for each Part B for which they have been entered at an examination session.

Candidates taking (or re-taking) further versions of Unit 3 at different examination sessions must attempt Part A and the relevant Parts B even if they have passed Part A on a previous occasion.

The practical examination will require candidates to recognise and identify anatomical features, organs, abnormalities and lesions due to infectious agents, pathological changes to organs due to dysfunction of body systems and abnormalities and lesions due to trauma of ducks and geese from specimens and / or photographic records. In order to be awarded a *Pass* for the practical examination candidates must be able to:

- identify anatomical features of ducks and geese
- recognise diseases of ducks and geese and their associated zoonoses
- describe pathological conditions of ducks and geese
- identify abnormalities and lesions due to trauma
- state the relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings
- correctly pass post mortem judgements on specimens or from photographic evidence.

To achieve these criteria the candidate must demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of ducks and geese such that the candidate will be able to satisfactorily work as part of a meat inspection team.

Unit 3d: Post Mortem Inspection of Poultry (game birds)

Level 2

70 guided learning hours (20 theory / 50 practical)

Rationale

This unit considers the post-mortem inspection of game birds. Anatomy, physiology, pathology, production methods and inspection procedures are covered in sufficient depth to enable the successful candidate to identify meat unfit for human consumption and suggest possible reasons for the meat being unfit. This is one of four units on the post mortem inspection of poultry. In terms of outcomes and criteria these are identical. They differ only with respect to the types of bird considered and the associated pathological conditions and issues for the meat hygiene inspector. A person who takes just one of these units should spend 70 hours (20 theory and 50 practical in-plant) on it. However, people who take further versions of Unit 3, either concurrently or at a later stage, need spend only 22 hours (2 theory and 20 in-plant) on each of these further units.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Identify anatomical features of game birds and state the function of major organs, *by being able to:***
 - identify anatomical features of game birds
 - outline the structure and function of the major organs of game birds
2. **Outline methods for the production and processing of game birds, *by being able to:***
 - describe in outline production and processing methods
3. **Describe on-line inspection procedures for game birds, *by being able to:***
 - recognise diseases of game birds and their associated zoonoses
 - describe pathological conditions of game birds
 - outline post mortem techniques.

Content:

1. **Anatomical features of game birds and the function of major organs**

Anatomical features: identification and normal appearance of carcasses, parts of carcasses and organs; recognition of sex of carcasses; commonly used commercial terms of anatomical features.

Structure and function of major organs: structure and function of the major body systems of game birds to include heart, lungs, digestive system, reproductive system and liver.

2. **Processing methods for game birds**

Processing methods: Outline of commonly used systems of game bird production; role of food chain information; appreciation of the main steps in the processing of game birds to include for farmed game, unloading, lairaging, hanging-on, stunning and slaughter; in all types of game bird feather removal, evisceration and dressing, chilling, packaging and dispatch, handling and disposal of unfit material.

3 **On-line inspection procedures for game birds**

Diseases of game birds: notifiable diseases of game birds; post mortem detection of abnormalities and lesions due to infectious agents (bacteria, fungi, viruses) and parasites; effect on public health, animal health and animal welfare; zoonotic infections.

Pathological conditions: outline of pathological changes to organs due to dysfunction of body systems; comparison of normal and abnormal carcasses, meat and offal; organoleptic anomalies.

Post mortem techniques: post mortem inspection of game birds; detection and rejection of poorly processed and contaminated birds (to include birds that are badly bled, poorly feathered and partly eviscerated); abnormalities and lesions due to trauma; relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings; handling and disposal of unfit material; limitations of post mortem inspections; recording and reporting procedures.

Assessment:

This unit will be assessed by an examination consisting of 20 short answer questions to be completed in 45 minutes, and a practical assessment. Both parts must be passed in order to pass the unit.

The written paper will comprise two parts, A and B:

Part A will have 10 questions and these will be relevant to all types of poultry.

Part B will also have 10 questions and these will be specifically about game birds.

The examination will be provided by the RSPH

In order to be awarded a *Pass* for the written examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of game birds such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 50% or greater in *both* examination papers and an overall score of 60% will be deemed to have achieved the criteria for a *Pass*.

Candidates taking further versions of Unit 3 at the same examination session need attempt only one Part A but must take the Parts B for all the Units 3 attempted. A special paper will be provided for this purpose. In these circumstances the candidates must score at least 50% in Part A and, in order to pass a specific Unit 3, at least 50% in the relevant Part B with an overall score of at least 60% from the Part A and the relevant Part B. The candidates will be allowed a further 25 minutes for each Part B for which they have been entered at an examination session.

Candidates taking (or re-taking) further versions of Unit 3 at different examination sessions must attempt Part A and the relevant Parts B even if they have passed Part A on a previous occasion.

The practical examination will require candidates to recognise and identify anatomical features, organs, abnormalities and lesions due to infectious agents, pathological changes to organs due to dysfunction of body systems and abnormalities and lesions due to trauma of game birds from specimens and / or photographic records. In order to be awarded a *Pass* for the practical examination candidates must be able to:

- identify anatomical features of game birds
- recognise diseases of game birds and their associated zoonoses
- describe pathological conditions of game birds
- identify abnormalities and lesions due to trauma
- state the relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings
- correctly pass post mortem judgements on specimens or from photographic evidence.

To achieve these criteria the candidate must demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of game birds such that the candidate will be able to satisfactorily work as part of a meat inspection team.

Unit Four: Meat Hygiene and Regulation

Level 3

100 Guided Learning Hours (90 theory/10 practical)

Rationale

This is a core unit in the qualifications for people seeking to work at the level of Official Auxiliary (Meat Hygiene Inspector). It builds on the Level 2 Units 'Regulations and Responsibilities in Meat Processing' and 'Introduction to Food Safety Management', establishing a sound understanding of the structure of the meat industry, the regulatory framework within which it operates and the hygienic operation of meat plants.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Describe the structure and organisation of the meat industries, by being able to:**
 - state how the meat industry is structured and organised
 - describe the organisation and management of meat and poultry supply chains
 - discuss consumer issues relating to the production and processing of animals for human consumption.
2. **Review legal and regulatory aspects of the meat industry, by being able to:**
 - outline relevant legislation
 - state the importance of health certification and food chain information
3. **Review the importance of food safety hazards to the meat industry, by being able to:**
 - outline the role of biological agents in spoilage and disease
 - describe chemical hazards to food safety
 - describe physical hazards to food safety
4. **Explain the requirements for hygienic production, by being able to:**
 - state how hygiene control procedures should be monitored
 - describe the correct disposal of waste material
 - describe hygiene requirements for the transport of meat.
5. **Describe the operation of a meat plant, by being able to:**
 - discuss the preparation and processing of meat

- explain the principles and application of HACCP
- outline microbiological sampling procedures.

Content:

1. Structure and organisation of the meat industries

Meat industry: structure of meat, poultry and game meat industries in the UK and EU; regional variations in meat trade; variations in nomenclature; marketing and use of meat, poultry and game, including by-products, offal and cull animals.

Meat and poultry establishments: organisation, management and environmental requirements of all types of fresh meat handling establishments including slaughterhouses, processing plants, wholesale depots, cold stores, retail shops and supermarkets; principles of layout and structure of slaughter houses, cutting plants and cold stores; equipment contained within slaughter houses, cutting plants and cold stores necessary for their operation; design and construction features relevant to hygiene of production, personnel safety, ease of cleaning and maintenance; routine maintenance of structure and fabric of meat plants.

Consumer issues: issues relating to effect on animal welfare of farming methods and animal husbandry practices, animal transportation and methods of slaughter; use of feed additives / supplements and their effect on human health; residues in meat and perceived adulteration of meat; safety and fitness of meat for human consumption; concept and implications of 'farm to fork'; importance of traceability of meat.

2. Legal aspects

Legislation: EU directives and regulations; UK Acts, Orders and Codes of Practice; enforcement bodies and industry codes; UK food legislation as it affects meat, game, poultry and meat products plants; role of the central competent authorities, local authorities and their officers.

Health certification and food chain information: types of health and I.D. information; flow of information from farm to fork; health and I.D. marking; security of health marked materials; health marking equipment; health certificates; use of data; imported meat documentation and identification; procedures and documentation for ensuring the traceability of food animals and meat; record keeping; responsibilities of regulatory bodies; roles and responsibilities of officials.

3. Importance of food safety hazards

Role of biological agents: characteristics of bacteria, mycoplasmas, viruses, fungi and prions; infectious and spoilage microorganisms; factors affecting the growth of microorganisms *in vivo* and *in vitro*; common causes of food poisoning; role and characteristics of parasites; common disease organisms in food animals; zoonoses; defence mechanisms of the body.

Chemical hazards: heavy metal poisoning; veterinary residues; cleaning chemicals and grease; pesticides.

Physical hazards: physical hazards that arrive with the animal; packaging materials; metal; glass; bone splinters; methods of preventing and detecting physical contamination.

4. **Hygiene**

Hygiene control procedures: objectives of plant hygiene; cleaning and disinfection routines in meat and poultry plants; hygienic operation of the lairage, slaughter hall, cutting, jointing and boning; cleaning and disinfection / sterilisation of instruments and equipment; monitoring of effectiveness of cleansing and disinfection; application and monitoring of hygiene standards in the workplace; infringements of hygiene regulations, action to be taken; assessment of hygiene of slaughter, dressing, cutting and storage; correction of improper or unhygienic techniques; types and use of cleaning agents, detergents, de-greasers and sanitisers; effect of these chemicals on food containers; water supply, treatment and sampling; cold chain and its maintenance; procedures for the control of pests; monitoring effectiveness of pest control operations; record keeping.

Disposal of waste material: effects on working practices; legislative controls on the disposal of unfit meat, meat not intended for human consumption, other waste and plant effluents; handling, treatment and disposal of specified risk material, cull meat, unfit meat and meat not intended for human consumption; handling, treatment and disposal of other waste material and effluents from meat and poultry plants; monitoring effectiveness of in-plant waste disposal procedures; record keeping.

Transport: main features of the design and construction of vehicles used for the transport of livestock and meat; cleansing and disinfection of vehicles; loading and unloading of vehicles; hygiene during transport; monitoring of cleansing, disinfection, loading, unloading and hygiene control

5. **Operation of a meat plant**

Preparation and processing: cutting, jointing and boning (to include hot and cold boning, warm cutting and line boning techniques); electrical stimulation procedures; preparation and methods of packaging of meat, poultry and offal (to include vacuum packing, gas flushing, modified atmosphere packaging and skin packing); identification of meat cuts and anatomical parts; meat preparations (to include mechanically separated and minced meat); methods of fresh meat preparation; refrigeration and the effect of temperature control on meat quality; meat storage temperatures; cold storage operations; technology of refrigeration (to include post mortem and offal chilling, plate freezing, tunnel freezing, chilled storage, freezing and frozen meat storage); thawing of meat; wrapping of meat; laboratory identification of meat species and meat substitutes; monitoring of preparation and processing procedures and temperatures to ensure meat safety; supervision and record keeping.

Principles and application of HACCP: concept of Hazard Analysis and Critical Control Points (HACCP); the seven principles of HACCP; pre-requisites of Good Hygiene Practice and HACCP; composition and role of the HACCP team;

purpose and use of process flow diagrams; identification of hazards and critical control points; control methods; establishment of critical limits for critical control points; corrective actions; establishment of monitoring and verification procedures; monitoring equipment and its calibration; monitoring of personnel; documentation; HACCP-based systems of food safety management.

Microbiological sampling procedures: reasons for microbiological sampling; sampling strategies; surface and carcass sampling; sampling techniques; advantages and disadvantages of techniques; dispatch of samples; evaluation of microbiology test results to include the effect of microbial succession on microbial counts; water treatment and testing; evaluation of water test results; limitations, monitoring effectiveness of plant procedures and protocols for collecting samples and responding to results; record keeping and reporting; legislation relevant to microbiological sampling.

Assessment:

This unit will be assessed by an examination consisting of four long answer questions to be completed in two hours from a choice of five.

In order to be awarded a *Pass* for the examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the learning outcomes such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 60% or greater in the examination will be deemed to have achieved the criteria for a *Pass*.

Unit Five: Aetiology, Pathology and Welfare in Poultry

Level 3

160 Guided Learning Hours (140 theory/20 practical)

Rationale

This unit extends the study of the anatomy, physiology and pathology of poultry introduced in Unit 3 by considering the structure and function relationships and relevant disease processes in the main species of bird, including game birds. The production of poultry is also considered, including welfare issues and relationship with findings at ante- and post-mortem inspection. It would be appropriate for the learners to visit a poultry production facility, in accordance with 854/2004, whilst taking this unit.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Review the production and processing of poultry and game birds in the food industry, by being able to:**
 - outline the structure and organisation of the agricultural industry
 - discuss methods for the production of poultry and game birds
 - outline procedures for meat processing
 - describe stunning and slaughter techniques
 - explain relevant laboratory procedures
2. **Describe the structure and function of the organs and systems of poultry and game birds, by being able to:**
 - identify poultry and game birds
 - identify anatomical features
 - discuss principles of poultry and game bird physiology
3. **Discuss factors affecting the health of animals and the fitness of meat, by being able to:**
 - identify the signs and symptoms of disease in animals *ante* and *post mortem*
 - discuss the causes, consequences and pathology of disease
 - outline the importance of farm hygiene, animal husbandry and environmental conditions for the health of animals
 - state the effect of animal disease and environmental conditions on the fitness of meat
4. **Review factors affecting the welfare of animals, by being able to:**

- discuss factors affecting welfare during production and transport
 - outline animal welfare issues at the slaughterhouse
 - state the consequences of poor animal welfare to the carcass
5. **Explain procedures for ante-mortem and post mortem inspection and assessment of poultry and game birds, by being able to:**
- explain the procedures for ante mortem inspections
 - explain the procedures for post mortem inspections.
 - identify changes in poultry and game birds due to disease
6. **Demonstrate knowledge of legislation, by being able to:**
- review legislation pertinent to the white meat industry

Content:

1. Production and processing of poultry and game birds

Structure and organisation of the agricultural industry: structure of the poultry and game bird farming industry; organisation of livestock marketing in the UK and EU; national organisations

Production methods for poultry and game birds: commonly used systems of animal production; animal husbandry; principles of nutrition and growth; use of veterinary medicines and growth promoters; effects of rapid growth rates; identification of different breeds and species; advantages and disadvantages of different breeds and species; role of the producer in ensuring the production of safe food; role of food chain information.

Meat Processing: carcass composition; meat quality and the effect of post mortem handling; hygienic operation of all slaughterhouse and processing plant operations; unloading, lairaging, hanging-on, stunning, slaughter; feather removal; evisceration, dressing; cooling and chilling; monitoring of the process to ensure meat safety.

Stunning and slaughter techniques: mechanical, electrical and gaseous stunning; maintenance of restraint and stunning equipment; techniques of slaughter (to include neck dislocation); recognition of improper or ineffective slaughter practices; principles and techniques of religious slaughter; slaughter of birds (including game birds) intended for human consumption outside the slaughterhouse; how to monitor stunning and slaughter operations.

Laboratory procedures: procedures for and significance of tests for salmonella, tuberculosis and viral diseases; residue testing; how to monitor effectiveness of these operations in the meat plant.

2. Structure and function of organs and systems

Poultry and game birds: identification of species and breeds of poultry, farmed and wild game birds; differences in appearance within species due to age, sex and season.

Anatomical features: identification and normal appearance of carcasses, parts of carcasses, organs, lymphatic system, glands, major structures, main blood vessels and nerves in carcasses and separated viscera; identification, location and normal appearance of bones and their articulations and the position of the major muscles; anatomical structures of body systems and their relationships (with particular reference to the respiratory system in poultry); anatomy of the urino-genital system; recognition of age and sex of carcasses; commonly used commercial terms of anatomical features; anatomy of skin layers, the uropygial gland and the *bursa of Fabricius* in poultry; comparison of the anatomy of domestic fowl with that of other species of domestic poultry and game birds.

Animal physiology: basic principles; functions of body systems, normal post mortem changes and their effects on the carcass.

3. **Factors affecting the health of animals**

Signs and symptoms of disease: infectious and non-infectious diseases of birds; infectious agents (bacteria, fungi, viruses) and parasites; likely disease patterns in production units; notifiable diseases; possible public health implications; nature and post mortem signs of deficiency and metabolic diseases; conditions due to environmental factors, such as hock burn, breast blister, arthritis and tenosynovitis.

Causes, consequences and pathology: principles of acute and chronic inflammatory change; visible responses to traumatic injury and disease; immune responses and tissue reaction to infection; routes of entry and disease pathways within the bird; general pathology of poultry; nature, spread and dissemination of disease through a body system, transfer to other body systems; consequences of pathological dysfunction of body systems for public health; zoonotic diseases.

Farm hygiene, husbandry and environmental conditions: role of good hygiene in preventing/reducing disease; importance of protective clothing, hand washing and disinfection of footwear and equipment; pest control; other possible sources of infection such as water and food supplies; effect of husbandry practices on the incidence and development of disease, such as population size, feeding programmes, vaccination programmes, use of antibiotics, growth rates and exercise space; contribution of environmental factors to disease such as litter, light levels, temperature and ventilation.

Effect of disease and environmental conditions on the fitness of meat: effect of disease on the fitness of meat; environmental conditions on the farm or holding likely to lead to tainting of meat such as feed ingredients, litter and contamination by disinfectants.

4. **Factors affecting animal welfare**

Welfare during production and transport: importance of good husbandry and environmental conditions for animal welfare; welfare during catching, handling and crating of animals; effects of overcrowding; welfare during transportation,

effect of duration of travel and poor temperature control; causes of stress and how to reduce it.

Welfare at the slaughterhouse: welfare issues as a result of unloading of crates, removal of birds from crates, shackling, stunning and time between hanging on and slaughter; detection of inadequately stunned animals; environmental needs of animals at slaughterhouse; how to monitor effects of stunning and slaughter operations on animal welfare.

Consequences of poor welfare: damage to carcasses and organs due to poor handling, overcrowding, transport and inadequate stunning; effect of poor welfare on the fitness of meat and public health.

5. **Procedures for ante mortem and post mortem inspection**

Ante mortem inspections: purpose and limitations of *ante-mortem* inspection of poultry; *ante-mortem* inspection at the farm/holding, at loading and unloading, at the slaughterhouse; ante mortem signs of diseases caused by infectious agents, parasites and environmental factors; action to be taken if abnormalities identified, to include procedures for dealing with dirty, diseased, dead-on-arrival and suspect birds discovered during ante mortem inspections; action to take in the event of discovery of notifiable diseases during ante mortem inspection; relevance of flock performance records to level of inspection required; role of food chain information; recording of ante mortem inspections; possible correlation of findings at ante mortem inspection with animal husbandry, environmental conditions at the farm/holding and welfare.

Post mortem inspections: purpose and limitations of post mortem inspections; procedures for post mortem inspections of poultry, farmed and wild game birds and of poultry destined for delayed evisceration; role of food chain information; identification of pathological conditions and sequelae; distinction between benign and malignant tumours; actions to take in the event of discovery of any of these conditions; action to take in the event of discovery of notifiable diseases during post mortem inspection; disease monitoring programmes; assessment of carcasses, parts of carcasses and organs with regard to fitness for human consumption; partial or total rejection of meat; possible correlation of post mortem findings with animal husbandry, environmental conditions at the farm/holding, animal welfare and poor processing procedures; possible public health issues related to post mortem findings; recording of post-mortem inspections.

Changes in poultry and wild game birds: comparison of normal and abnormal carcasses, meat and offal; pathological changes due to physiological disturbances; pathological conditions birds; causes of and responses to tissue damage; specific pathology of systems, organs and tissues of poultry and wild game birds; assessment of nature and progress of lesions.

6. **Legislation**

Meat industry legislation: EU and National legislation, orders, codes of practice and industry guidance relating to welfare, transport, hygiene, animal health and disease control including food chain information, health documentation and I.D. marking.

Assessment:

This unit will be assessed by an examination consisting of five long answer questions to be completed in two and a half hours, from a choice of six. The examination will be provided by the RSPH.

In order to be awarded a *Pass* for the written examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the aetiology, pathology and welfare of poultry such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 60% or greater in the examination will be deemed to have achieved the criteria for a *Pass*.

Unit Six: Aetiology, Pathology and Welfare in Red Meat Animals

Level 3

220 Guided Learning Hours (180 theory/40 practical)

Rationale

This unit considers red meat animals, including pigs, bovines, sheep and goats, horses and wild and farmed game (including lagomorphs). People taking this unit will be required to develop a sound understanding of anatomy and physiology and of the aetiology and pathology of the animal conditions that can impact on the suitability of meat for human consumption. It is important that the learners develop an appreciation of the relationships between production methods, animal health and welfare and the findings at post-mortem inspection (considered in Unit 7) and it would therefore be appropriate for learners to visit a production facility, in accordance with the requirements of 854/2004.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Review the production and processing of red meat animals in the food industry, by being able to:**
 - outline the structure and organisation of the agricultural industry
 - discuss methods for the production of red meat animals
 - explain relevant laboratory procedures

2. **Discuss factors affecting the health of animals and the fitness of meat, by being able to:**
 - identify the signs and symptoms of disease in live animals
 - discuss the causes, consequences and pathology of disease
 - outline the importance of farm hygiene, animal husbandry and environmental conditions for the health of animals
 - state the effect of animal disease and environmental conditions on the fitness of meat

3. **Review factors affecting the welfare of animals, by being able to:**
 - discuss factors affecting welfare during production and transport
 - outline animal welfare issues at the slaughterhouse
 - state the consequences of poor animal welfare to the carcass

4. **Explain procedures for *ante-mortem* inspection and assessment of red meat animals, by being able to:**

- explain the procedures for *ante-mortem* inspections
5. **Demonstrate knowledge of legislation, by being able to:**
- review legislation pertinent to the red meat industry

Content:

1. Production of red meat animals

Structure and organisation of the agricultural industry: structure of the red meat farming industry (to include farmed and wild game); organisation of livestock marketing in the UK and EU; national organisations

Production methods for red meat animals: commonly used systems of animal production; animal husbandry; principles of nutrition and growth; use of veterinary medicines and growth promoters; effects of rapid growth rates; identification of different breeds and species of red meat animals, to include farmed and wild game animals; advantages and disadvantages of different breeds and species; role of the producer in ensuring the production of safe meat; role of food chain information.

Laboratory procedures: procedures for and significance of tests for cysticercosis, trichinosis, glanders, tuberculosis and brucellosis; residue testing; monitoring of effectiveness of these operations in the meat plant.

2. Factors affecting the health of animals

Signs and symptoms of disease: diseases of red meat animals caused by infectious agents (bacteria, fungi, viruses, prions) and parasites; notifiable diseases and action to be taken; *ante mortem* signs of diseases caused by infectious agents and parasites; possible human health hazards; likely disease patterns in production units; conditions of ill-health due to environmental factors.

Causes, consequences and pathology: principles of acute and chronic inflammatory change; visible responses to traumatic injury and disease; immune responses and tissue reaction to infection; routes of entry and disease pathways within the animal body; general pathology of food animals; nature, spread and dissemination of disease through a body system, transfer to other body systems; consequences of pathological dysfunction of body systems for public health; nature of deficiency and metabolic diseases, possible human health hazards; zoonotic diseases.

Effect of hygiene, husbandry and environmental conditions: role of good hygiene in preventing/reducing disease; importance of protective clothing, hand washing and disinfection of footwear and equipment; pest control; other possible sources of infection such as water and food supplies; effect of husbandry practices on the incidence and development of disease, such as population size, feeding programmes, vaccination programmes, use of antibiotics, growth rates and

exercise space; contribution of environmental factors to disease such as bedding, light levels, temperature and ventilation.

Effect of disease and environmental conditions on the fitness of meat: effect of disease on the fitness of meat; environmental conditions likely to lead to tainting of meat such as feed ingredients, bedding and contamination by disinfectants.

3. **Factors affecting animal welfare**

Welfare during production and transport: importance of good husbandry and environmental conditions for animal welfare; welfare during catching, handling and loading of animals; effects of overcrowding; welfare during transportation, effect of duration of travel; causes of stress and how to reduce it.

Welfare at the slaughterhouse: unloading of animals; handling of animals in the lairage and during movement to point of slaughter; environmental needs of animals at slaughterhouse; detection of inadequately stunned animals; causes of stress and how to reduce it; overcrowding and inadequate separation of livestock; handling of diseased and injured animals; how to monitor effects of stunning and slaughter operations on animal welfare.

Consequences of poor welfare: damage to carcasses and organs due to poor handling, overcrowding, transport and inadequate stunning; effect of poor welfare on the fitness of meat and public health.

4. **Procedures for *ante-mortem* inspection**

Ante-mortem inspections: purpose and limitations of *ante-mortem* inspection of red meat animals; *ante-mortem* inspection at the farm/holding, at loading and unloading, at the slaughterhouse; *ante mortem* signs of disease caused by infectious agents, parasites and environmental factors; action to be taken if abnormalities identified, to include dirty, diseased/injured, dead-on-arrival and suspect animals; action to take in the event of discovery of notifiable diseases during *ante mortem* inspection; relevance of herd performance records to level of inspection required; role of food chain information; recording of *ante-mortem* inspections; possible correlation of findings at *ante-mortem* inspection with animal husbandry, environmental conditions at the farm/holding and welfare.

5. **Legislation**

Meat industry legislation: EU and National legislation, orders, codes of practice and industry guidance relating to welfare, transport, hygiene, animal health and disease control including food chain information, health documentation and I.D. marking.

Assessment:

This unit will be assessed by an examination consisting of five long answer questions to be completed in two and a half hours, from a choice of six. The examination will be provided by the RSPH.

In order to be awarded a *Pass* for the written examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the aetiology, pathology and welfare of red meat animals such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 60% or greater in the examination will be deemed to have achieved the criteria for a *Pass*.

Unit Seven: Post Mortem Inspection of Red Meat

Level 3

260 Guided Learning Hours (40 theory/220 practical)

Rationale

This unit considers the post-mortem inspection of red meat animals, including pigs, bovines, sheep and goats, horses and wild and farmed game (including lagomorphs). It builds on the information in Unit 6 by requiring individuals to recognise pathological conditions in red meat carcasses and to explain the significance of post-mortem findings. At least 180 hours of the structured delivery should be undertaken in appropriate abattoirs, enabling the learner to gain experience of all relevant species.

Summary of Outcomes:

To achieve this unit, a candidate must:

1. **Describe the structure and function of the organs and systems of red meat animals, by being able to:**
 - identify red meat animals
 - identify anatomical features
 - discuss principles of animal physiology

2. **Review procedures for the slaughter and processing of food mammals, by being able to:**
 - describe stunning and slaughter techniques
 - outline procedures for carcass processing

3. **Explain procedures for post mortem inspection by being able to:**
 - explain the procedures for post mortem inspections
 - describe age and identity checks on food animals
 - identify changes in red meat food animals due to disease
 - describe procedures for residue sampling

4. **Discuss the significance of post mortem findings, by being able to:**

- suggest possible causes of post mortem findings
- explain the relevance of post mortem findings to public health

Content:

1. **Structure and function of organs and systems**

Red meat animals: identification of species and breeds of red meat animals, to include farmed and wild game animals; differences in appearance within species due to age, sex and season.

Anatomical features: identification and normal appearance of carcasses, parts of carcasses, organs, glands, major structures, main blood vessels and nerves in carcasses and separated viscera; identification, location and normal appearance of the lymph nodes; identification, location and normal appearance of bones and their articulations and the position of the major muscles; anatomical structures of body systems of each species of animal and the anatomical relationships of the various organs; recognition of age, sex and species of carcasses; identification of species by examination of animal parts and organs; commonly used commercial terms of anatomical features; effects of pregnancy on the carcasses and organs of the food animal species

Animal physiology: basic principles; functions of body systems, normal post mortem changes and their effects on the carcass.

2. **Procedures for the slaughter and processing of food mammals**

Stunning and slaughter techniques: restraint of animals prior to slaughter; mechanical, electrical and gaseous stunning; maintenance of restraint and stunning equipment; differentiation between stunned and inadequately stunned animals; techniques of slaughter; recognition of improper or ineffective slaughter practices; principles and techniques of religious slaughter; slaughter of animals intended for human consumption (including game animals) outside of the slaughterhouse.

Carcass Processing: carcass composition; meat quality and the effect of post mortem handling; tenderising methods; hygienic operation of all slaughterhouse and processing plant operations; unloading, lairaging, hanging-on, stunning, slaughter and scalding; hide and skin removal; identification and removal of specified risk material; evisceration, splitting, dressing; gut and tripe dressing; offal preparation; removal and hygienic preparation of the tongue; cooling, chilling and carcass hanging (to include tender stretch hanging); monitoring of the processes to ensure meat safety.

3. **Procedures for post mortem inspection**

Post mortem inspections: purpose and limitations of post mortem inspections; role of food chain information; procedures for post mortem inspections of different food mammals; examination for brucellosis, cysticercosis, glanders, trichinosis

and tuberculosis; identification of pathological conditions and sequelae; distinction between benign and malignant tumours; actions to take in the event of discovery of any of these conditions; action to be taken if SRM or notifiable diseases observed in carcasses; assessment of carcasses, parts of carcasses and organs with regard to fitness for human consumption; partial or total rejection of meat; recording and reporting procedures for post mortem inspections.

Age and identity checks: methods, including passports and dentition, for establishing the age and identity of different species of food animals; importance of age of food animals; procedures for food animals of different ages; how to monitor effectiveness of in-plant procedures.

Changes in animals: comparison of normal and abnormal carcasses, meat and offal; pathological changes due to physiological disturbances; pathological conditions of food animals, appearance of diseased tissues, causes of and responses to tissue damage; specific pathology of systems and organs of food animals; assessment of nature and progress of lesions; post mortem signs of deficiency and metabolic diseases.

Procedures for residue sampling: sample request plans; suitability of animals for sampling; individual and batch sampling; tissues required for sampling; methods and procedures for obtaining samples; recording and labeling requirements; need to ensure traceability; dispatch of samples.

4. **Significance of post mortem findings**

Possible causes of post mortem findings: correlation of post mortem findings to poor animal husbandry, environmental conditions at the farm / holding, transport, animal welfare issues and poor processing procedures.

Relevance to public health: possible public-health issues with respect to post mortem findings.

Assessment:

This unit will be assessed by an examination, consisting of five long answer questions to be completed in two and a half hours, from a choice of six, and a practical examination. Both parts must be passed in order to pass the unit. The examination will be provided by the RSPH.

In order to be awarded a *Pass* for the written examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the aetiology, pathology and welfare of red meat animals such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 60% or greater in the examination will be deemed to have achieved the criteria for a *Pass*.

The practical examination will require candidates to recognise and identify anatomical features, organs, abnormalities and lesions due to infectious agents, pathological

changes to organs due to dysfunction of body systems and abnormalities and lesions due to trauma of red meat animals from specimens and / or photographic records. In order to be awarded a *Pass* for the practical examination candidates must be able to:

- identify species and breeds of red meat animals
- identify anatomical features of red meat animals
- recognise diseases of red meat animals and their associated zoonoses
- describe pathological conditions of red meat animals
- identify abnormalities and lesions due to trauma
- state the relationship between production issues (welfare, transport, stunning and slaughter) and post mortem findings
- correctly pass post mortem judgements on specimens or from photographic evidence.

To achieve these criteria the candidate must demonstrate a satisfactory level of understanding of the principles and concepts used in the post mortem inspection of red meat animals such that the candidate will be able to satisfactorily work as part of a meat inspection team.

Unit Eight: Principles of Hygiene and HACCP Regulatory Auditing

Level 3

20 Guided Learning Hours (20 theory/0 practical)

Rationale

Although Official Auxiliaries (Meat Hygiene Inspectors) are not responsible for audits of meat plants they will assist the Official Veterinarian by gathering evidence. This unit considers the principles of auditing with particular reference to food safety in meat plants.

Summary of Outcomes:

To achieve this unit a candidate must:

1. **Identify methods for the conduct of audits of meat plants by the central competent authority, by being able to:**
 - Discuss the reasons for and importance of audits
 - Outline the conduct of an audit visit
 - Identify the documentation used in evaluating the effectiveness of food safety management systems of the food business operator's (FBO's) establishment
 - Describe the role of the meat hygiene inspector (MHI) in the conduct of audits by the Official Veterinarian (OV).

2. **Describe post-audit procedures, by being able to:**
 - Identify possible areas and levels of non-compliance or deviation from documented procedures
 - Outline requirements for completion of the verification record
 - Identify the relationship between audit findings and enforcement actions

Content:

1. Conduct of audits of meat plants

Reasons for and importance of audits: definitions of audit, inspection, verification; types of establishment subject to audit; scopes; internal and external audits; second and third party audits; identification of relevant legislation; audit frequencies and their determination; importance to FBO of audit frequency

Conduct of audit visit: target dates for audit completion; pre-arrangement and planning of audits; features of opening meeting, audit and closing meeting; types of food safety hazard (with examples); assessment of compliance with legislative requirements and with FBO procedures

Documentation used in evaluating food safety management systems: documentation and procedures relating to food safety management systems required during audit (including Good Manufacturing/Hygiene Practices, Required Methods of Operation, Standard Operating Practices, HACCP; documentation and procedures relating to pre-requisite programmes such as cleaning, pest control and staff training; internal verification and review of food safety management systems, food chain information documentation);

Role of the MHI in audits: roles and responsibilities of enforcement agencies' regional offices, MHI, Official Veterinarian, Food Business Operator before, during and following audits; roles and responsibilities in the event that audit is rescheduled; information to be gathered by MHI on a daily basis

2. Post-Audit procedures

Areas of non-compliance: grading of non-compliances; importance of verifiable evidence for non-compliances; assessment of risk; action to be taken on finding critical non-compliance

Requirements of the verification record: timescale for completion of the record; sections of the verification record; contents of written audit report; use of report.

Relationship between audit findings and enforcement; action to be taken by MHS team and FBO on identification of non-compliance; use of unscheduled audit visits

Assessment:

This unit will be assessed by an examination consisting of 20 short answer questions to be completed in 1h 40 minutes. The examination will be provided by the RSPH.

In order to be awarded a *Pass* for the examination, candidates must be able to recall and apply relevant knowledge and facts from some parts of the specification and demonstrate a satisfactory level of understanding of the principles of hygiene and HACCP regulatory auditing such that the candidate will be able to satisfactorily work as part of a meat inspection team. The majority of answers to examination questions will contain some information of relevance. Candidates who attain a mark of 60% or greater in the examination will be deemed to have achieved the criteria for a *Pass*.

Award of Certificate

The award of the **Level 3 Diploma in Meat Hygiene and Inspection** is only made to those candidates who have successfully passed the assessment for **all** of the units.

Guidance

Recommended prior learning:

There are no recommended prior learning requirements for this qualification. The RSPH does, however, recommend that candidates have prior experience of the meat industry.

Key Skills:

It is expected that the delivery of this qualification should provide opportunities for the development of the following *key skills*:

Application of Number Levels 2 and 3
Communication Levels 2 and 3
Improving own Learning and Performance Levels 2 and 3
Information and Communication Technology (ICT) Levels 2 and 3
Problem Solving Levels 2 and 3
Working with Others Levels 2 and 3

Guidelines for key skills are shown in Appendix 1.

Other Issues:

The delivery of this qualification could provide opportunities for contributing to an understanding of Spiritual, Moral, Ethical, Social and Cultural issues and an awareness of Environmental issues, Health and Safety considerations and European developments. Possible areas for discussion are shown below.

Spiritual	The qualification can contribute to an understanding of spiritual issues by allowing students to discuss how the approaches of different religions to food preparation were driven by considerations of food hygiene and safety. The background to the development of different procedures and techniques for the religious slaughter of animals can also be discussed.
Moral and Ethical	Moral and ethical issues can be developed in a discussion of the legal responsibilities of employees and employers for the provision of safe food, and by discussing factors affecting animal welfare on the farm/holding, during transport and at the slaughterhouse.
Social and Cultural	A discussion of possible reasons for changes in food poisoning trends; consumption of raw foods such as fish and shellfish; different catering systems such as cook-chill, cook freeze and <i>sous vide</i> and the growth of food outlets such as sandwich bars and takeaways can contribute to an understanding of social and cultural issues. This can also be achieved by a discussion of consumer issues relating to the production and processing of animals for human consumption.
Health and Safety	Health and Safety considerations are explicit in the qualification. For example, the importance of hygiene in the prevention of food poisoning, safe storage of food, HACCP, rejection of meat unfit for human consumption and the removal and disposal of specified risk material.
Environment	Awareness of environmental issues can be raised through consideration of disposal arrangements for waste refuse and waste food, pest control methods, the use of cleaning agents and the disposal effluents.
European	The influence of European legislation on UK law is explicit in the specification of the qualification.

Restrictions on Candidate Entry:

There are no restrictions on candidate entry

Special Needs:

Centres that have candidates with special needs should consult the RSPH's *Regulations and Guidance for Candidates with Special Assessment Needs*, this is available from the RSPH and the RSPH's web site www.rsph.org

Recommended Qualifications and Experience of Tutors:

The RSPH would expect that tutors have teaching experience and a qualification in a relevant subject area, but recognises that experienced teachers can often compensate for a lack of initial subject knowledge, or experienced practitioners for a lack of teaching experience. The RSPH considers that the Meat Hygiene and Inspection qualification is best delivered by a team of tutors.

A suitable course team for the RSPH Diploma in Meat Hygiene and Inspection might include:

- A registered veterinary surgeon with experience of meat inspection
- Tutors with experience of meat inspection at a senior level
- Staff with expertise in microbiology, animal anatomy and law could also contribute to the teaching of some parts of the syllabus.

Centres should be registered with the RSPH

Any enquiries about this qualification should be made to:

The Qualifications Department,
Royal Society for Public Health
3rd Floor
Market Towers
1 Nine Elms Lane
SW8 5NQ

Appendix One: Key Skills Guidelines

This qualification provides a number of opportunities for candidates to develop competence in key skills and to produce evidence towards attainment of key skills. Successful completion of the qualification does not in itself imply attainment of the listed key skills; this is dependent on the candidate producing a portfolio of evidence and the teaching and learning methods adopted by the tutor(s) and candidate in the delivery of the qualification.

The specification content, which provides the most appropriate opportunity for key skill development, is signposted below.

Application of Number

Skill

Specification Content

<p>N2.1 Interpret information from a suitable source.</p>	<p>Graphical and tabular information can be used to obtain information relating to current trends and statistics relating to food-borne illness (Unit 1). Information can also be obtained in this manner to determine the expected size and weight of animals at a specific age based on known growth rates (Unit 5 and Unit 6). Deviations from the expected weight can be an indicator of health or welfare problems.</p>
<p>N2.2 Use your information to carry out calculations to do with: a) amounts or sizes b) scales or proportion c) handling statistics d) using formulae.</p>	<p>Correct cooking, cooling, chilling, freezing, defrosting and re-heating of food (Unit 1). Cooking times for joints of meat can be calculated from the size of the joint and the cooking temperature. Defrosting times for frozen joints of meat can be estimated from the weight of the joint. The expected age of an animal can be calculated from growth rate information (Unit 5 and Unit 6).</p>
<p>N3.1 Plan an activity and get relevant information from relevant sources.</p>	<p>As for N2.1 above. Candidates can interpret temperature charts to determine what corrective action to take in the event of a failure of temperature controls (Unit 1). Protocols for residue sampling can be developed from information relating to herd or batch size and amount of material required (Unit 2 and Unit 7).</p>

Communication

Skill	Specification Content
C2.1a Take part in a group discussion.	Any part of the content could be used as the basis for a discussion.
C2.2 Read and summarise information from at least two documents about the same subject. Each document must be a minimum of 500 words long.	Any part of the content could be researched from textbooks and specialist journals
C3.1a Take part in a group discussion.	Any part of the content could be used as the basis for a discussion.
C3.2 Read and synthesise information from at least two documents about the same subject. Each document must be a minimum of 1,000 words long.	Any part of the content could be researched from textbooks and specialist journals

Improving own Learning Performance

Skill	Specification Content
LP2.1 Help set targets with an appropriate person and plan how these will be met.	The manner in which candidates plan and carry out their programme of learning for this qualification, in consultation with their tutors/trainers, could provide evidence for this key skill or some elements of this key skill.
LP2.2 Take responsibility for some decisions about your learning, using your plan to help meet targets and improve your performance.	
LP2.3 Review progress with an appropriate person and provide evidence of your achievements.	
LP3.1 Set targets using information from appropriate people and plan how these will be met.	
LP3.2 Take responsibility for your learning, using your plan to help meet targets and improve your performance.	
LP3.3 Review progress and establish evidence of your achievements.	

Information and Communications Technology

Skill	Specification Content
<p>ICT2.1 Search for and select information to meet your needs. Use different information sources for each task and multiple search criteria in at least one case..</p>	Information about any part of the content could be obtained from web-sites dealing with food safety. Books and articles can be accessed by on-line searches.
<p>ICT3.1 Search for information, using different sources, and multiple search criteria in at least one case.</p>	

Problem Solving

Skill	Specification Content
<p>PS2.1 Identify a problem, with help from an appropriate person, and identify different ways of tackling it.</p>	A number of areas within the specification can be delivered by using a problem-based approach to teaching and learning.
<p>PS2.2 Plan and try out at least one way of solving the problem.</p>	For example: Unit Four: Identification of hazards and critical control points; control methods; establishment of critical limits for critical control points; corrective actions.
<p>PS3.1 Explore a problem and identify different ways of tackling it.</p>	Unit Five: Possible correlation of post mortem findings with animal husbandry, environmental conditions at the farm/holding, animal welfare and poor processing procedures; possible public health issues related to post mortem findings.
<p>PS3.2 Plan and implement at least one way of solving the problem.</p>	Units Five and Six: Contribution of environmental factors to disease such as litter, light levels, temperature and ventilation. Causes of stress and how to reduce it. Possible correlation of findings at <i>ante-mortem</i> inspection with animal husbandry, environmental conditions at the farm/holding and welfare.

Working with Others

Skill

Specification Content

- WO2.1** Plan work with others.
- WO2.2** Work co-operatively towards achieving the identified objectives.
- WO2.3** Review your contributions and agree ways to improve work with others.
- WO3.1** Plan work with others.
- WO3.2** Seek to develop co-operation and check progress towards your agreed objectives.
- WO3.3** Review work with others and agree ways of improving collaborative work in the future.

The manner in which candidates work with others in carrying out their programme of learning for this qualification, in consultation with their tutors and trainers, could provide evidence for this key skill or some elements of this key skill.