REPORT ON EDIBLE CO-PRODUCTS

Issue

1. The purpose of this paper is to bring the MHPF's attention to the attached report on edible co-products and its recommendations.

Background

2. Earlier this year the Food and Veterinary Office (FVO) of the European Commission carried out a mission to the UK to evaluate the implementation of official controls for gelatine. Following this mission the Agency commissioned a review by Jim Scudamore (ex-CVO) into the handling of other edible co-products.

3. The terms of reference for the review were:
   - To conduct a fact finding review of the production of:
     - Rendered Animal Fats and Greaves
     - Treated Stomachs, Bladders and Intestines
   - To consider the operations from the supply and handling of the raw materials in the slaughterhouse to production of the final product. This included premises, hygiene, documentation and traceability.
   - To prepare a summary of the processes and the structure of the industry for each of the categories of edible co-products covered in the report.
   - To audit the process from origin to the production of the final product.
   - To make recommendations for improvements to the Guide where appropriate.
   - To identify issues which need further consideration with the industry.

MHPF Action

4. MHPF members are invited to:
   - note the intention to hold a meeting on **13 September** to consider the report and amendments to the Industry Guide on Edible Co-Products, and
   - comment on the attached report, and particularly give their views on:
     i. **Industry/MHS education/training on edible co-product production and legislation** (see paras. 2.5.3 and 2.2 and recommendations 2 & 4). Is there merit in a joint industry/MHS approach? Who would wish to be involved and how might this best be arranged?
     ii. **Approval** (see recommendations 7 & 31) - Should slaughterhouses seeking to market edible co-products instead of disposing of the material as animal by-products, be required to obtain specific approval?

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REPORT ON EDIBLE CO-PRODUCTS

J.M. Scudamore
7 June 2007

Table of contents

ABBREVIATIONS

ABP	Animal By-Products
AH	Animal Health formerly SVS
Defra	Department for Environment, Food and Rural Affairs
EBLEX	English Beef and Lamb Executive
EC	European Community
EHO	Environmental Officer
EU	European Union
FBO	Food Business Operator
FFA	Free fatty acids
FSA	Food Standards Agency
FVO	Food and Veterinary Office
Guide	The Industry Guide on Edible Co-Products and Animal By-products
HACCP	Hazard Analysis and Critical Control Point(s)
LA	Local Authority
Manual	MHS Manual for Official Controls, Procedures and Legislation
MHI	Meat Hygiene Inspector
MHS	Meat Hygiene Service
MLC	Meat and livestock Commission
OTM	Over Thirty Month
OTMS	Over Thirty Month Scheme
OV	Official Veterinarian
OVS	Official Veterinary Surgeon
PM	Post mortem
RVA	Regional Veterinary Adviser
SOP	Standard Operating Procedures
SRM	Specified Risk Material
SVS	State Veterinary Service
TSE	Transmissible Spongiform Encephalopathies

REPORT ON EDIBLE CO-PRODUCTS

SUMMARY OF RECOMMENDATIONS

Recommendation 1: The Guide should remain as the definitive guidance but a simplified summary should be produced to cover the common points such as final inspection, separation, contamination, labelling and documentation which are common to the production of all the products.

Recommendation 2*:* The FSA/MHS should work closely with EBLEX on an education programme for those FBOs who are considering the production and sale of edible co-products.

Recommendation 3: The Guide should be incorporated into the MHS Manual for Official Controls, Procedures and Legislation or alternatively the simplified addition should be included with clear references to the full Guide.

Recommendation 4: The MHS staff should receive additional training on the production requirements for edible co-products especially where sales to Europe or export to third countries is under consideration

Recommendation 5: On going education of all involved in edible co-products is required using the Guide to ensure that the correct terminology is used by both the FBOs and Enforcement Agencies

Recommendation 6: FSA to provide legal clarification on the status of stomachs, bladders and intestines at different stages of processing based on the EU guidance re unprocessed and processed products

Recommendation 7*:* Consideration should be given to the value of a specific approval process for the production of edible co-products for human consumption.

Recommendation 8: A comprehensive list of the standalone and co-located approved premises for the production of edible co-products should be produced and maintained by the FSA. The list should include details of the activities on each site. This would then comply with the new Commission requirements.

Recommendation 9: Discussion should take place with Animal Health to enlist their assistance when visiting Animal By-products plants in particular raw pet food operations. This would require them to check whether any raw material could be diverted for use for human consumption and whether any production for human consumption takes place at the same location where the separation on the site is inadequate.

Recommendation 10: The MHS should inspect the HACCP plans for the gut room and discuss with the FBO to ensure cross contamination is minimised.

Recommendation 11: Clarity is required as to where responsibility for the HACCP plan lies when the FBO contracts out the operation in the gut room.

Recommendation 12*:* A source of detailed advice and/or consultancy possibly from the MLC is required for slaughterhouses planning to develop overseas markets for edible co-products. This advice should cover all aspects of the Guide.

Recommendation 13: A standard interpretation on acceptable levels of contamination in the gut room should be developed for use by the FBO and the OV. There is currently some variation around the country on the interpretation of the legislation on this issue.

Recommendation 14: If green offal transferred to the gut room is to act as a source of raw material for edible co products then material which is condemned as unfit for human consumption should not pass down the same chute into the same area of the gut room. This is a particular problem in some cattle slaughterhouses.

Recommendation 15: Improvements are required at all slaughterhouses on the labelling of the metal and plastic containers used in the gut rooms for material for human consumption, and ABP category 1, 2 and 3 material. Also containers awaiting dispatch must be fully labelled. Consideration should be given to the wider use of adhesive tape to identify the ABP category

Recommendation 16: FBOs and OVs need to be reminded that when category 1 and 2 material are loaded into the same container or skip all the material must be clearly stained blue especially in the skip or container used to transport the waste to the rendering plant.

Recommendation 17: If slaughterhouses are being redesigned or updated it is important that there is a facility to hold the intestines until the final inspection of each carcase is completed unless the FBO is prepared to hold and discard batches of intestines.

Recommendation 18: The FBO and OV need to be reminded that either the final inspection is completed before the green offal is transferred to the gut room or that there is a protocol in place to discard all the whole batch of green offal if a carcase is condemned. The OV must enforce this requirement.

Recommendation 19: Wherever possible the design of the gut room and the processes especially in cattle slaughterhouses should be such that the rumen is not opened in such a way as to allow spillage of ruminal contents onto the omental fat.

Recommendation 20: A better developed cleaning protocol is required for most of the gut rooms when edible co-products are being produced to ensure contamination is kept to a minimum. Spillages should be kept to a minimum and cleaned up as soon as possible after they occur. Where there is green contamination of the omental fat this should be removed.

Recommendation 21: The attitude that the further processing of the products especially with edible fats will resolve any contamination issues needs to be overcome and the product produced as hygienically as possible.

Recommendation 22: Consideration should be given to assessing whether it is feasible to remove omental fat in the slaughter hall rather than in the gut room especially in the high throughput slaughterhouses
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Recommendation 23: The FSA to clarify the legal position on the temperature requirements for storage of untreated stomachs at a slaughterhouse and for the transport for further processing.

Recommendation 24: An alternative to permit the transport of emptied stomachs direct from the slaughterhouse to the processing plant within 2 hours under specific conditions not requiring a temperature of 3°C should be urgently developed by the FSA.
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Recommendation 25: The FSA and industry to discuss the most appropriate methods of affixing the identification mark to the edible co-products derived from the slaughterhouse to meet the legislative requirements.

Recommendation 26: A campaign by the FSA and MHS is urgently required to ensure that all establishments, in particular those producing raw materials such as runners, fats and stomachs are aware of the legal identification requirements and that these are correctly implemented.

Recommendation 27**:** Clarity is needed on the identification marks required for edible co-products in particular those which could be used for further processing necessary to ensure they are fit for human consumption. This relates in particular to omental fat.

Recommendation 28 The minimum statutory information required on the documentation to accompany consignments of edible co-products to the next destination needs to be clarified and enforced.

Recommendation 29*:* Increased liaison between the local food enforcement authorities and Animal Health where companies process both categories in the same location but on separate sites at that location.

Recommendation 30: During inspections to Animal By-Product plants, Animal Health should check and confirm the destination of any products. Similarly the local food enforcement authorities should check the origins of the material being presented for processing for human consumption.

Recommendation 31: In issuing approval for premises to process edible co products the approving authority should check the procedures and standard operating procedures (SOPs) of the FBO. This is to ensure that procedures are in place to detect raw material in the wrong category and to define the action to be taken in that event. The SOP should also provide details of action to be taken if raw material is identified and rejected.

CHAPTER 1: INTRODUCTION

1.1 Introduction

The Industry Guide on Edible Co-products and Animal By-products (The Guide) was prepared by a working group including members from the European Fat Processors and Renderers Association, British Meat Processors Association, British Poultry council, Meat and Livestock Commission and the Pet Food Manufacturers Association. The Guide was published in August 2006 and sent to the industry in September 2006. The Guide is also available on the Food Standards Web site at http://www.food.gov.uk/multimedia/pdfs/ediblecoprod.pdf.

The purpose of the Guide is to assist the industry to understand the legislation that applies to a number of products which are fit for human consumption. The Guide also provides information on best practice.

The Guide resulted from the changes in the legislation with the introduction of the new EU regulations on 1 January 2006 and the need to clarify the differences between edible co-products and animal by-products. Since then there has been increasing interest by the industry to utilise red meat offals rather than dispose of much of the offal as animal by-product. The English Beef and Lamb Executive (EBLEX) undertook a "Review of the Red Meat Offal and By-Products Industry" in 2006. Since then EBLEX has been actively exploring market development and export potential for red meat offal. Potential export markets for tripe in particular have been identified. In March 2007 EBLEX/MLC held joint offal export workshops. Current exports of casings, tripe and maws (pig stomachs) are estimated at £14 million per year.

Between 29 January and 2 February 2007 the Food and Veterinary Office (FVO) of the European Commission carried out a mission to the UK in order to evaluate the implementation of official controls for Gelatine. Following this mission the Food Standards Agency (FSA) decided that information was required on the structure of the UK industries dealing with the other edible co-products and in particular fats/greaves, casings and stomachs and bladders.

It was also considered appropriate to review the current activities within the industry and to assess whether the Guide provided a useful source of information. Recommendations for updating the guide would be considered with the industry.

1.2 Terms of reference

The terms of reference were as follows:-

- To conduct a fact finding review of the production of edible co-products excluding gelatine and collagen. The scope of the review was limited to edible co–products covered by the Industry Guide on Edible Co-products and Animal By-products. This includes:-
    - Rendered Animal Fats and Greaves
    - Treated stomach, Bladders and intestines
- To consider the operations from the supply and handling of the raw materials in the slaughterhouse to production of the final product. This included premises, hygiene, documentation and traceability.
- To prepare a summary of the processes and the structure of the industry for each of the categories of edible co-products covered in the report.
- To audit the process from origin to the production of the final product.
- To make recommendations for improvements to the Guide where appropriate.
- To identify issues which need further consideration with the industry.

Edible co-products derived from poultry were not considered in this review.

1.3 Industry

In 2006 there were approximately 325 Red Meat slaughterhouses in Great Britain of varying sizes. The numbers of animals slaughtered annually is as follows:

- Cattle 2.0 million
- Sheep 15.0 million
- Pigs 8.5 million

The potential for the sale of edible co-products is high provided there are suitable markets either in the UK or overseas. If this potential is to be exploited it is essential that production and marketing developments are in compliance with the legislation. This involves the use of suitable facilities, satisfactory hygiene and documentation along with the ability to demonstrate that the product meets all the requirements of the legislation. It is important that clear advice is available to the Food Business Operators (FBO) from a recognised source and that the enforcement authorities are also clear about the requirements.

1.4 Methodology

A number of visits were undertaken to follow the processes from the collection of the raw materials in the red meat slaughter halls through all the processes to final dispatch of finished product for human consumption. The plants were selected to include those where the whole process took place on one site and those where unfinished product was transported to separate sites for further processing. In each slaughterhouse the process was monitored from the slaughter hall through the gut room to packaging, storage and dispatch.

At each visit the content and value of the Guide was discussed with plant management and MHS staff where present.

Every effort was made to meet with the organisations representing the different sections of the industry. They were visited and their views sought on the issues affecting the industry, details of the structure of their industry and their assessment of the Guide

1.5 Acknowledgements

I would like to take the opportunity to thank those organisations who made time to discuss the situation and who provided a considerable input. See Appendix I for details. I am also grateful to the many staff within the plants and the MHS who took the time and trouble to show me around and to give me their views and provide additional information as it was requested.

CHAPTER 2: SUMMARY OF ISSUES

2.1 Introduction

The purpose of this chapter is to summarise the issues related to Edible Co-products that are common to all the categories covered by this review. Detailed comments are made in the relevant chapters. The summary is linked to the headings in the sections of the Industry Guide on Edible Co-products and Animal By-products.

2.2 The Guide

Knowledge of the guide and its availability varied considerable amongst FBOs and the official veterinarians (OV). At some premises the guide was held by the FBO but the OV did not have a copy. In others neither the FBO nor the OV had copies or access to the guide.

For those with access to the guide there were varied comments on its value. In some cases the guide was used when the FBO began to harvest material. Occasionally the guide was used as a reference document when needed. Generally it was not used or needed. It was not referred to on a regular basis

Comments on the usefulness of the guide varied although there was general agreement that problems arose where there was not a clear cut statement of the requirements. This arose due to the apparent vagueness of the EU and primary legislation in some areas. It was felt that there could be a better interpretation of what was needed in some cases. Specific issues are covered in the detailed sections of this report.

With the increasing interest in utilising edible co-products it is important that the industry, food enforcement authorities and the MHS are aware of the guide. It must be used to best effect especially when planning to produce edible co- products for the first time.

The MHS Manual for Official Controls, Procedures and Legislation (The Manual). http://www.food.gov.uk/foodindustry/meat/mhservice/mhsmanual2006/ makes no mention of the controls required for edible co-products. The Manual only indicates the MHS enforcement role exists in the co-located sites. The Manual only refers the reader to the Meat Industry Guide on the FSA web site on the introductory page.

Recommendation 1: The Guide should remain as the definitive guidance but a simplified summary should be produced to cover the common points such as final inspection, separation, contamination, labelling and documentation which are common to the production of all the products.

Recommendation 2: The FSA/MHS should work closely with EBLEX on an education programme for those FBOs who are considering the production and sale of edible co-products.

Recommendation 3: The Guide should be incorporated into the MHS Manual for Official Controls, Procedures and Legislation or alternatively the simplified addition should be included with clear references to the full Guide.

Recommendation 4: The MHS staff should receive additional training on the production requirements for edible co-products especially where sales to Europe or export to third countries is under consideration.

2.3 Terminology

There remain wide variations in the use of the terminology by the FBOs and the MHS. Some plants still refer to edible by-products, by-product, ABP category 4 products and other variations. This seems to be partly due to the relative newness of the terminology and the changes in the legislation. For those who participated in the preparation of the Guide the terminology presents no problems. With the current initiative by the EBLEX and the MLC to improve the utilisation of red and green offal more effective education is an important component for success. This is to ensure all those involved refer to the correct terminology. More work is needed to ensure the term edible co-product is understood and that the associated legislative requirements are also understood and implemented.

Recommendation 5: On going education of all involved in edible co-products is required using the Guide to ensure that the correct terminology is used by both the FBOs and Enforcement Agencies.

2.4 EU Legislation

The interpretation of the EU legislation is important especially as some of the articles in the Hygiene regulations (852/2004, 853/2004 and 854/2004) are open to a number of different interpretations.

Section 7.9 of Annex 1 to Regulation EC No 853/2004 defines “Treated stomachs, bladders and intestines as stomachs, bladders and intestines that have been submitted to a treatment such as salting, heating or drying after they have been obtained and after cleaning”. This interpretation can sometimes be confusing as to the treatment required to transform a raw material into a treated product.

The guidance document on the implementation of certain provisions of Regulation (EC) 853/2004 provided by DG SANCO on 21 December 2005 indicates in annex 1 of the document that untreated intestines, stomachs and bladders are classified as unprocessed products of animal origin. They can be considered as raw products as they have not undergone processing (i.e. any action that substantially alters the initial product, including heating, smoking, curing, maturing, drying, marinating, extraction, extrusion, or a combination of those processes). Frozen products of animal origin remain unprocessed products.

Annex II of the guidance document provides a list of processed products of animal origin which are obtained by submitting raw products to a process such as heating, smoking, curing, maturing, drying, marinating, etc. The process must lead to a substantial alteration of the initial product.

The guidance document indicates that “In determining whether a product of animal origin is processed or unprocessed it is important to take into account **all** the relevant definitions contained in the hygiene regulations, in particular, the definitions of ‘processing’, ‘unprocessed products’ and ‘processed products’ in Article 2 of Regulation (EC) 852/2004, and the definitions of certain processed products in Section 7 of Annex I of Regulation (EC) 853/2004. The interrelationship between these definitions will impact on the decision reached”.

Based on this guidance, intestines, runners and casings that have not been salted remain unprocessed products. Casings are only included in this category once they have been salted. In the case of stomachs the process of washing at 65-70°C and scalding at 90-100°C could be considered as heating meaning that a this stage the stomachs are classified as treated. However the change to the stomachs is not substantial as this only occurs when they are boiled and bleached during further processing. It is important to confirm that once the stomachs are washed at 65-70°C they have become treated product.

Recommendation 6: FSA to provide legal clarification on the status of stomachs, bladders and intestines at different stages of processing based on the EU guidance re unprocessed and processed products.

2.5 Premises

2.5.1 Authorisation

The stand alone plants which were visited had all been approved by the local food authority and were subject to regular visits. The majority of co-located plants had been re-approved by the FSA but not all. This work is in hand. The design, layout and separation in main part of the slaughterhouse were satisfactory in the majority of cases but there were a number of issues relating to the gut rooms that are dealt with below. The introduction of a specific approval for the section of the plant producing edible co-products would enable the competent authority to have more control over structure and hygiene practices.

Recommendation 7*:* Consideration should be given to the value of specific approval process for the production of edible co-products for human consumption.

2.5.2 List of premises

A comprehensive list of premises involved in the production of edible co-products is not currently available but is being developed. The only list available was provided under out of date legislation as “Other Proteins of Animal Origin”. This list did not indicate the activity at the premises providing only the name, address, local food authority and the identification mark.

Establishments preparing foodstuffs must be registered under Regulation (EC) No 852/2004 and establishments handling products of animal origin for which hygiene conditions are laid down in Regulation (EC) 853/2004 must be approved by the competent authority of the Member State. Under Regulation (EC) No 882/2004 Member States must make up-to-date lists of such establishments available to other Member States and to the public. Collection centres and processing plants for rendered animal fats and greaves and processing plants for treated stomachs, bladders and intestines must be listed.

FSA is currently seeking information from the local authorities on the edible co-product plants in their areas to ensure that lists of approved food establishments comply with the new Commission requirements on availability of this information.

The MHS did not appear to have a list of slaughterhouses producing raw materials for the edible co-product production either on co-located sites or for dispatch to third parties for further processing. A record of the plants producing the raw materials for further processing as co-products would be of value although it is recognised that this would change from time to time depending on circumstances.

Animal Health (formerly the SVS) has no remit to cover food production premises. However, it would appropriate for Animal Health during visits to animal by-products (ABP) plants and pet food plants to record any activities on the site which could be linked to the production of products for human consumption. This could apply when Animal Health is undertaking either approval visits or regular inspections under the animal by-products legislation. This is of particular importance when category 3 ABP arrives at a company where although there is separation, material for human consumption and pet food is produced. This relates mainly to tripe production.

Recommendation 8: A comprehensive list of the standalone and co-located premises for the production of edible co-products should be produced and maintained by the FSA. The list should include details of the activities on each site. This would then comply with the new Commission requirements.

Recommendation 9: Discussion should take place with Animal Health to enlist their assistance when visiting Animal By-products plants in particular raw pet food operations. This would require them to check whether any raw material could be diverted for use for human consumption and whether any production for human consumption takes place at the same location where the separation on the site is inadequate.

2.5.3 Gut rooms

There is a philosophical difference between the UK and continental Europe on the importance and role of the gut room. In Europe edible co-products are used much more widely than in the UK. As a consequence the gut room is considered to be an important component in the food production chain and subjected to strict rules for structure and hygiene. In the UK the gut room has been used mainly for the disposal of material as waste and not for human consumption with less emphasis on hygiene and structure. The gut room or gut department deals with all the green offal. After its removal from carcases in the slaughter hall the offal is sent down chutes to the gut room.

Apart from the collection of some fats most of the edible co-products are collected in the gut room. These are often small and cramped rooms which have insufficient space for all the activities especially when edible co-products are being harvested. As a result some of the activities occur outside the room itself. By their very nature these areas are contaminated with stomach and intestinal contents although the degree of contamination varies considerably from slaughterhouse to slaughterhouse. The gut room in the pig slaughterhouses were less of a problem and were generally much cleaner with less likelihood of cross contamination.

Traditionally the gut room was managed by the plant operator. Nowadays some plant operators employ or sub-contract a company to manage the gut room operation on their behalf. In these situations staff in the gut room are employed by a separate company which is responsible for all the work in the gut room whether harvesting material for edible co-product or for disposal of waste under the ABP legislation. These staff do not enter the main slaughter hall.

An efficient gut room operation is essential if edible co-products are to be harvested. It is important to ensure that the quality of the product is maintained in what is a difficult environment. This involves the handling of the raw material, minimising contamination and spillage and proper cleaning as and when necessary.

It is unusual for operators to extend the gut room. Consequently the more activities which take place the more there is potential for contamination and for mistakes with the separation of material into edible co-products and animal by-products. This problem is particularly marked when material is harvested and also processed in the same room with the need for more containers to hold the various products.

Recommendation 10: The MHS should inspect the HACCP plans for the gut room and discuss with the FBO to ensure cross contamination is minimised.

Recommendation 11: Clarity is required as to where responsibility for the HACCP plan lies when the FBO contracts out the operation in the gut room.

Recommendation 12*:* A source of detailed advice and/or consultancy possibly from the MLC is required for slaughterhouses planning to develop overseas markets for edible co-products. This advice should cover all aspects of the Guide.

Recommendation 13: A standard interpretation on acceptable levels of contamination in the gut room should be developed for use by the FBO and the OV. There is currently some variation around the country on the interpretation of the legislation on this issue.

2.6 Separation and Labelling

Premises which are authorised or approved under the hygiene regulations must ensure that edible co-products are kept separated from materials consigned as animal by-products from the point at which they arise. If materials from two categories are mixed then that mixture must be downgraded to the higher risk category. Equally edible co-products that are mixed or in contact with animal by- products should be down graded. This is of relevance when condemned material is passed down the same chute as the green offal being transferred to the gut room. It is essential that condemned material is kept separate from the material classified as fit for human consumption if the co-products are to be harvested.

In some gut rooms there will be ABP category 1, category 2, category 3 and raw material for edible co-products. It was noticeable that the labelling of containers, skips, dolavs (see Appendix 5) was very variable. Labels were not clear and, apart from the identification of contents, it was difficult to differentiate categories of waste and those fit for human consumption in some plants. At some plants there was a lack of obvious separation of edible co-product and ABP category 3 waste especially as the bins used for the different products were in many cases not well labelled. In some cases this occurred for stomachs going for pet food.

One of the problems has arisen because slaughterhouses now combine the ABP category 1 and 2 waste into one container. It was noticed on one occasion the ABP category 1 and 2 waste were combined into one skip and not sprayed so that the overall appearance did not meet the staining requirement. FBOs need to be reminded of the need to stain material if ABP category 1 and category 2 material is mixed. Equally, proper labelling of ABP category 3 wastes as not fit for human consumption is required on the relevant containers etc.

Labelling is one of the main problems. This is partly due to the fact that none of the current methods for labelling are completely secure. Sticky and adhesive labels are lost. Labels which clip onto containers and skips work well provided the FBO remembers to apply the correct label to the correct container at the right time. Painted labels work but cause major problems when skips and containers are used for other purposes as the marks then have to be obliterated. The only successful labelling was the use of colour coded bins for the 3 categories of ABP waste. Unfortunately with the changes in the disposal of ABP Category 1 and 2 this is no longer used in all slaughterhouses. During the visits to the slaughterhouses the most successful and obvious labelling system was the use of the sticky adhesive tape which could be wrapped around the whole container so as to provide an immediate visual indication of the category of waste. An example is shown at Appendix 2.

Labelling and separation go hand in hand as all unlabelled containers are assumed to contain material which is fit for human consumption although they should bear an identification mark showing the approval number of the establishment which prepared them. This may not be added until a later stage if at all.

It was suggested that the most secure method of labelling and differentiating material fit for human consumption and animal by-product would be to ensure that colour coded barrels, containers or dolavs were used. One colour for ABP, another for material fit for human consumption. This is an attractive proposition but would be difficult to introduce in view of the many colours already in use and the large costs involved in changing the storage containers.

If, as is likely, there is increased emphasis on the use for the edible co-products it will be important to ensure that the gut room can cope with the increased work and that the cleaning and separation of the different categories of raw material is adequate and acceptable.

Recommendation 14: If green offal transferred to the gut room is to act as a source of raw material for edible co-products then material which is condemned as unfit for human consumption should not pass down the same chute into the same area of the gut room. This is a particular problem in some cattle slaughterhouses.

Recommendation 15: Improvements are required at all slaughterhouses on the labelling of the metal and plastic containers used in the gut rooms for material for human consumption, and ABP category 1, 2 and 3 material. Also containers awaiting dispatch must be fully labelled. Consideration should be given to the wider use of adhesive tape to identify the ABP category.

Recommendation 16: FBOs and OVs need to be reminded that when ABP category 1 and 2 material are loaded into the same container or skip all the material must be clearly stained blue especially in the skip or container used to transport the waste to the rendering plant.

2.7 Hygiene

2.7.1 Post mortem inspection

Edible co-products must be derived from animals which have passed ante and post mortem inspection. If a carcase is condemned then it is a requirement to identify the entire product from that animal and ensure it is also condemned. Failure to do this requires the whole batch of material to be condemned. The ability to correlate the green offal with carcase was variable in the slaughterhouses that were visited. In the case of the collection of brisket, peri-renal fat (Suet) and Cod fat in cattle, the collection occurred after final inspection in the majority of cases although in one slaughterhouse the peri-renal fat was collected before final inspection.

In the majority of cases the intestines remained identifiable with the carcase as the final inspection point for carcase and green offal was virtually at the same location in the slaughter hall for pigs and sheep. However in one sheep slaughterhouse the green offal was dispatched down the chute to the gut room before final inspection. The result being that if a carcase was condemned the green offal was not identifiable and was likely to have been processed. A similar situation occurred at some of the cattle slaughterhouses. The FBO had the view that it was too expensive to hold the green offal until the final inspection and consequently the whole batch in the gut room would be downgraded to animal by-product if necessary.

Recommendation 17: If slaughterhouses are being redesigned or updated it is important that there is a facility to hold the intestines until the final inspection of each carcase is completed unless the FBO is prepared to discard batches of intestines.

Recommendation 18: The FBO and OV need to be reminded that either the final inspection is completed before the green offal is transferred to the gut room or that there is a protocol in place to discard all the whole batch of green offal if a carcase is condemned. The OV must enforce this requirement.

2.7.2 Contamination

It is important for FBOs and those responsible for the gut room to realise that offals intended for human consumption must be handled as hygienically as practical after inspection. It should also be recognised that this can be difficult in the gut room. Tripe and / or edible fat should be prepared under hygienic conditions.

Cleaning of the gut room often takes place only once at the end of the day. The result is contamination of the stainless steel shelves with spillage from stomach and intestines, blood and water. The way in which the offal, especially stomachs and the intestines, are handled in

the gut room also has an impact on the degree of spillage and contamination. Contamination should be kept at the lowest level and where necessary contaminated material removed. The most effective way of achieving this is to ensure adequate procedures in the gut room, including the need to clean the stainless steel shelves/racks more frequently.

There were variations in the levels of visual contamination that are considered acceptable, especially when the final destination for the product involves heat treatment. This was particularly relevant to the harvesting of omental fat in the gut room as it could be contaminated with rumen contents. In some cases there is a view that the heat treatment of fat with melting at 100°C and refining at 240°C will render it safe and that contamination is of no importance. However it must be recognised that the fat will be consigned with a label indicating it is fit for human consumption even before melting and in some circumstances it could be used for purposes other than melting. Similarly in the case of sheep and pig intestines the salting process for the casings would reduce the microbial contamination. The question was raised as to the acceptable level of visual contamination.

It was noted that there were different levels of cleanliness operated in different parts of the country due to the wording in the Guide and in the legislation. The wording in the legislation indicates “consist of adipose tissues or bones, which are reasonably free from blood and impurities”. In the Guide it indicates that “best practice would be to ensure that the fat is as free as practically possible from blood and impurities including faecal contamination when it is collected at the slaughterhouse.” These guidance notes are interpreted in different ways by both FBOs and OVs. Some refuse to allow the collection of omental fat in the gut room whilst others permit the collection and allow low levels of contamination.

One of the slaughterhouses visited had attempted unsuccessfully to harvest omental fat in the slaughter hall. Ideally this could be a solution, as it would avoid the potential contamination which can easily occur in the gut room. In the case of small abattoirs where omental fat may be removed in the slaughter hall there is less opportunity for contamination.

Recommendation 19: Wherever possible the design of the gut room and the processes especially in cattle slaughterhouses should be such that the rumen is not opened in such a way as to allow spillage of ruminal contents onto the omental fat.

Recommendation 20: A better developed cleaning protocol is required for most of the gut rooms when edible co-products are being produced to ensure contamination is kept to a minimum. Spillages should be kept to a minimum and cleaned up as soon as possible after they occur. Where there is green contamination of the omental fat this should be removed.

Recommendation 21: The attitude that the further processing of the products especially with edible fats will resolve any contamination issues needs to be overcome and the product produced as hygienically as possible.

Recommendation 22: Consideration should be given to assessing whether it is feasible to remove omental fat in the slaughter hall rather than in the gut room especially in the high throughput slaughterhouses.

2.8 Temperature controls

Concern was expressed by the smaller slaughterhouses about the harvesting and processing of tripe and the impact of the current temperature controls contained in the legislation and in the Guide. This is one of the most important areas of confusion. It also acts as an important constraint on the use of raw material for edible co-product production and as a consequence a considerable amount of raw material is disposed of as waste or for pet food. Many of the smaller slaughterhouses have restricted chiller capacity and find it impossible to chill the raw

material either for storage or to ensure that it leaves the slaughterhouse on a chilling curve that results in a continuous decrease in temperature toward 3°C.

It would be more appropriate for the cleaned stomachs to be dispatched to a second plant for washing and scalding. In the case of overseas interest the countries involved wish to purchase raw material and transport this to other plants for processing including the washing and scalding stages.

The EU legislation on the temperature control for treated stomachs is clear that they must be stored at 3°C until their dispatch if they are neither salted nor dried. This requirement is met by all the slaughterhouses visited and is applicable to stomachs that have been subjected to washing and scalding.

The EU legislation on storage of offal in general (Regulation (EC) 853/2004 annex III section I, chapter VII 1a) indicates that, unless other specific provision provide otherwise, post mortem must be followed immediately by chilling in the slaughterhouse to ensure a temperature throughout the meat of not more than 3°C for offal along a chilling curve that ensures a continuous decrease of the temperature. The offal must attain that temperature which should be maintained during storage.

However the provisions in the same regulation at Section XIII relate only to treated stomachs. Although the EU legislation seems clear that offal should be stored at 3°C, the Guide specifically states that "The requirement to chill at +3°C or lower does not apply to the untreated raw material". This needs to be clarified and any specific provisions overriding the requirement for offal should be clearly identified.

If there is a clear legal requirement for the storage at 3°C or to ensure a decreasing temperature towards 3°C when being transported then an alternative arrangement needs to be investigated to facilitate the use of co-products. Stomachs are offal and fall under the controls for meat as contained in Regulation (EC) 853/2004 annex III section I chapter VII 3a b which states that "such transport takes place in accordance with the requirements that the competent authority specifies in respect of transport from one given establishment to another and the meat leaves the slaughterhouse or cutting room on the same site as the slaughterhouse, immediately and transport takes no more than two hours".

This indicates that it would be possible to collect and empty the stomachs for transport to a processing plant within 2 hours for further processing.

Recommendation 23: The FSA to clarify the legal position on the temperature requirements for storage of untreated stomachs at a slaughterhouse and for the transport for further processing.

Recommendation 24: An alternative to permit the transport of emptied stomachs direct from the slaughterhouse to the processing plant within 2 hours under specific conditions not requiring a temperature of 3°C should be urgently developed by the FSA.

2.9 Identification

There is a legal requirement for the edible co-products to bear an identification mark showing the approval number of the plant of origin in all cases. The legislation is quite clear on this point in Regulation (EC) 853/2004 Article 5 and annex II section II. The identification mark must be applied before the product leaves the slaughterhouse or the processing plant. The form of the mark is also clearly laid down in the legislation. There is some leeway in the way in which the mark is applied. In the case of raw materials for co-products that are placed in transport containers and intended for further processing the mark may be applied to the

external surface of the container. The mark may be applied to the packaging, printed on a label fixed to the product, the wrapping or the packaging. The mark may also be an irremovable tag made of resistant material.

The establishments processing and producing the final products all complied with the EU legislation. The slaughterhouses providing the raw materials failed in a number of cases to comply with the legislation. There was wide variation in the types of label used and the marks on those labels. In some case the oval mark was employed but in many cases the identification mark was not used and various other types of mark were employed. Some of these indicated the approval number of the plant whilst others only provided the name of the slaughterhouse. Most of the arrangements would allow the product to be traced.

As material in containers without ABP labels is assumed to be for human consumption it is essential that the proper identification mark is applied. This, along with the documentation, is the only mechanism that confirms the status of the material as fit for human consumption.

The issue is particularly important for material which in itself is derived from animals fit for human consumption but where the product requires further processing to make in acceptable for human consumption. Examples would be intestines, hides, feet etc. A problem arises with omental fat, which could either be used direct or could be processed through a fat melting plant. The omental fat could be contaminated and if used direct would be unacceptable but if processed into beef dripping, for example, would be acceptable. If an identification mark is placed on the container the fat could be used in either circumstance, one of which was acceptable, the other not.

Recommendation 25: The FSA and industry to discuss the most appropriate methods of affixing the identification mark to the edible co-products derived form the slaughterhouse to meet the legislative requirements.

Recommendation 26: A campaign by the FSA and MHS is urgently required to ensure that all establishments, in particular those producing raw materials such as runners, fats and stomachs are aware of the legal identification requirements and that these are correctly implemented.

Recommendation 27**:** Clarity is needed on the identification marks required for edible co-products in particular those which could be used without further processing necessary to ensure they are fit for human consumption. This relates in particular to omental fat.

2.10 Documentary controls

Edible co-products must be accompanied by an appropriate commercial document. The model documents at the annexes to the Guide were not used at the plants visited. Various systems were in place to provide documentation and traceability. These appeared satisfactory and allowed raw materials to be traced back to slaughterhouse of origin and forward to destination. Details on the documents included those similar to the recommendations in the model documents. In many cases the traceability of the materials was subject to the audit arrangements as part of the BRC accreditation schemes and also those of the individual supermarkets.

Most of the slaughterhouses are in the British Retail Consortium (BRC) Accreditation scheme and are subject to annual visits by EFSIS who audit on behalf of the BRC. Some of the cleaning companies are also in the scheme. This audit covers traceability as an important component which means full traceability can be demonstrated. Others are audited by their customers who in one case are the major supermarkets. This applies also to the slaughterhouses that supply to the major supermarkets.

Recommendation 28: The minimum statutory information required on the documentation to accompany consignments of edible co products to the next destination needs to be clarified and enforced.

2.11 Security and Fraud

In the past there have been situations where material labelled as Animal By-product has been processed for human consumption. This occurred on one occasion when fat labelled as ABP category 3 passed through a number of hands to ultimately be processed for human consumption. This has the potential to be a problem, with fat and stomachs for tripe where, unless the material is properly identified, labelled and accompanied by the correct documentation, it could be transferred deliberately or accidentally from the ABP category 3 to the human consumption category.

This is a potential problem that is more likely due to oversight or lack of understanding of the various categories of product and their legal use. This could be compounded if raw materials are delivered to sites where the separation of the ABP raw pet food production is not completely separated from the production area for products for human consumption. This is of particular importance with tripe where the material may go to a tripe processor that also has a raw pet food licence. It is essential that there is full separation for those parts of the company that handle ABP and edible co products. It is equally important that Animal Health and the local authorities liaise over such plants.

Recommendation 29*:* Increased liaison between the local food enforcement authorities and Animal Health where companies process both categories in the same location but on separate sites at that location.

Recommendation 30: During inspections to Animal By-Plants Animal Health should check and confirm the destination of any products. Similarly the local food enforcement authorities should check the origins of the material being presented for processing for human consumption.

Recommendation 31. In issuing approval for premises to process edible co products the approving authority should check the procedures and standard operating procedures (SOPs) of the FBO. This is to ensure that procedures are in place to detect raw material in the wrong category and to define the action to be taken in that event. The SOP should also provide details of action to be taken if raw material is identified and rejected.

CHAPTER 3: EDIBLE FAT AND GREAVES

3.1 Introduction

Fat processing activity is divided into two types. Firstly, the production of fats and proteins (greaves) for human consumption which is in accordance with Hygiene Regulation (EC) No 853/2004. Secondly the processing of ABP category 3 animal by-products also derived from animals fit for human consumption but not to be used for human consumption in conformance with Animal By-Products Regulation (EC) No 1774/2002.

Fat extraction is a major part of the rendering process. The resulting tallow is used in a wide range of industries depending on its quality and grade. The best quality tallow such as lard and beef dripping is obtained from melting fat tissues derived from animals that have been passed as fit for human consumption. Oils and fats produced by fat melters are used in the food industry, e.g. in baking and food processing; frying and margarine production. This tallow can be used in all applications including human food, animal feeds, cosmetics and pharmaceuticals.

A number of slaughterhouses harvest omental and other fat which is not intended for human consumption and is classified as ABP category 3 to go for rendering elsewhere. This tallow is also safe for use in all applications with the exception of food. About half the tallow and animal fats produced are used by the oleochemical industries as raw materials for a wide variety of chemicals, which are then used in soaps, cosmetics, pharmaceuticals, detergents and a large range of industrial products, e.g. from paint to car tyres.

Fat processing is characterised by its fresh raw material and relative mild processing conditions in order to preserve the product properties, which are essential for the applications. The quality and source of the raw material is an important aspect of fat processing.

3.2 Definitions

Edible fat melters are that section of the rendering industry which produces high quality tallow considered safe for human consumption by processing large discrete adipose tissue obtained from animals that have been passed as fit for human consumption.

Fat can be classified as 1^{st} or 2^{nd} quality. First quality fat comes from sites such as the suet (kidney) or cod fat (inguinal fat from male animals). Second quality fat is the cutting fat that is boned out in the cutting plant. Fats from different parts of the body have differing qualities. A higher price is paid for first quality fat.

Omental fat is found in the greater omentum. The omentum is a complex structure that comprises two layers of peritoneum which pass directly onto the rumen and have a number of abdominal attachments. The omentum can be an important store of fat that results in the whole omentum becoming thickened and opaque.

“Premier jus” is the best quality melted extracted fat and is the crude unrefined tallow which is golden yellow in colour. It is still in demand.

Lard is pork fat. Beef dripping and lamb fat are the other two products.

3.3 Structure of the Edible Fat Industry

Edible fat melters producing fat for human consumption in the UK are of two main types. These are standalone and plants co-located with slaughterhouses. Other small businesses may collect fat from single slaughterhouse for melting on their premises to produce beef dripping sold locally in small packs. Other rendering facilities co-located with slaughterhouses are approved to handle ABP category 3 fats only. These plants are not authorised to process fat for human consumption.

3.3.1 Standalone plants

Two standalone plants in the UK are approved for the manufacture of edible fat for human consumption, Nortech in England and Duncrue Food Processors in Northern Ireland.

Nortech Foods operates the largest edible beef dripping and lard refinery and packing plant in the UK. Nortech is part of the PDM Group (Prosper De Mulder Ltd). The company supplies a range of edible fats and oils for retail, manufacturing and catering industries under a variety of brands. Nortech also provides contract packing services for many of the UK's leading brands of cooking fats. The Nortech site in Doncaster is multipurpose with a pig blood separation and a pet food preparation plant on a separate part of the site. Around 30 slaughterhouses supply fat to the Nortech plant. Although Nortech processes fat from all three species beef, is 85% of production with sheep at 10% and pig at 5%. Pig fat is in short supply and the company imports pig fat from the Netherlands and Denmark.

There is a similar plant in Northern Ireland. Established in 1979 as a family business, Duncrue Food Processors has grown to one of the UK's leading Beef Dripping producers. The company employs 30-plus people at their manufacturing plant in Belfast. The company has invested in the refining and deodorising plant. Duncrue Food Processors produces a full range of dripping products, from traditional beef dripping to the Premier Jus.

3.3.2 Co-located plants

Two slaughterhouses, both part of the Woodhead Brothers Company, are approved or in the process of obtaining approval for their fat melting plant co-located with the slaughterhouses. Fat is transferred from the slaughter hall or the co-located cutting plant to the fat melting plant. The resulting crude tallow is stored in different bulk storage at the plant depending on the use to which the tallow will be put. Some of the tallow is used for fueling the boilers at the plant. The tallow is sold on to an agent for either further refining as fat for human consumption or as commercial tallow for manufacturing. The agent sells wherever there is a market.

Currently the price of tallow for non human consumption is higher than that for human consumption. Consequently tallow is currently used for non human consumption purposes at the Woodhead Brothers slaughterhouses in Lancashire and Aberdeen. The company switch production depending on price although the raw material is all classified as fit for human consumption. When the market is depressed the tallow is used in the boilers.

Other companies such as ABP Shrewsbury and MacIntosh Donald in Scotland have co-located rendering plants but these are for ABP category 3 materials only. The resulting tallow is often used as fuel in the plant boilers. These sites are authorised by Animal Health under the ABP regulations.

3.3.3 Small businesses

In this situation the small food business will purchase fat usually suet and /or cod fat from a local slaughterhouse. The fat will be refrigerated and collected once or twice a week in dolavs. The fat will be melted in a dry system using a steam jacketed boiler. The yellow creamy fat is decanted in to small pots for sale in markets, to butchers and wholesalers as beef dripping. The greaves are sold as pet food. It is difficult to ascertain how much this

occurs throughout the country but it is usually associated with small food businesses which deal with a range of products.

3.3.4 Collection centres or intermediate plants

As far as can be ascertained there are no intermediate plants or collection centres although the transport collecting the raw materials may have a daily collection round visiting a number of slaughterhouses.

3.4 Edible Fat Production

3.4.1 Source of fats

There are a number of sources for the fat for further processing. At most slaughterhouses peri-renal, brisket and other fat is collected from the carcase post final inspection, although in one slaughterhouse the fat was collected before the final inspection. The fat is collected into bins and added to dolavs containing a plastic liner. When full the liner is folded over and sealed. It is given a label with the identification number of the plant. The fat is then usually stored at 3°C in a chiller to await collection. This is not always the case and in one plant the fat was stored outside under cover in the sealed dolavs. In this case the dolavs were collected at the end of each day and transported to Nortech Doncaster in PDMs own refrigerated vehicles. The justification being that the fat was processed within 12 hours of collection and before mid day the next day.

In addition to first grade fat a number of slaughterhouses also collected the omental fat from cattle and sheep. This is collected in the gut room and put into similar dolavs with plastic liners. The dolavs were then held either out doors at ambient temperature or in chillers. In some of the slaughterhouses the omental fat was collected as ABP category 3 material and sent to other non-food renderers.

3.4.2 Processing

Woodgate and van der Veen described the processes in detail in 2004. Tallow is extracted from animal tissues containing fat by a variety of processes called rendering or melting. Typically the raw materials are heated, mechanically agitated, and the moisture evaporated or separated. The lipid fraction is separated from the tissues and protein matter by pressing, centrifugation and filtration.

Three methods of fat melting have been used: batch wet fat melting, batch dry fat melting and continuous wet fat melting. The quality of the fat is affected by the method used. High quality fat will have a low content of free fatty acids (FFA); low water content; good keeping qualities; low peroxide value; neutral taste, flavour and colour and high solidification point. Raw materials that are not fresh may cause odour problems and add to the waste water pollution burden.

Under certain conditions, fat undergoes two important chemical changes, i.e. hydrolysis and oxidation. Hydrolysis is a chemical reaction between fat and water, through which free glycerides and FFAs are formed. The compounds formed during oxidation give the product a rancid taste. The handling and storage of the raw material before processing and the type of processing carried out determine the FFA and the peroxide value. To achieve low water content the fat may be purified in a separator. The water content of the fatty raw material normally ranges between 6 - 25 %. The FFA content increases with the duration of storage and treatment, especially any time at raised temperatures. To avoid this, the constituents need to be separated quickly.

3.4.3 Continuous wet fat melting

The process used both at Nortech and at the Woodhead Brothers co-located sites is the continuous wet fat melting process although the scale of the operation is different. The raw

material is first passed through a mincer or grinder. It is then conveyed to an airtight section, where it is heated in a matter of a few minutes to around 100°C, using steam injection. The direct injection of steam makes the processing time very short, displaces the air and minimises oxidation of the product. It has been reported that there is no rise in the FFA content or peroxide value in fat processed by continuous wet fat melting.

The heated material is passed to a decanter centrifuge that is especially designed for the continuous removal of solids from a liquid. The solids, known as greaves, leave the plant at this point. The liquid, now consisting mainly of fat, but also containing some water and fines is then passed through a separator to remove water. The final purified fat flows through a plate heat-exchanger, in which it is cooled down to about 40 ºC before leaving the plant.

Continuous wet fat melting is used as it takes less time and space than the other methods. The fat yield is lower than the batch methods because the effluent water and the greaves contain more of the fat. At this stage the tallow is unrefined and has an odour and a yellowish colour. In this state it may be used by consumers as Premier Jus, but it is normally refined further. This includes bleaching to remove the chlorophyll and finally de-odorising to remove free fatty acids to leave an odourless, colourless liquid which is stored in bulk silos.

The greaves produced in these plants could be used in human foods as it was derived from raw materials that had originated from animals passed fit for human consumption. In reality greaves have no market at present and according to the industry are sold as ABP category 3 wastes for inclusion in pet food.

3.5 The Guide: Edible Fats and Greaves

3.5.1 Hygiene

Strong plastic liners in dolavs were used in most slaughterhouses. Collection of the fat in the slaughter hall meets the hygiene requirements. When the omental fat is collected in the gut room the question of acceptable level of contamination is critical. The omental fat collected in the gut room was sometimes contaminated with rumen contents, blood and intestinal spillage. Once held in the dolavs streaks of green contamination could be seen on occasions. An intake of raw material may be rejected at Nortech if it is wrongly labelled or in poor condition. Rejection is also based on visual inspection and smell.

3.5.2 Temperature controls

There was confusion over the interpretation of the requirements in EC 853/2004 Annex III, Section XII, and Chapter II 1b). The Guide states that “Raw material for the production of rendered animal fats and greaves (unless the fat is rendered within 12 hours after the day it was obtained) must be transported and stored at an internal temperature no greater than 7°C”. In one case the raw material was stored at ambient temperature, collected in the evening in a refrigerated vehicle then offloaded into the un-refrigerated loading bay of the melting plant. Processing depends on species, time of arrival but in general the raw material is processed within 12 hours. On occasions the period of time for the collection of the fat in the slaughterhouse to the time of processing at Nortech was in excess of 12 hours. The legislation could be interpreted to mean the 12 hours begins from the time the raw material was obtained, i.e. arrived at the edible fat melting plant in Doncaster.

The recommended best practice is straightforward i.e. that the raw material should be stored and transported at no more than 7°C. Based on the processes at Nortech there seems to be little problem as a result of their temperature regime nor do there seem to be any increases in FFA in the product especially as the refining process removes the FFA. Nortech were also concerned that if the slaughterhouses were required to refrigerate a lot of product would be lost as at some of the slaughterhouses, the facilities for storage of dolavs containing fat did not exist.

3.5.3 Identification marking

Labels on the dolavs varied from plant to plant. In the majority they contained details of the plant identification number, date of kill, address, and the information “edible fat for melting” Traceability systems were in place although they varied from company to company.

The consignments to Nortech were accompanied by forms produced by PDM. These were similar in content to those contained in the relevant annex to the Guide. Four copies were made of the forms. These contained the majority of the information required in the annex in the Guide but not in the same format. On arrival at Nortech the paperwork was inspected, vehicles weighed and the dolavs unloaded in the loading bay.

3.5.4 Separation from animal by-products

At the slaughterhouse the fat was separated from other animal by-products. The sealed dolavs were secure. On some of the vehicles, ABP category 3 pet food was transported at the same time as the edible fat. Strict procedures were in place at Nortech to ensure that the edible raw material was offloaded first and then the ABP category 3 materials was delivered to the pet food plant on the adjacent site. All containers were sealed and labelled appropriately. If there were any queries about the content of a container it would be rejected by the fat melting plant.

3.6 Audit, Inspection and Enforcement

As a standalone plant Nortech is inspected by the local authority with a visit every other month. The plant is also subject to regular audits as a result of BRC accreditation. Finally Animal Health visits the adjacent premises which deals with pig blood and pet food. In the case of the slaughterhouses that melt fat on site the responsibility for enforcement lies with the MHS. In the case of those slaughterhouses that render ABP Category 3 fat, enforcement is the responsibility of Animal Health.

3.7 Hazard Analysis and Critical Control Points (HACCP)

The plant visited had detailed HACCP plans. The majority of the Critical Control Points (CCPs) were linked to the temperature controls. Other CCPs were related to the origin of the raw material supplies, intake, storage and inspection before melting.

REFERENCES

S. Woodgate and J. van de Veen. 2004 The role of fat processing and rendering in the European Union animal production industry. Biotechnol. Agron. Soc. Environ. 8 (4) 283-294.

CHAPTER 4: CASINGS

4.1 Introduction

The Natural Casings industry operates on a worldwide basis with sheep and pig casings comprising the bulk of the industry. The process involves taking the intestines arising from the slaughtered animals, stripping the mucosa and treating with salt prior to sorting and grading. The finished stripped intestines are used primarily as natural sausage casings although some pig intestines may be further processed into chitterlings. In the past most parts of the intestinal tract could be used as casings for sausage, but nowadays this is limited to the small intestines. In the UK the highest throughput for sheep intestines is from mid June to October.

Natural casings are derived from the small intestines of mainly sheep and pigs although beef intestine is also used. In the UK bovine intestine and mesentery and the ileum of sheep are classified as specified risk material and cannot be used for any purpose. Imports of beef casings can be permitted from countries where the risk of BSE is considered to be extremely low.

Artificial casings are made of collagen, cellulose or even plastic. Collagen is largely derived from the collagen rich corium layer of cattle hides which undergoes extensive treatment with heat, acids and ammonia during the manufacturing process. The collagen casings do not need any preparation. They are ready to use, are not salted and have a shelf life of about two years if kept in a cool, clean and dry environment. They do not need to be refrigerated. New developments include other types of artificial casings which may be prepared from specially impregnated papers and from seaweed derivatives.

4.2 Definitions

Various terms are in current use and for clarity the following will be used in this report:

- Green Offal: Stomach, small intestine, large intestine, mesentery and omental fat.
- Intestines: small and large intestines.
- Runner: Intestine which has been separated from stomachs and mesentery and pulled out with removal of intestinal contents.
- Casings: Runners which have been processed to remove all the layers of the intestines apart from the sub-mucosa.
- Salted casings: Casings which have been covered and rubbed in salt.

The companies involved in casing production may deal with one or more of the following processes:

- Production: Harvesting of the intestines and production of runners
- Cleaning: Transforming the runners into salted casings
- Sorting: Selection of the casings by quality, length and calibre (diameter)
- Distribution: Sale and distribution of sorted casings either using UK or imported products.

4.3 Structure of the Casings Industry

The sausage casings industry estimated in 2002 that up to 15% of sausages were made with natural sheep casings mainly derived from the UK sheep flock. These were generally at the top end of the market. Another 10-15% used pig casings. The remaining 70-75% of sausages were sold skinless or used synthetic casings. This contrasts with Europe where 20% of the

casings are artificial and 80% are natural. The main player is Germany due to the quantity and variety of sausage production.

It was estimated that around 14 million sheep casings were produced each year with 5 million (36%) used for UK domestic production and 9 million (64%) exported to Europe. Some of these casings would be re-imported. The MLC estimates that the turnover in the casings processing sector was £24 million in 2002. The pig casing market in the UK is currently dominated by imported Chinese product.

Many small slaughterhouses will sell the runners to local butchers and processors. There are around 10 companies processing casings mostly in the North of England. They will purchase either runners or casings washed and ready for final processing. One of the major companies in the UK will collect from 40+ slaughterhouses, in 8 of which they also mange the gut room.

There are a range of companies involved with numerous overlaps in their activities in the processing of casings in the United Kingdom. For ease, 4 categories can be considered:

- Companies involved in the whole process on a single site, from the receipt of the intestines from the slaughter floor to further processing of cleaned and salted casings and subsequent dispatch of packed cured casings usually unsorted. These companies install all the equipment necessary for the production of casings and are responsible for the operations in the gut room. Examples Irish Casings Ltd for sheep and DAT-Schaub for pig casings.

- Companies involved in the whole process, from the receipt of the intestines from the slaughter floor but with the further processing of the runners to produce cleaned and salted casings at a different cleaning site. These companies will transport the runners from the slaughterhouse to their cleaning site usually in their own transport. Example Harder Brothers.

- Companies only involved in the production of runners. After the removal of intestinal contents, the runners are packed in barrels with chilled water, with or without salt and then collected for further processing into salted casings by a separate company. Example Woodhead Brothers.

- Companies which collect and process runners received from slaughterhouses into salted casings. Some of these companies may also sort the casings. Example Harder Brothers and Weschenfelders.

In some cases the cleaning company will be responsible for the gut room operations at a number of slaughterhouses. In these situations the company will be responsible for the collection of all edible co products from the time the green offal is transferred down the chute into the room. At other slaughterhouses the gut room staff are employed and managed by the slaughterhouse with the cleaning company only collecting the runners.

Other companies involved include:

- Sorting companies, which sort casings on the basis of quality, diameter and length although nowadays the majority of sorting is undertaken outside the UK.

- Distribution companies trade natural casings without further processing. Casings may be sourced from processing plants in the UK and Ireland but are also imported from Europe, Australia, New Zealand and North & South America. Casings can be supplied in the traditional formats such as salted nets, hanks and wet packs or pre-spooled onto tapes.

Collection centres or intermediate plants

Collection centres and intermediate centres appear not to be used during the transport of the runners. The transport collecting the raw materials may have a daily round collecting from more than one slaughterhouse. The runners are collected in lidded barrels or sealed dolavs by the cleaning company and taken direct to the cleaning plant usually in refrigerated vehicles. Once the final product is salted then various distributors will be used but by this time there is no possibility of mixing with other slaughterhouse waste.

4.4 Casings Production

4.4.1 Structure of casings

The small intestines comprise five distinct layers. From the inner to the outside layer, these are: mucosa, sub mucosa, circular muscle layer, longitudinal muscle layer and serosa. The sub mucosa, which consists mainly of collagenous and elastic fibres, forms the main base for natural casings. The objective is to clean and remove all the internal and external layers leaving the sub mucosa intact with no tears or holes. The resulting casings are usually preserved by natural means, including salting, for storage and transport.

The transformation of the raw material into the final product for sale involves three stages:-

1. Production of runners
2. Cleaning
3. Sorting.

4.4.2 Production of runners

There are a number of stages to the harvesting or production process. The intestines of the various species used for the preparation of casings are collected from the slaughter hall after evisceration and inspection of the carcases. In general carcases and green offal are correlated and the health inspection of the sheep and pig carcase along with their offal occurs at about the same point. This means that when the offal is transferred to the gut room it is known to be from animals which have passed the final health inspection although this is not always the case.

Once transferred to the gut room the first step is to separate the small intestine from the stomach. In most cases the ileum of sheep is removed at this stage and transferred to the SRM container. The omental fat is also removed at this stage. In a few cases going for further processing as edible fat but in the majority consigned as ABP category 3 waste.

The intestines are then separated from the mesentery and the large intestine by a process known as pulling which can be either manual or mechanical. At this stage the intestines are known as “runners”. Manual pulling takes place in small slaughterhouses where the throughput of sheep or pigs may be around 4-500 animals. In some slaughterhouses where machine pulling occurs the large intestines and ileum are left on the racks. The large intestines of sheep and pigs are disposed of as ABP category 3 waste or in many cases combined with the ABP category 1 waste for disposal purposes.

The next stage is to pass the intestines usually 10 at a time, through a manure stripper that comprises a set of rollers that squeeze out the intestinal contents. The design and action of the manure stripper can vary but the objective is to remove the contents from the intestine without damaging the sub mucosa. In some cases the manure stripping equipment will also act as a crusher and begin the process of removing the mucosa as well as the intestinal contents.

After the removal of the intestinal contents the runners are tied together in hanks of 10 and put into barrels with chilled water with or without salt. The barrels are generally stored in a

refrigerated room or container to await collection and transfer to the cleaning plant for the production of casings. In the larger slaughterhouses the runners are packed in dolavs to which ice is added. In some slaughterhouses the cleaning process takes place on the same premises and in the same room.

There is also some variation in the way in which the runners are handled before transport to the cleaning premises. These include:

- Transfer of the runners in to cold water in lidded barrels with storage at ambient temperature with collection by the cleaning plant at the end of each day. If the ambient temperature rose to 14-15°C + the bins would be placed in a refrigeration facility.

- Transfer of the runners into brine in lidded barrels with immediate transfer to a chiller for storage, and with collection by the cleaning plant at intervals which depended on quantity of runners.

- Transfer into dolavs lined with plastic, with layers interspersed with ice and transferred into refrigerated containers or other storage.

Depending on the cleaning company and the distance travelled, the containers were transported in refrigerated vehicles for long distances and in un-refrigerated vehicles for distances involving less than 3-4 hours travel time. On arrival at the cleaning plant the containers were generally transferred into refrigerated storage although not in all cases.

4.4.3 Cleaning

In some cases the runners are held for around 24 hours in tanks with water for washing and conditioning to soften the casings and for easier removal of the mucosa. In others the runners were held for a period and then placed in a container with warm water. The first stage in the operation is the inspection of the material largely to identify any hygiene issues (gut contents on the material) or decomposition. Material that is unsuitable may be either removed from site for disposal or may be minced and transferred into the effluent storage tank.

The runners are warmed up from the refrigeration temperature and then passed through 2 or 3 stripper/crusher machines. Each of these comprises a set of irrigated paired nip rollers that separates the mucosa and expels this debris. Often the first stripper/crusher removes remaining intestinal contents and some mucosa whilst the second machine removes the mucosa. In some cases a third stripper/crusher is used. The pressure employed at each stage of the process will depend on the number of machines used.

Interspersed between each of the stripper/crushers the runners are passed through water at a temperature of around 40°C. This is important as too low a temperature will result in tearing and holes and too high a temperature will cause ballooning.

The waste mucosa and liquids are usually pumped to effluent storage or an effluent treatment plant (some materials that are low in solids and residues may be discharged to the sewer). In the past the mucosa from pigs was sold for the production of heparin but this is no longer the case.

Finally the runners are passed through a finishing machine or de-threader which removes any residual material and the external layers of the runner. At this stage only the sub mucosal layer of the intestine remains and is now the casing. These are transferred directly from the finishing machine into containers of cold water.

Following this the casings may be sorted and graded but more often are made up in to hanks, salted and packed in barrels or containers ready for storage or shipment for sorting. At this stage the cleaning company may sell the product for further sorting. One of the major

companies in the UK will send a proportion of the salted casings to Portugal for sorting and return to the UK for sale to specific customers.

4.4.4 Sorting

Casings are sorted into various grades and diameters. Quality is important and is classified as A, B or C. In the case of sheep the highest quality is "A" which is most in demand in Germany. This quality has no holes or weaknesses and can be used for the finest sausage mixes without any leakage. B quality casings are of acceptable strength and quality for coarse mixes. Water testing is the traditional method of grading sheep and pig casings. The diameter of the casings is also measured. This may range from 16mm to 28mm in sheep and 30 to 44mm in pigs and is important for the type of sausage to be prepared. After selection the length of the casings is carefully measured ether by machine or hand. Pig and sheep casings are prepared in 91 metre hanks or bundles.

Salted casings are often sold to companies which transport the salted casings to third countries for sorting. Here the casings are washed, sorted and then repacked in salt and returned as the finished product to Europe for sale. This can take a relatively long time and while this does not appear to make sense, the lower wages and the scale of the casing operation means that it is cheaper to send the casings to third countries than to process them in the UK.

If the sorting is undertaken in the UK the company will re-salt the sorted casings for bulk sale. Alternatively, with the development of the home market and the small scale producer of local sausage, the casings may be put on to a spool which is then salted for storage. Casings are best stored in a controlled cool dry environment with a temperature of 4-10°C being the optimum.

4.5 The Guide: Casings

4.5.1 Hygiene

The intestines were emptied of their contents and then transferred into lidded barrels with water to which salt had been added in some slaughterhouses but not in others. The runners at this stage were as clean as one could expect after the process. There is some confusion over the word "cleaned" in Annex III, Section I, chapter IV 18(a) (b). In the production of casings cleaning is taken to be the process of removing the mucosa and muscular layers of the intestine to leave the sub mucosa which is the casing. This often occurs at a separate site to the slaughterhouse where the runners are collected.

4.5.2 Treatment

In many of the slaughterhouses the runners are placed into lidded barrels to await transport to the cleaning plant. At this stage the runners are not treated and should be classified as untreated for the purposes of hygiene rules. A separate room or space is not required.

In a number of slaughterhouses the runners are processed into casings and salted on the same site. In one of the two slaughterhouses where treatment of the casings took place on the same site the process occurred in the same room as the separation of the intestines and the cleaning process. This did not comply with the requirements of the Guide to Compliance which states "If this (i.e. treatment) takes place in the slaughterhouse, this must be in a room approved for the purpose and separated in time and space from the room used for cleaning the raw material". However in this one instance it did not seem to pose a problem with cross contamination and the salting process took place at the end of the cleaning line after the casings had been immersed in brine.

4.5.3 Temperature controls

There was confusion over the interpretation of the requirements in EC 853/2004 annex III, section XIII, 2 says: "Treated intestines that cannot be kept at ambient temperature must be stored chilled using facilities intended for that purpose.... products that are not salted or dried must be kept at a temperature of not more than 3°C." Annex III, section 1, chapter VII, 1(a) require chilling of offal in the slaughterhouse to ensure a temperature of not more than 3°C for offal along a chilling curve that ensures a continuous decrease of the temperature.

The recommended best practice is straightforward in that the raw material which leaves the slaughterhouse should be on a chilling curve that ensures a continuous decrease in temperature to 3°C. In one slaughterhouse the runners were immersed in cold water in barrels which were stored at ambient temperature.

Based on the guidance from the EC Commission intestines, runners and even casings which have not been salted remain as untreated and unprocessed products. From the time salting begins the casings become treated intestines and processed products.

A degree of delay in reducing the temperature to 3°C may be beneficial, as it will permit autolysis to facilitate the removal of the different layers of the mucosa. It was considered that a temperature of +7°C was effective for this process whereas a temperature of +3°C could inhibit the autolysis.

4.5.4 Identification marking

The lidded barrels and dolavs containing runners carried a variety of marks, some of which did not provide the official identification mark of the slaughterhouse of origin. The markings included date of kill, various reference numbers etc. Traceability systems were in place although they varied from company to company. It would not be difficult to add a seal to each of the lidded barrels with the identification mark of the slaughterhouse of origin. In the case of the cleaning companies the product after processing was labelled with the correct identification mark of establishment which handled and prepared the casings.

Various types of documentation was used, most of which contained the information recommended in the Guide.

4.5.5 Separation from animal by-products

In the gut room there was a mixture of material from sheep ileum as SRM, the ABP category 3 waste comprising the large intestine and fat not harvested for human consumption. These were all in bins which were identifiable and ensured that the runners were kept separate. As the runners were prepared in the gut room there was not a problem with separation or potential for contamination.

The runners were held in lidded barrels and were separate from the animal by-products. The vehicles transporting the lidded containers carried no other material and went direct to the cleaning plant.

4.6 Audit, Inspection and Enforcement

The companies involved in the production of natural casings from the slaughterhouses to the cleaning companies are subject to various types of audit. Firstly the Environmental Health Departments from the local borough or District Councils pay regular visits to the cleaning companies. All those visited had recent visits from the local authority. When the cleaning companies are co-located with slaughterhouses the MHS has the responsibility for audit and enforcement.

4.7 Hazard Analysis and Critical Control Points

Natural sausage casings companies must comply with HACCP requirements. Natural casings companies have developed a HACCP manual, in close association with international organisations. The manual was originally published by European Natural Sausage Casing Association (ENSCA). It was compiled by Dutch and German scientists, and lists, in separate chapters, the critical points for each type of company. Within these organisations the critical points for natural casings include the salt content and the quality of processing and packaging. The HACCP manual promotes the uniformity of processing world-wide which is an important point for customers and inspectorates.

The raw materials used in the process can include sheep and lamb or pig intestines, salt (sodium chloride) and food contact packaging materials. No chemicals or additives other than salt are used in their production.

Contamination of the casings with micro-organisms from the intestinal contents is inevitable during these pre-salting steps. There is potential for microbial growth during the conditioning period as the water used for conditioning is not controlled at low temperatures. However, the salting process reduces the bacterial contamination to zero as demonstrated by microbiological testing.

There is a variation in the CCPs with one cleaning company indicating that there were no CCP, a second identified the CCP as the final inspection point on the slaughter line in a co-located plant. In a further plant the main CCP was identified as the final salting with the need for a visual examination of the casings to ensure adequate distribution of the salt on and within the bundles of casings.

All companies visited had HACCP in place and these were subject to review and discussion with the audit bodies. In one of the slaughterhouses the OV had recently reviewed the HACCP for production of casings and identified a number of areas where changes were needed in the flow chart.

CHAPTER 5: STOMACHS AND BLADDERS

5.1 Introduction

In the past there was considerable demand for these products but this has declined in the UK over the last few decades. Until recently most of the cattle and sheep stomachs were dispatched as ABP category 3 for pet food but there is now increasing interest in utilising the stomach from cattle, sheep and pigs for human consumption. Increasingly rumen and reticulum of cattle and sheep are being harvested and processed for tripe, sometimes at the slaughterhouse sometimes after dispatch to a processing company. At present there is little demand for the omasum or the abomasums. Pig stomach (Maws) are now also harvested.

More value can be achieved by improving the management in the processing plant to separate the stomach contents from the intestines and washing and cleaning stomachs and intestines rather than paying for them to be sent as waste for rendering.

5.2 Definitions

The ruminant stomach is composed of four chambers called the rumen, reticulum, omasum and abomasums. Food passes through each stomach in succession. The first three stomachs deal with complex food which comprises the main part of the ruminant diet. The abomasum is the true stomach and similar to the stomach of the pig, dog and horse

Tripe is a type of edible offal from the stomach of various domestic animals. Beef and sheep tripe is typically made from the first two stomachs,

- the rumen (blanket/flat/smooth tripe),
- the reticulum (honeycomb and pocket tripe).
- the omasum (book/bible/leaf tripe) was used in the past
- the abomasum (reed) tripe was also used but with much less frequency, owing to its glandular tissue content.

Pork tripe (Maws) is also produced.

"Green tripe" refers to unwashed tripe, not suitable for humans but often used in dog food. Green tripe is so called because of its high chlorophyll content from undigested grass. However it is more often brown or grey in colour.

The chitterlings comprise the large intestine and often the stomach of the pig and are cooked and used as food.

5.3 Structure of the Tripe Industry

Unlike Europe and the USA there has been a decline in the UK consumption of tripe. As a result there are only a few companies which process tripe usually purchasing the raw material blanched and trimmed. Companies such as Heys of Danby, Scragg of Liverpool and Fishers of Newark are the three main operators in the market and members of the National Tripe Dressers Association. Two other processors exist, one in the North of England and one in Scotland. Many potential uses for these edible co-products are neglected due to the lack of facilities in the slaughterhouses.

There is high demand for tripe in Europe which indicates that a market can be developed in future. This will be dependant on the slaughterhouses and processors producing the tripe in conformity with EU legislation to ensure that the market can be exploited.

At present the harvesting of stomachs for the production of tripe is hampered by the temperature requirements, especially the need to immediately chill in the slaughterhouse to ensure a temperature throughout the meat of not more than 3°C for offal along a chilling curve that ensures a continuous decrease of the temperature. Many small slaughterhouses do not have the chiller capacity to comply with this requirement. This problem could be overcome if the requirement to store or transport the untreated stomachs on a chilling curve to ensure a decreasing temperature to 3°C was not needed or if stomachs could be transported warm for further processing within 2 hours. The later option seems feasible within the existing legislation and should be explored further by the FSA.

Collection centres or intermediate plants

As far as can be ascertained there are no intermediate plants or collection centres for the raw materials although the transport collecting the raw materials may have a daily round visiting a number of slaughterhouses.

5.4 Tripe Production

5.4.1 Cattle/sheep

There is variation in the way in which tripe is produced. A number of specific operations are involved which can be combined and may take place on different premises depending on the local arrangements. The processes are in 5 main stages the first three of which may take place in the slaughterhouse:

1. Cleaning: separation of the stomachs from the intestines and other tissues, opening and the removal of the contents followed by washing in cold water to remove any remaining contents.
2. Washing: in specific equipment at 65-70°C for between 6 and 15 minutes in order to wash, scald and bleach the inner surface of the stomach.
3. Scalding: in specific equipment involves washing at a temperature of 85-90°C for between 6 and 15 minutes. This is intended for degreasing and refining the outside surface of the stomach.
4. Boiling: involves cooking at 100°C for around 2½ hours.
5. Bleaching: involves the addition of chemicals either for hot bleaching or cold bleaching.

Harvesting the stomachs
In all the gut rooms the rumen and reticulum are separated from the remaining stomachs and the intestines. Although the omasum and the abomasum may be harvested this does not occur on a large scale and was not seen during the visits. The contents are then removed avoiding contamination as far as possible. The empty stomachs are then washed and stored in barrels or dolavs. In many slaughterhouses this is the only process. At this stage the stomachs are classified as untreated.

Initial processing
If the stomachs are treated warm with about 15 minutes of collection the process is relatively easy using only washing and scalding in temperature controlled equipment. If the stomachs are not processed quickly through to stage 3 then it becomes more difficult to remove the mucosa and fats. In this situation the addition of lime/soda to the washing or scalding water is necessary at a later stage.

In some plants there is a machine washer into which 10-12 tripes are tipped. At a number of slaughterhouses the stomachs are taken through the washing stage only. The temperature of the washing varies depending on the company but is usually between 65-70°C although some

companies prefer lower temperatures of 60-65°C. After washing the tripes will be cold rinsed and then hung on racks to drain and for checking. The tripes are then moved on the full racks to the chiller at 3°C and susequently often frozen at -18°C the same day in boxes for delivery to a tripe dressing plant in the UK or overseas.

At other slaughterhouses the stomachs are processed through both the washing and scalding phase. In the scalding phase the temperatures are usually between 85-90°C although some will use slightly lower temperatures. The tripe is then cooled, drained, boxed, labelled and blast frozen for delivery to tripe dressing plants. The boxes containing the tripe have the correct identification mark of the plant of origin.

Final Processing
The tripes may arrive fresh in water or frozen at the processing plant. The processing at the tripe dressing plant will depend on the type of material received. If the tripes are raw without washing or scalding the process will be undertaken at the premises with the addition of lime/soda to facilitate the process. If frozen tripes that have been scalded and washed are received, no additional action is required.

Once these processes are completed the tripes will be cooked in boiling water for around 2½ hours. At the end of this process hot bleaching may take place where the bleaching chemicals will be added to the tripes in the container in which they have been cooked. Cold bleaching is favoured by other tripe dressers where the bleaching chemicals are added after the tripes are cooled in cold water. In some cases bleaching is not required as the tripes from young animals are generally white after the washing and scalding process.

Once cooking and beaching is completed the tripes are washed and soaked in cold water, drained, chilled, packaged and dispatched. The sale of tripe is through market stalls, butchers' shops, other shops and supermarkets.

5.4.2 Pigs

Large pig slaughterhouses either scald the pig stomachs or wash, pack and freeze fresh product for export to third countries. Most of the smaller slaughterhouses do not have the facilities to either wash or freeze. In one case the stomachs were cleaned, washed and scalded before being boxed, labelled and frozen. In a second case the stomachs were emptied, washed, boxed and held at 3°C before dispatch for further processing. The labels contained the identification mark of the slaughterhouse.

In the case of chitterlings, they are often transported frozen in which case the first process is defrosting or they may arrive in salt water. After inspection the chitterlings are cooked in boiling water before cooling and packing (they may have additives for colour control).

5.5 The Guide: Stomachs

5.5.1 Hygiene

The rumen and reticulum were emptied and the contents discarded. The tripe was washed and in some cases boxed and put into the chiller to lower the temperature. In other cases the slaughterhouse had the facilities to wash, and scald the tripe. This was then put on to racks to dry in a chiller then boxed and dispatched to a cold store for freezing. In the slaughterhouses where the tripe was processed, rooms separate from the gut room were used for the scalding and drying thereby minimising the potential for contamination.

5.5.2 Treatment

Where appropriate the tripes were washed and scalded/blanched at 90°C.

5.5.3 Temperature controls

In all the slaughterhouses the washed and scalded tripe was kept at less than 3°C as required by the legislation. There is confusion about the temperature at which untreated stomachs should be stored before dispatch for further processing. The Guide in the recommended best practice suggests a continuous decrease in temperature towards 3°C after leaving the slaughterhouse. The legislation related to stomachs does not specify that the raw material should be chilled to 3°C. The legislation related to offal in general indicates that, unless specific provision provides otherwise, post mortem must be followed immediately by chilling in the slaughterhouse to ensure a temperature throughout the meat of not more than 3°C for offal along a chilling curve that ensures a continuous decrease of the temperature. The specific provisions for stomach, bladders and intestines do not require cooling to 3°C for the raw material although it is doubtful that this overrides the provision for offal to be cooled to 3°C.

5.5.4 Identification marks

The boxed tripe was dispatched with the correct identification mark showing the approval number of the establishment of the slaughterhouse. When partially processed tripe was dispatched the identification mark was not always used. Instead the name of the slaughterhouse was written on the container. Some slaughterhouses fully met the requirements to use the identification mark whilst others did not.

5.5.5 Separation

In the gut room the separation of the stomach was adequate but, in a number of cases, the stomach going for pet food were not in containers properly labelled as ABP category 3 not fit for human consumption.

There was good separation at the slaughterhouses where the stomachs were processed by washing and scalding with a separate room for the scalding and draining of the tripe before transfer to the chiller.

If premises are recorded as dealing with raw pet food and are also approved to produce tripe for human consumption it is important that the local food enforcement authority responsible for approving the plant is satisfied with the level of segregation.

5.6 Audit, Inspection and Enforcement

Enforcement at the co-located premises is the responsibility of the MHS. The local food enforcement authority is responsible for the standalone premises. Animal Health is responsible for the raw pet food plants. Regular inspections occur.

5.7 Hazard Analysis and Critical Control Points

A standard HACCP plan was available from the plants visited and indicated that the temperature of washing, scalding, drying, storage and freezing were the CCPs.

The plants involved in tripe production had satisfactory HACCP plans. The main CCPs were linked to the temperature of the water being used for washing and scalding. Subsequently the CCPs were linked to the cooling and chilling of the tripe which necessitated a chiller temperature of below +3°C. Temperatures were regularly checked. Finally the tripe would be dispatched to a cold store for blast freezing in refrigerated vehicles at below +3°C.

Microbiological assessments of the tripe at the various stages of production were also carried out before the wash, after the wash, after the polish, after the cold rinse and in the chiller. The microbiological assessment included the total viable count and the count of enterobacteriaciae.

Appendix 1 List of Consultations /Visits

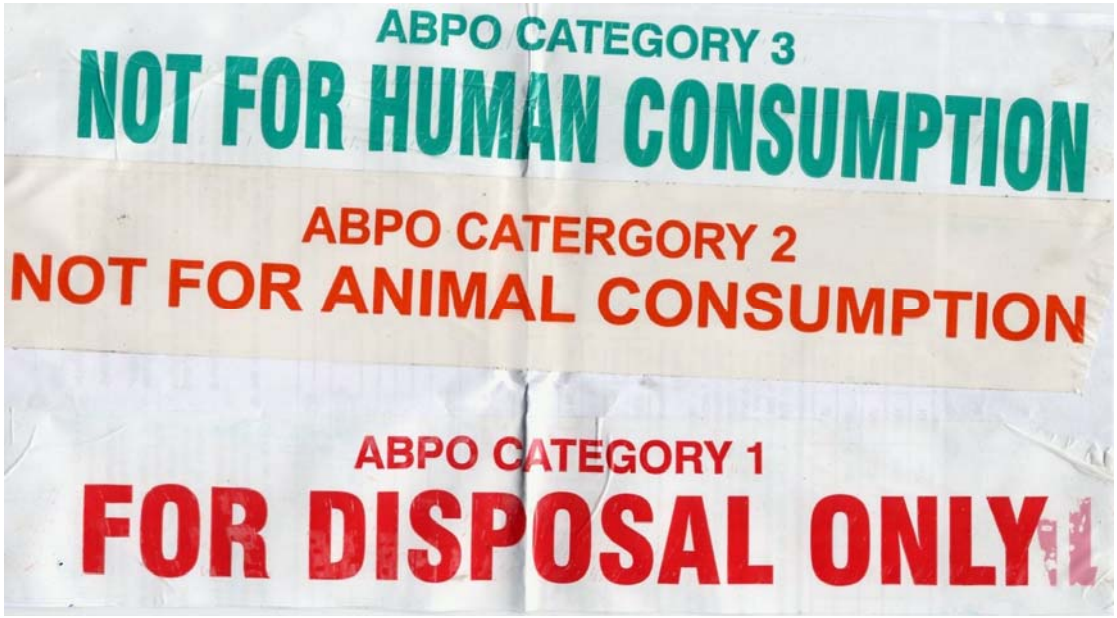
Meetings/Consultations:

British Meat Processors Association
Defra
European Fat Processors and Renderers Association
FSA
National Tripe Dressers Association
Natural Casings Association

Visits:

Dunbia Slaughterhouse: Sawley
Harder Brothers Ltd: Morley
Keighley Byproducts: Keighley
J&B Fitton: Oldham
Nortech Foods Ltd: Doncaster
Parry Scragg Ltd: Liverpool
PDM Group: Doncaster
Rose County Slaughterhouse: Ashton under Lyme
RWM Food Group Ltd: Yetminster
St Merryn Meat: Bodmin
St Merryn Meat: Merthy Tydfill
Weschenfelders: Middlesborough
Woodhead Brothers: Colne

Appendix 2: Example of adhesive tape identifying ABP category



Green Letters

Orange Letters

Red LetterS

Appendix 3 Edible Fat Production

Representative Organisations

The European Fat Processors and Renderers Association

In 2001 the European Association of Fat Processors (UNEGA) merged with the European Association of Renderers (Eura) into a new organisation the European Fat Processors and Renderers Association (EFPRA) to inform the public about the industrial application of animal slaughter by-products

Dirk Dobbelaere, is the secretary general of EFPRA, besides being a financial decision to merge, the membership of the two organizations overlapped. A 15-member EFPRA board, which represents each of the organizations 15 member countries, was formed.

EFPRA, Boulevard Baudouin 18 (Bte 4), B-1000 Brussels
Tel + 32 2 203 5141 Fax + 32 2 203 3244

The UK Renderers Association

The United Kingdom Renderers' Association is the trade association representing the rendering industry.
UKRA, St Martha's Lodge, One Tree Hill Road, Guildford, GU4 8PJ
Tel: +44 (0)2476 418704

Standalone GB Approved Premises for Edible Fat production

Nortech Foods Ltd Ings Road Doncaster South Yorkshire DN5 9SW	Doncaster MBC	**DK 010**

Co-located GB Approved Premises for Edible Fat production

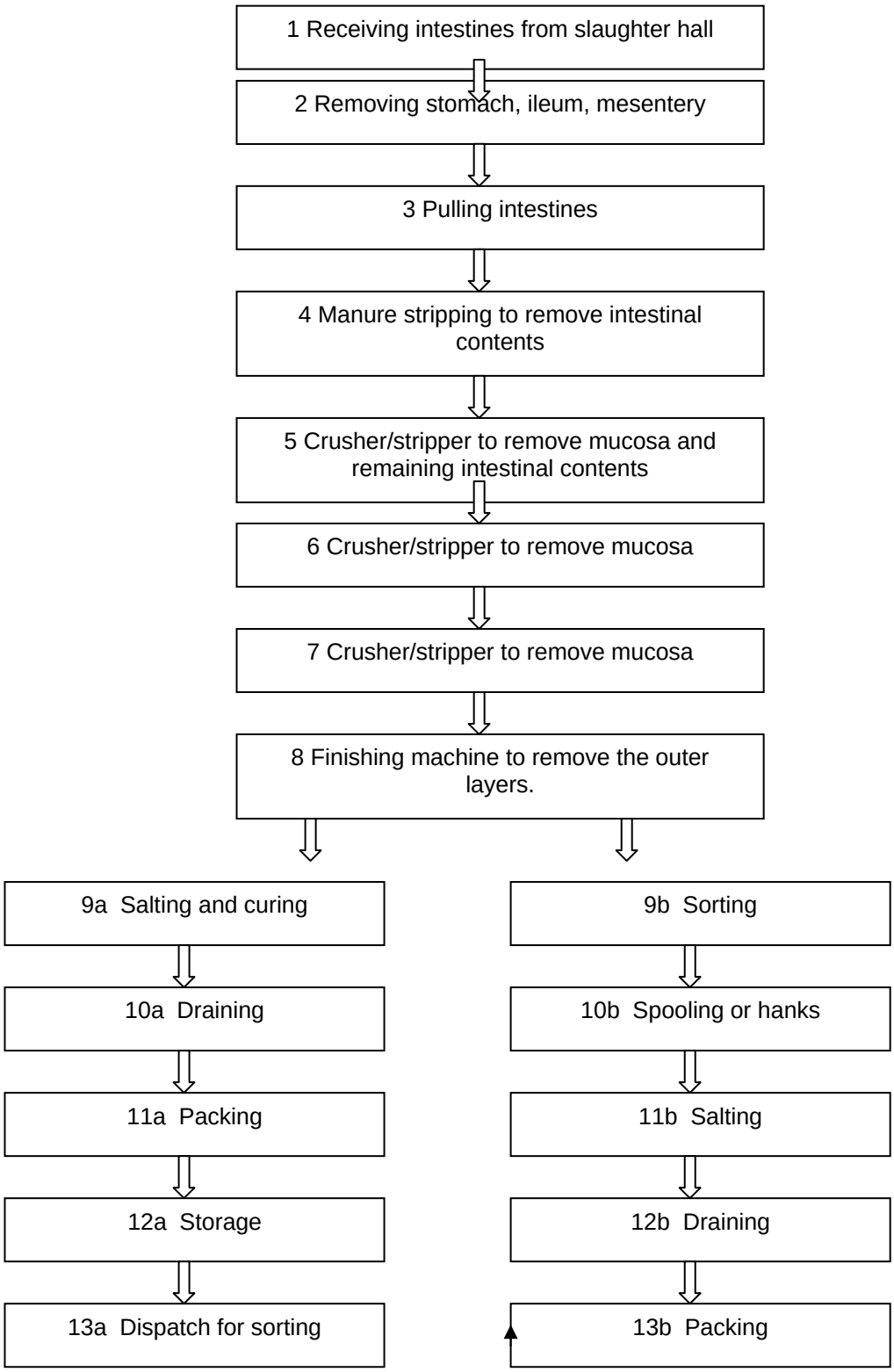
Woodhead Brothers Meat Company Markethill Industrial Estate, Turriff, Aberdeenshire, AB53 4PA	FSA	**1103**
Woodhead Bros Meat Company (Colne) The Slaughterhouse, Junction Street, Whitewalls Industrial Estate, Colne Lancashire, BB8 8LH	FSA	**4471**

Co-located Animal By-products category 3 plants rendering fat not for human consumption
Macintosh Donald,Aberdeen

ABP (Shrewsbury) Ltd, The Slaughterhouse, Battlefield Road, Harlescott, Shrewsbury, Shropshire, SY1 4AH
[Approval no.: 35/280/8000/ABP/REN]

Appendix 4 Casing Industry

Flow chart for the production of casings



Contact points

Representative Organisations

The International Natural Sausage Casing Association (INSCA)

The International Natural Sausage Casing Association (INSCA) is the international association for the natural sausage casing industry. Members include producers, suppliers and brokers of natural casing products. Additional membership categories are available to manufacturers of equipment used in the processing of natural casings, as well as for national associations representing sausage casing companies. INSCA offers a diversity of member nationalities, backgrounds, casings businesses and geographic locations. Two British firms are recorded as members on the INSCA web site. These are: Harder Bros Ltd and Associated Casings Company limited. There is also the Irish Casing Co Ltd which operated in the UK

The European Natural Sausage Casings Association (ENSCA).

ENSCA is the European association for the natural sausage casing industry. ENSCA members include national associations, producers, suppliers and brokers of natural casing products. First established in 1956 the Natural Sausage Casing Association, London, joined in 1973. After the reorganisation of ENSCA was completed during the spring of 2005, the membership changed, allowing for private companies to become full ENSCA member and allowing non-European companies and organisations to become associate members. At present there are twelve European national associations full member of ENSCA.

From the early beginning in 1956 the objectives of ENSCA were defined as to:

Coordinate the national interests and different interpretations of legal requirements;

Establish the image and reputation of the European Casing Industry vis-a-vis European officials and the public opinion;

Bring forward the needs and interests of the European Casing Industry to the legislative authorities, both national and European;

Establish scientific background of all aspects of casing production and casing trade.

The final objective was started with the establishment of the Scientific Working Group of ENSCA in l995 and was combined in 1997 with the R&D Working Group of INSCA (International Natural Sausage Casing Association).

Contact: Rue de la Loi 81A Bte 9 / 1040 Bruxelles / BELGIUM
Phone: 32-2-230-46-03 / Fax: 32-2-230-94-00 / Website: www.ensca.be / Email: info@ensca.be
Mr. Jean-Luc Mériaux

The Natural Sausage Casings Association (NSCA) London

President: Mr T Weschenfelders, Wesschenfelders, 2-4 North Road, Middlesborough, Cleveland, TS2 1DE. Tel 01642 247524.

Secretary: Mr Digby Morgan-Jones, Wychwood Cottage, 38 High St, Risley Beds MK44 1DX tel 01234 709022
Members of the Association include

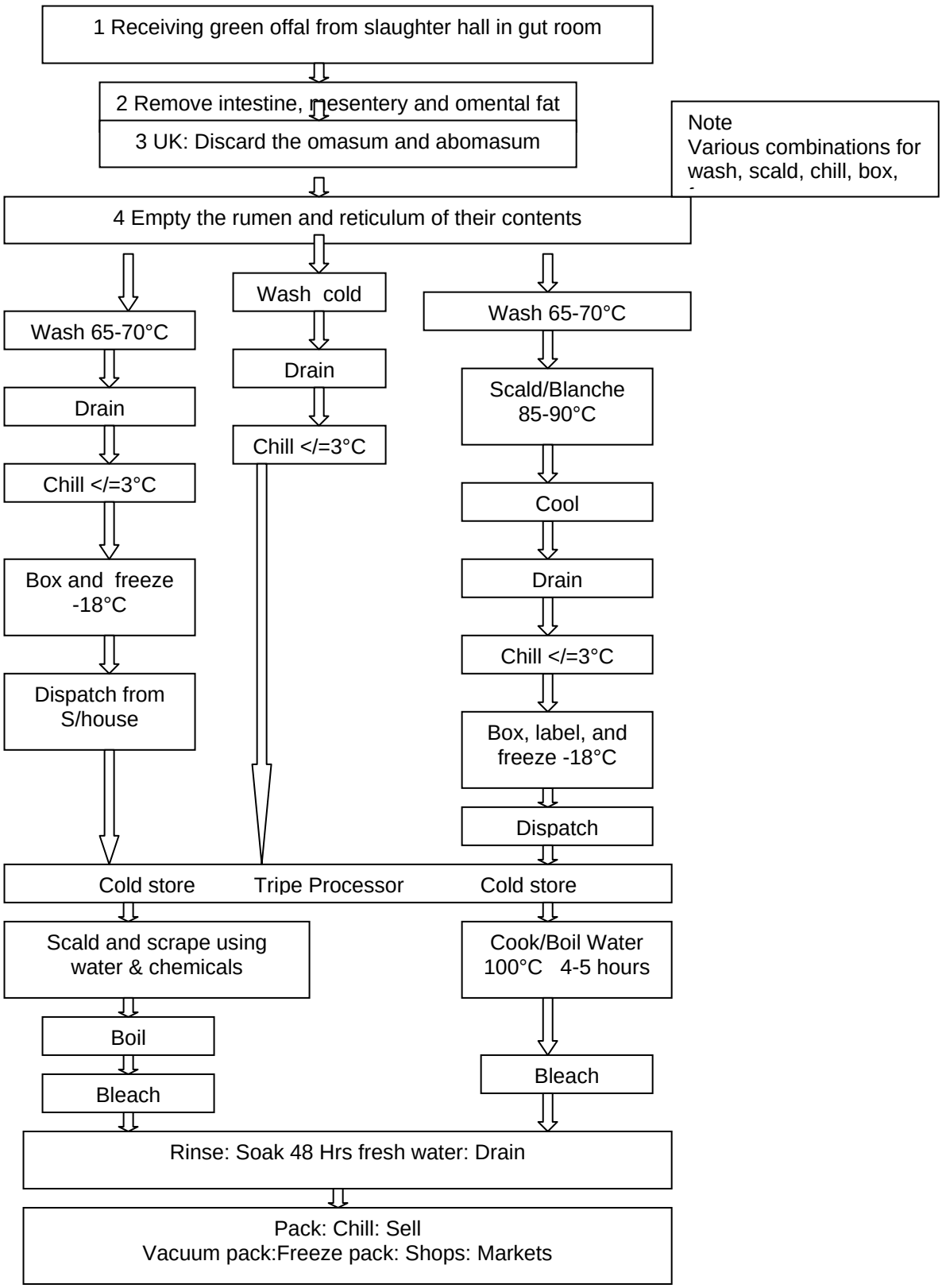
Name	Identification no	Authority
Harder Brothers: around 30-35 suppliers	LD200	Leeds City MBC
Oris: Recently bought by Van Hessen	SQ009	Sunderland MBC
Associated Casings Company	*--	*--

Weschenfelders: Around 19 suppliers.	MG005	Midlesborough
Stader and Company	SM088	St Edmundsbury BC
MJC Casings (North West)	LV006P	Liverpool City MBC
Staffordshire Casings	DL002	Dudley MDC
Irish Casings Ltd (St Merryn Merthyr)	7176	FSA

* To be checked

Appendix 5 The Tripe Industry

Flow chart for production of Tripe



Contact points

Representative Organisations

The National Tripe Dressers Association
President: P A Rawcliffe
Address;
Parry Scragg Ltd,
25/33 Dalrymple Street,
Taylor Street Industrial Estate
Liverpool L5 5HB
Tel 0151 207 5867

In the past there were up to 450 members of the Association. This has now declined to the 3 members listed below. There may be one or two other tripe producers based in the north of England/Scotland who are not members of the association.

GB Approved Premises
Members of the Tripe Dressers Association
R Hey and Sons Ltd, Meadow Lane, Bradford Road, Dewsbury WF13 2BE
Kirklees MBC **KM 095**

G Fisher & Sons (1987) Ltd** , Tompkins Farm, Gainsborough Road, Girton, Newark Notts NG23
Newark & Sherwood **NS 004**

** This is dual premises with approval for tripe production for human consumption and with approval under the ABP regulations as a pet food plants producing raw pet food. The approval number is 32/060/8000/PTF. In the web information the company indicates that it is a processor of tripe and associated edible offal. It also supplies freshly frozen pet food.

Parry Scragg Ltd., 25-33 Dalrymple Street, Taylor Industrial Estate
Liverpool L5 5HB
Liverpool City MBC LV022
From the web site http://www.icep.org.uk/places/outlets.shtml?category=retail, this company indicates it is a manufacturer of traditional Lancashire foods since 1825. Products include tripe, beef dripping, savoury ducks, black pudding and associated products.

GB Approved Premises
Non-Members of the Tripe Dressers Association

Bradshaws Quality Tripe Burnley BC *
Clitheroe St
Padiham
Burnley BB12 8DE

***** to be obtained.

Appendix 6 Equipment

Types of Equipment

Dolav Container

Dolav Plastic Products is involved in the production and marketing of box pallets with a large volume capacity. It was established in 1976 in southern Israel**.** Dolav containers are used in a wide variety of applications, including agriculture, industry, food processing, material handling fishing, chemical, textile, recycling and pharmaceutical, etc.

Plastic Barrels for runners

Web sites for description, pictures and availability of equipment for casings and tripe manufacture.

1. La Parmentiere International
http://www.laparmentiere.com/en/boeuf/pansefeuillet_b_en.html
(accessed 15 May 2007).

2. Holdijk + Haamberg GmbH
Home page: http://www.holdijkhaamberg.com
www.holdijk.de/index.php?file_id=81&language_id=2
(accessed 28 May 2007)