

Annex A

Request

- 1. How many times in 2018 were meat samples found to have been unsatisfactory for speciation (i.e. marketed/ sold as a particular type of meat when it was actually another) in the UK? Please include all results submitted by LAs through the UKFSS and via all other means.*
- 2. Please could you provide details, specifically: a) dates, b) supplier type (retailer, takeaway, plants, restaurants, etc), c) meat type, d) nature of substitution, of all cases where meat samples have been mis-sold as above?*
- 3. Please include details of the total number of samples submitted by LAs and the number of LAs which submitted this data*

Response

The FSA does not hold the relevant information to determine how many times meat samples were found to be unsatisfactory in England, Wales and Northern Ireland in 2018.

This is because the responsibility for enforcement of food law in individual businesses, including taking of samples, is the responsibility of 387 local authorities (LAs) across England, Wales and Northern Ireland and the FSA does not hold information on the sampling activities of every LA in the level of detail required to provide a response.

An annual data return to the FSA through the [Local Authority Enforcement Monitoring System \(LAEMS\)](#) provides information on the total number of samples LAs took but does not provide details of what was tested or the results. More detailed sampling information would only be available from the LAs themselves.

The agency is therefore unable to provide a response-

A request for the sampling results for Scotland would need to be sent to Food Standards Scotland.

Partial data available

Under the FOI act, we can provide partial information that is held.

Some local authorities voluntarily report sampling results into the United Kingdom Food Surveillance System (UKFSS) and as a result a small and incomplete set of data is held.

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It is important to note that for unspecified meat sampling, this dataset does not include results for 86% of LAs in England, Wales and Northern Ireland and it does not cover any LAs in Scotland. The data has also not been verified with the reporting authorities to ensure it is accurate.

As outlined above, the FSA does not hold data from all sampling work carried out by LAs. From the data that is available to the FSA through the UKFSS, it indicates that 155 meat samples were taken by twenty-four LAs and analysed for speciation identification from January to December 2018.

The following factors should be taken into account when considering this figure:

- The FSA does not hold data from all sampling work carried out by LAs.
- Recent data may not have been processed and reported to the FSA.
- Sampling is not conducted on a random or representative basis. It is used by LAs as part of a targeted approach where mislabelling may already be more likely.

Of the 155 samples, forty-two were found to contain unspecified meat or DNA species that were not declared on the label, of which nine samples contained very diminutive levels of unspecified species which is consistent with cross contamination rather than deliberate inclusion.

Local authorities are responsible for investigating unsatisfactory results. It is worth noting that these investigations may have revealed that even when levels of unspecified meat or DNA above 5% have been found, this may be due to cross contamination due to inadequate cleaning procedures in-between using the same mincer for different meat species, rather than deliberate inclusion. The FSA does not hold details of the outcome of these investigations and therefore it is not possible to say where deliberate inclusion is believed to have occurred.

A breakdown of the unsatisfactory samples including their results is detailed in Annex B.

Responsibility for conducting sampling

The FSA is the Central Competent Authority for food safety and has a statutory function to protect public health and consumers' other interests in relation to food and drink.

The day to day responsibility for food standards enforcement rests with 177 LAs in England, 22 LAs in Wales and 11 LAs in Northern Ireland. LAs decide upon their local sampling priorities using a risk-based approach. They conduct the sampling, arrange for relevant testing and carry out enforcement activity where required. The number of samples taken will depend on a range of factors including the number and types of businesses, the results of past inspections and other types of intervention.

Food sampling is only one of a number of different approaches that LAs will take to assess compliance with food standards law, including whether products are being mislabelled. During food standards inspections, officers will check invoices, traceability, menus and descriptions, the physical product being processed or in storage including checking the labels to gain assurances that food business operators are providing food that is accurately described. It's not always necessary to sample foods in order to determine whether a business is compliant.

National Food Crime Unit samples

While local authorities are responsible for day to day enforcement of food laws, the FSA's National Food Crime Unit (NFCU) works to identify and respond to serious criminality in food supply chains.

From January to December 2018 the NFCU have procured four samples of meat which have been analysed for speciation, three of which were found to be unsatisfactory for speciation analysis. A breakdown of these samples is detailed in Annex C.

Annex B – Unsatisfactory samples

UKFSS Sample Reference	Sample Date	Premises Type	Food Description	Analyst Comments
807006225068	22/08/2018	Manufacturers / processors	VENISON SAUSAGE	<p>The apparent meat content of the sample was 96% which is in sufficient agreement with the quantitative ingredient declarations made for Venison of 82% and Pork of 13% (total of 95% meat ingredients).</p> <p>DNA was extracted from the sample. Nine real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse), <i>Gallus gallus</i> (Chicken), <i>Cervus elaphus</i> (deer), <i>Equus asinus</i> (Donkey) and <i>Meleagris gallopavo</i> (Turkey) were then applied to detect and measure the amount of those animal species present.</p> <p>The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows: Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: Deer (major part) Beef (minor part) Pork (diminutive part).</p> <p>The labelling indicates that the sausages contain Venison and Pork. Beef which is present in the food as a minor part (5 - 30%) was not declared as an ingredient or in the name of the food. I am therefore of the opinion that the sample was not of the substance demanded and was unsatisfactory in this respect.</p> <p>The name of the food was Venison sausage, under the terms of Regulation (EU) 1196/2011 on the provision of food information to consumers, this name would not be sufficiently descriptive as the sausage is not wholly Venison.</p>

40500010604	01/02/2018	Restaurants and other Caterers	LAMB CURRY	The sample was described as 'lamb curry'. DNA of sheep was not detected in the sample. DNA of cow was detected in the sample. I am of the opinion that the meat of the sample was derived from cow and that the food was not of the nature demanded by the purchaser.
40500010635	01/02/2018	Restaurants and other Caterers	LAMB TIKKA BALTI	The sample was described as 'lamb tikka balti'. DNA of sheep was not detected in the sample. DNA of cow was detected in the sample which was indicative of the presence of meat derived from cow. I am of the opinion that the food was not of the nature demanded by the purchaser.
40500010610	01/02/2018	Restaurants and other Caterers	LAMB BHUNA	The sample was described as 'lamb bhuna'. DNA of sheep was not detected in the sample. DNA of cow was detected in the sample. I am of the opinion that the meat of the sample was derived from cow and that the food was not of the nature demanded by the purchaser.
40500010681	08/02/2018	Restaurants and other Caterers	LAMB CURRY	DNA of sheep was not detected in the sample. DNA of cow was detected in the sample. I am of the opinion that the meat of the sample was derived from cow and that the food was not of the nature demanded by the purchaser.
40500010684	08/02/2018	Restaurants and other Caterers	LAMB CURRY	The sample was described as 'lamb curry'. DNA of sheep and cow was detected in the sample. I am of the opinion that the meat of the sample was derived from sheep and cow and that the food was not of the nature demanded by the purchaser.
40500010688	08/02/2018	Restaurants and other Caterers	LAMB CURRY	The sample was described as 'lamb curry'. DNA of sheep was not detected in the sample. DNA of cow was detected in the sample which was indicative of the presence of meat derived from cow. I am of the opinion that the food was not of the nature demanded by the purchaser.
80900400311	05/01/2018	Manufacturers mainly selling by retail	MINCE BEEF	<p>DNA was extracted from the sample. Five real-time PCR assays for Bos taurus (Beef), Sus scrofa (Pork), Ovis aries (Sheep), Capra hircus (Goat), Equus caballus (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: Beef (major part) Pork (diminutive part) Sheep (very diminutive part)</p> <p>The sample was described as "mince beef" and was therefore not of the substance demanded, contrary to the requirements of Article 13 of the Food Safety (Northern Ireland) Order 1991.</p>
80900480015	12/06/2018	Manufacturers / processors	BEEF AND BLACK PEPPER SAUSAGE	As a result of the analysis, I am of the opinion that the apparent meat content met the minimum meat content requirement for the reserved description 'sausage' where the meat ingredient consists of meat other than pork, meat from birds or meat from rabbits as laid down in The Products Containing Meat etc. Regulations (Northern Ireland) 2014.

				<p>The apparent meat content of the sample was 16% lower than the QUID declaration made for beef, a deficiency equivalent to approximately 26% of the declared content; this is unsatisfactory.</p> <p>DNA was extracted from the sample. Five real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: Beef (major part) Sheep (minor part)</p> <p>The presence of other meats in sausages other than sausages described as pork sausages is not specifically prohibited by the Products Containing Meat etc (Northern Ireland) Regulations 2014. However, under the terms of the Food Information Regulations (Northern Ireland) 2014 which provide for the execution and enforcement of Regulation (EU) No. 1169/2011 on the provision of food information to consumers, I am of the opinion that other meats which characterise the food should be included in the name of the food to prevent consumers being misled.</p> <p>The sample was described in the submission information as prepacked for the ultimate consumer.</p> <p>Under the terms of the Food Information Regulations (Northern Ireland) 2014 which provide for the execution and enforcement of Regulation (EU) No. 1169/2011 on the provision of food information to consumers, I am of the opinion that the sample label possessed the following irregularities: -</p> <p>5. As a result of the analysis, I am of the opinion that the sample contained sheep meat but this was not included in the ingredients list.</p>
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80900490091	25/07/2018	Manufacturers mainly selling by retail	THICK PORK SAUSAGES	<p>The apparent meat content of the sample was satisfactory.</p> <p>DNA was extracted from the sample. Five real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: Pork (major part) Sheep (minor part) Beef (diminutive part)</p> <p>The Products Containing Meat etc. Regulations (Northern Ireland) 2014 require pork sausages to contain meat from pigs only.</p> <p>The sample was described as pork sausages and was therefore not of the substance demanded, contrary to the requirements of Article 13 of the Food Safety (Northern Ireland) Order 1991.</p>
80900490131	27/07/2018	Manufacturers mainly selling by retail	PORK & LEEK SAUSAGES	<p>DNA was extracted from the sample. Five real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: Pork (major part) Sheep (diminutive part)</p> <p>The Products Containing Meat etc. Regulations (Northern Ireland) 2014 require sausages</p>

				<p>qualified with the name 'pork' but not by the name of any other type of meat to contain meat from pigs only.</p> <p>The sample was described as pork & leek sausages and was therefore not of the substance demanded, contrary to the requirements of Article 13 of the Food Safety (Northern Ireland) Order 1991.</p> <p>The information submitted with the sample stated that 69% pork was declared. However, based on the results of analysis, I am of the opinion that the sample must be marked or labelled separately with the quantity of pork used in the preparation of the food and the quantity of sheep meat used in the preparation of the food.</p>
80900480201	23/11/2018	Retailers	SLIMMERS PORK BBQ SAUSAGES	<p>DNA was extracted from the sample. Five real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: (major part): <i>Sus scrofa</i> (Pork) (minor part): <i>Bos taurus</i> (Beef) (very diminutive part): <i>Ovis aries</i> (Sheep)</p> <p>In my opinion the presence of less than 1% of <i>Ovis aries</i> (Sheep) DNA in the sample is unlikely to be due to deliberate substitution however, a significant amount (5-30%) of beef was detected in the sausage. The Products Containing Meat etc. (Northern Ireland) Regulations 2014 require the meat portion of a food described as pork sausage to consist entirely of pork. Food Standards Agency advice is that values above 1% should be regarded as deliberate addition therefore, this sample failed to comply with the requirements of the Regulations.</p>
05400070401	03/09/2018	Retailers	STEAK MINCE	<p>The results of analysis were consistent with the predominant species being cow but pig DNA was detected at or around the limit of detection of the test at 0.1%.</p>

130HQ30500002496	31/05/2018	Manufacturers / processors	LAMB KEBAB	The sample was analysed for the presence of seven meat species using a DNA technique. Bovine (cow) and ovine (sheep) DNA was detected. The quantity of bovine DNA equate to less than 1% of the detected meat DNA and the quantity of ovine DNA equated to at least 87% of the detected meat DNA. In my opinion the presence of bovine DNA is probably due to contamination as opposed to deliberate addition. Soya protein was detected in the sample at a trace level. The level found is probably due to contamination.
19300900626	30/01/2018	Restaurants and other Caterers	GOAT CURRY	The sample was described as 'Goat Curry'. DNA of goat was not detected in the sample. DNA of sheep was detected in the sample which was indicative that the meat was derived from sheep. I am of the opinion that the food was falsely described.
19301191129	24/04/2018	Manufacturers mainly selling by retail	LAMB AND VEGETABLE PIES	The sample was described as a 'Lamb and Vegetable Pie' DNA of sheep and cow was detected in the sample. It was estimated that approximately 30% of the DNA present was of cow origin which was indicative of the presence of beef. Consequently, I am of the opinion that the food was not of the nature demanded by the purchaser. I would expect a product described as 'Lamb and Vegetable Pies' to be derived only from sheep unless otherwise qualified. Consequently, I am of the opinion that the food was not of the nature demanded by the purchaser.
19301191131	24/04/2018	Manufacturers mainly selling by retail	MINCED PORK	The sample was described as 'Minced Pork'. DNA of cow and pig was detected in the sample. It was estimated that approximately 40% of the DNA present was of cow origin which was indicative of the presence of beef. I am of the opinion that the food was falsely described.
19301191135	24/04/2018	Manufacturers mainly selling by retail	MINCED STEAK	The sample was described as 'Minced Steak'. DNA of cow and sheep was detected in the sample. It was estimated that approximately 2% of the DNA present was of sheep origin. I am of the opinion that the food was falsely described.
19301160464	30/04/2018	Manufacturers mainly selling by retail	EXTRA LEAN MINCE 5% FAT	The sample was described as 'Extra Lean Mince 5% Fat.'. DNA of cow, pig and sheep was detected in the sample. It was estimated that approximately 1% of the DNA present was of pig origin and approximately 2% of the DNA present was of sheep origin. I would expect a product described as 'Extra lean mince' to be derived only from cow unless otherwise qualified. Consequently, I am of the opinion that the food was not of the nature demanded by the purchaser.
19301160472	01/05/2018	Manufacturers mainly selling by retail	MINCED STEAK	The sample was described as 'Minced Steak'. DNA of cow and pig was detected in the sample. It was estimated that approximately 1.8% of the DNA present was of pig origin which was indicative of the presence of pork. I am of the opinion that the food was falsely described.
19301191150	11/05/2018	Manufacturers mainly selling by retail	BEEF STIR FRY	The sample was described as 'Beef Stir Fry'. DNA of chicken was detected in the sample. DNA of cow was not detected in the sample. The results of analysis were consistent with the meat in the food being derived from chicken. I am of the opinion that the food was falsely described.
19300570346	07/09/2018	Slaughterhouses	LAMB SAMOSAS	The sample was described as 'Lamb Samosas'. DNA of cow, sheep and chicken was detected in the sample. I am of the opinion that the food was falsely described.

51100391186	13/03/2018	Restaurants and other Caterers	LAMB DONER	UNSATISFACTORY – Composition. DNA relating to bovine (cow), chicken and ovine (sheep) species was detected. The average quantity of bovine DNA equated to 35%, ovine DNA 50% and chicken DNA 9% of the detected meat DNA. In my opinion, a food described as 'Lamb Doner' should consist of ovine (sheep) DNA only. The presence of both beef and chicken therefore renders the food not of the substance demanded within the meaning of section 14 of the Food Safety Act 1990.
87000310017	11/07/2018	Restaurants and other Caterers	HAM	The sample bore the description 'Ham'. In my opinion a product bearing the name 'ham' is derived from pork meat. The sample was tested for a range of meat species using a DNA based technique. The DNA present in the sample was consistent with turkey meat. DNA from porcine (pig) meat was not detected. In my opinion the sample fails to satisfy the requirements of The Food Safety Act 1990 in that it is not of the nature demanded by the purchaser as it was not derived from pork meat.
87000310020	11/07/2018	Restaurants and other Caterers	PEPPERONI	The sample bore the description 'Pepperoni'. In my opinion a product bearing the name 'Pepperoni' is derived from pork and beef meat. The sample was tested for a range of meat species using a DNA based technique. The DNA present in the sample was consistent with beef, chicken and turkey. Chicken DNA was the major meat DNA component whereas beef DNA equated to 6% of the total meat DNA. A trace of turkey DNA was detected at a level of less than 0.1% of the total meat DNA. DNA from pig meat was not detected. In my opinion the sample fails to satisfy the requirements of The Food Safety Act 1990 in that it is not of the nature demanded by the purchaser as in that it did not contain pig meat.
56300390110	11/12/2018	Restaurants and other Caterers	LAMB TIKKA MASSALA	The food was obtained from a catering establishment and from information provided by the submitting officer, was sold as 'lamb tikka massala'. From one dish, all of the meat entities were removed from the sauce, scraped clean and then homogenised together in order to form the sample for DNA speciation analysis. All non-sauce entities were then removed prior to the analysis of the sauce matrix for artificial colouring matter. Genetic material consistent with ovine (sheep) and bovine (beef) was found by analysis. Quantified DNA analysis estimate of the amounts by determining the normalised ratio of the target species DNA copy number to the total copy numbers (bovine, ovine, porcine, gallus, caprine and horse equine). The copy number ratio of the ovine and all species indicates that as a best estimate based on the DNA extraction variability between different types of tissues, the level of ovine is 10-50% of the meat component. I am of the opinion that the sample is predominantly beef (bovine), with a medium level of ovine (sheep). I am subsequently of the opinion that a food described and sold as lamb should consist entirely of sheep and I am therefore of the opinion that the sample was not of the nature demanded by the purchaser within the meaning of section 14 of the Food Safety Act 1990
42201570006	29/06/2018	Manufacturers / processors	CHICKEN MECHANICALLY SOURCED MEAT, BEEF AND LAMB KEBAB MEAT	Sheep DNA was not detected in the sample which was indicative of the absence of meat derived from sheep. I am of the opinion that the food was falsely described.

42201570009	29/06/2018	Manufacturers / processors	DONER KEBAB	The label supplied with the sample included the following information 'Doner' and 'Ingredients: Mechanically Recovered Meat (20%), Beef (35%), Beef Fat (20%), Lamb (10%)' I would expect the meat ingredients of a meat product described as 'doner' to be derived only from sheep unless otherwise qualified. Consequently, I am of the opinion that the name was misleading as to the nature of the food. Sheep DNA was not detected in the sample which was indicative of the absence of meat derived from sheep. I am of the opinion that the list of ingredients was misleading as to the nature of the food.
56800230154	11/12/2018	Retailers	BEEF MINCE	All of the submitted minced meat matrix was homogenised together in order to form the sample for DNA speciation analysis (appendix image 2). Genetic material consistent with bovine (beef) and gallus (chicken) was found by analysis. Quantified DNA analysis estimate of the amounts by determining the normalised ratio of the target species DNA copy number to the total copy numbers (bovine, ovine, porcine, gallus, meleagris and horse equine). The copy number ratio of the gallus and all species indicates that as a best estimate based on the DNA extraction variability between different types of tissues, the level of gallus is a trace less than 1% of the meat component. I am of the opinion that the sample is predominantly beef, with a trace level of chicken consistent with cross contamination. The most likelihood is that it has arisen from use of the same machinery for products of the two species without proper cleaning.
43100380028	01/05/2018	Distributors / Transporters	GOAT	DNA of goat was not detected in the sample. DNA of sheep was detected in the sample. I am of the opinion that the meat of the sample was derived from sheep and that the food was not of the nature demanded by the purchaser.
43700213915	29/05/2018	Restaurants and other Caterers	mutton seek kebab meal	I would expect the meat ingredient of a meat product described as 'Mutton seek kebab' to be derived only from sheep unless otherwise qualified. Consequently, I am of the opinion that the name was misleading as to the nature of the food.
80900310720	04/01/2018	Retailers	BEEF SAUSAGES	DNA was extracted from the sample. Five real-time PCR assays for Bos taurus (Beef), Sus scrofa (Pork), Ovis aries (Sheep), Capra hircus (Goat), Equus caballus (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows: Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%). The following species were detected in the sample: Beef (major part) Sheep (very diminutive part) In my opinion the presence of less than 1% of sheep DNA in the sample is unlikely to be due to deliberate substitution.

80900310769	04/01/2018	Retailers	ITALIAN MEAT BALLS	<p>DNA was extracted from the sample. Five real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: Beef (major part) Pork (diminutive part)</p> <p>The list of ingredients given on the food label must be amended to include pork. This meat product must also be labelled with a QUID declaration of pork content in addition to the QUID declaration made for beef content.</p>
80900310751	04/01/2018	Retailers	LEAN STEAK BURGERS	<p>DNA was extracted from the sample. Five real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: Beef (major part) Pork (very diminutive part)</p> <p>In my opinion the presence of less than 1% of pork DNA in the sample is unlikely to be due to deliberate substitution.</p>

19301191038	05/04/2018	Manufacturers mainly selling by retail	PORK AND CHIVE SAUSAGES	. DNA of pig, cow and chicken was detected in the sample. It was estimated that approximately 65% of the DNA present was of pig origin, 35% of chicken origin and 10% of cow origin. I would expect a product described as 'pork and chive sausage ' to be derived only from pig unless otherwise qualified. Consequently, I am of the opinion that the food was not of the nature demanded by the purchaser.
19301191127	24/04/2018	Manufacturers mainly selling by retail	OLD ENGLISH SAUSAGES	DNA of cow, lamb and pig was detected in the sample. The results of analysis were consistent with the sample being composed of equal parts of beef and lamb. It was estimated that approximately 5% of the DNA present was of pig origin which was indicative of the presence of pork.
80900510041	09/08/2018	Retailers	4OZ STEAK BURGERS	<p>DNA was extracted from the sample. Five real-time PCR assays for Bos taurus (Beef), Sus scrofa (Pork), Ovis aries (Sheep), Capra hircus Goat), Equus caballus (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: Beef (major part) Pork (very diminutive part)</p> <p>In my opinion, the presence of less than 1% of pork DNA in the sample is unlikely to be due to deliberate substitution.</p>
80900510038	09/08/2018	Retailers	EXTRA LEAN SIRLOIN SAUSAGES	<p>DNA was extracted from the sample. Five real-time PCR assays for Bos taurus (Beef), Sus scrofa (Pork), Ovis aries (Sheep), Capra hircus (Goat), Equus caballus (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample:</p>

				<p>Beef (major part) Pork (very diminutive part)</p> <p>In my opinion, the presence of less than 1% of pork DNA in the sample is unlikely to be due to deliberate substitution.</p>
80900510002	09/08/2018	Manufacturers / processors	BUTCHERS STYLE BEEF SAUSAGES	<p>DNA was extracted from the sample. Five real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%) Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample:</p> <p>Beef (major part) Pork (minor part)</p> <p>The amount of pork was above the 1% value but the presence of other meats is not specifically prohibited in beef sausages under the terms of The Products Containing Meat etc. Regulations (Northern Ireland) 2014. Beef was the major meat species detected and as long as beef is the main characterising ingredient, I am of the opinion that the presence of pork is not regarded as adverse. The positive result for pork may also be due to the use of hog casings.</p>
80900480189	08/11/2018	Manufacturers mainly selling by retail	PORK & LEEK SAUSAGE	<p>The sample was described as "pork & leek sausage (in lamb casings)" and declared a meat content of "60% pork".</p> <p>DNA was extracted from the sample. Five real-time PCR assays for <i>Bos taurus</i> (Beef), <i>Sus scrofa</i> (Pork), <i>Ovis aries</i> (Sheep), <i>Capra hircus</i> (Goat), <i>Equus caballus</i> (Horse) were then applied to detect and measure the amount of those animal species present. The measurement is semi-quantitative, and estimates from the detected signals the amount of DNA present for all tested species and each individual species in bands as follows:</p> <p>Major part (60 - 100%)</p>

				<p>Medium part (30 - 60%) Minor part (5 - 30%) Diminutive part (1 - 5%) Very diminutive part (<1%).</p> <p>The following species were detected in the sample: (major part): <i>Sus scrofa</i> (Pork) (very diminutive part): <i>Bos taurus</i> (Beef), <i>Ovis aries</i> (Sheep)</p> <p>In my opinion the presence of less than 1% of <i>Bos taurus</i> (Beef) DNA in the sample is unlikely to be due to deliberate substitution.</p>
50500510036	13/11/2018	Restaurants and other Caterers	10 INCH PIZZA - MILANO PIZZA	<p>The sample was described as a 'Milano' pizza and weighed a total of 375g. A further portion of the meat topping was also subcontracted to Hampshire Scientific Service for meat identification and this report is also attached as a pdf. Only turkey was detected which was not consistent with the description of 'ham'. This was given in the list of ingredients of the pizza, on a copy of the menu provided, but ham is derived from pork meat only and no pig DNA was found. The presence of the meat, however, was consistent with a copy of the ingredient labelling provided which included 'turkey meat' in the list of ingredients. The information on the menu, therefore, was misleading as to the composition of the food (Regulation (EU) No 1169/2011, article 7</p>

Annex C– Unsatisfactory samples procured by NFCU

Sample Number	Sample Date	Premises Type	Food Description	Analyst Comments
1	12/02/2018	Distribution Centre	Beef sample 2	Labelled as “Beef sirloin steak BRIT/ISLES”. Analyst says 0.1% probability of this sample originating in the UK. (JR-12-2-18(2))
2	12/02/2018	Distribution Centre	Beef sample 3	Labelled as “Beef sirloin steak BRIT/ISLES”. Analyst says 0.1% probability of this sample originating in the UK. (JR-12-2-18(3))
3	25/01/2018	Retail restaurant premises	Goat	EHO ordered goat curry. Analyst states it contained only lamb.