



Food Sampling by District Councils in Northern Ireland - 2016

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We are pleased to present the tenth report on Food Surveillance in Northern Ireland. The 2016 report shows that district councils Environmental Health Officers continue to take food samples and submit them to the Northern Ireland Public Health Laboratory (Microbiological analysis) and the Public Analyst Scientific Services Limited (Chemical analysis) and that sample numbers have increased since 2015 (+461 samples). This is a positive and we thank officers for continuing to sample foods and foodstuffs, enabling production of this report and helping to ensure food safety and public health is maintained.

Executive Summary

Microbiological results

High risk foods for significant pathogens proved important in 2015. A sample of cooked kebab meat tested positive for Salmonella.

It is reassuring to see that none of the other main Pathogens had any failures, although levels of 'Borderline' results remain steady.

Chemical results

Chemical analysis, carried out by the Public Analyst and by AFBI, covers a very wide range of parameters. The Public Analyst checks for allergens, contaminants, nutritional constituents, additives, substitution and food labelling.

Errors in food labels persist to a high degree after which the highest percentage of failures observed were substitution of meat species and incorrect use of additives. It is interesting to note that two samples failed for presence of the prohibited substance 2,4-Dinitrophenol (DNP). This testing was as a result of targeted testing by EHOs in 2016.

1. Overall Microbiological and Chemical Data Trends

Between 1st January 2016 and 31st December 2016 there were 8561 sample details entered onto the United Kingdom Food Surveillance System (UKFSS) database from Northern Ireland.

A breakdown of the numbers of samples taken for microbiological and chemical examination and analysis and those giving an overall satisfactory result are presented in Table 1.

Table 1. Breakdown of UKFSS sampling statistics for 2016

	Number of samples	Number of samples giving an overall satisfactory result	% Satisfactory Samples
Microbiological	5978	3754	63%
Chemical	2583	1099	43%
Total	8561	4853	57%

Table 1 shows overall in 2016, 57% of all samples taken were satisfactory. Figures 1 and 2 show the percentage of satisfactory and unsatisfactory results for microbiological examination and chemical analysis between 2007 and 2016.

The results indicate that the percentages of unsatisfactory results recorded in 2016 for chemical analysis and microbiological examination were (57% and 37% respectively).

Figure 1 shows that there is no significant increase or decrease in the detection of unsatisfactory microbiological contamination.

Figure 2 would indicate that there has been an increase in unsatisfactory results from samples submitted for Chemical Analysis. This could be as a result of increased sampling on food supplements, the great majority of which would be non-compliant with respect to composition and labelling.

It should be noted as in previous reports that the inclusion of “Borderline” microbiological results as “Unsatisfactory” has the effect of raising the overall percentage of unsatisfactory results. In addition, many of the unsatisfactory chemical analytical results arise as a result of labelling errors and not as a result of incorrect food composition.

Figure 1. Microbiological sampling results 2007-2016

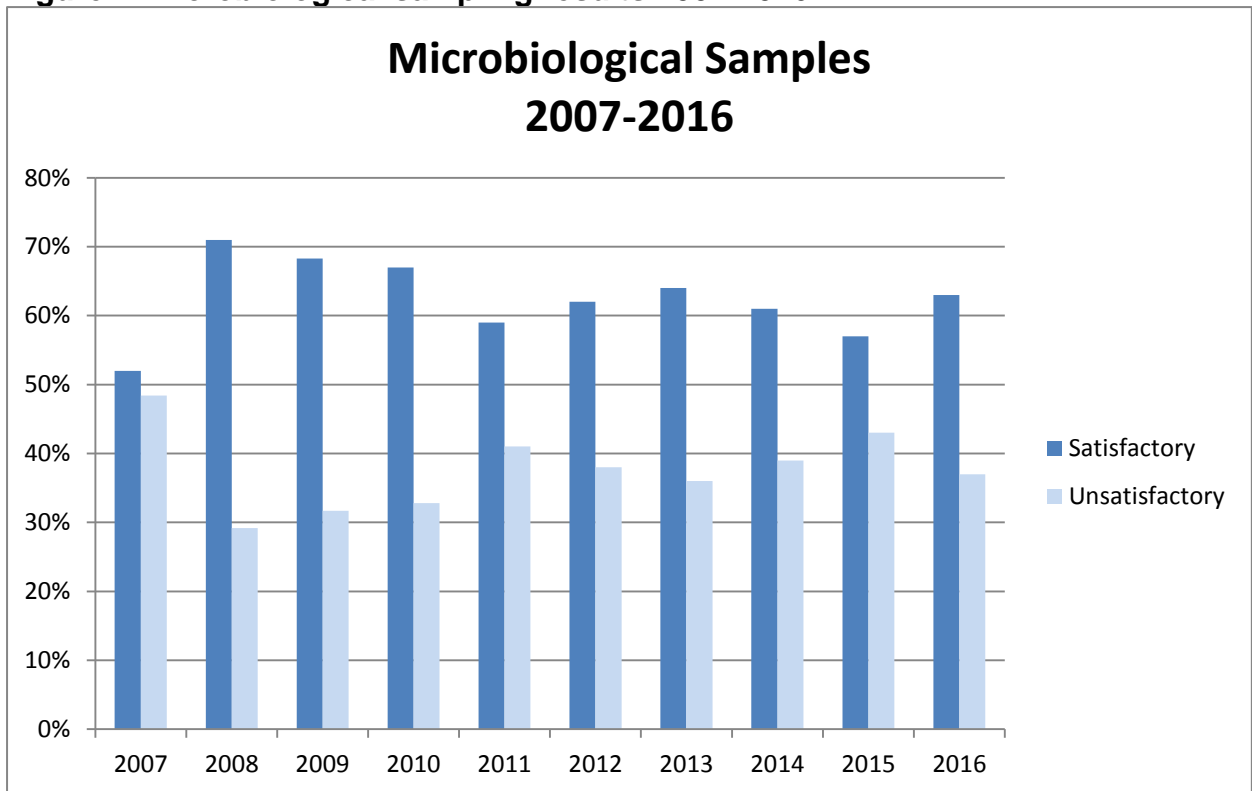


Figure 2. Chemical sampling results 2007-2016

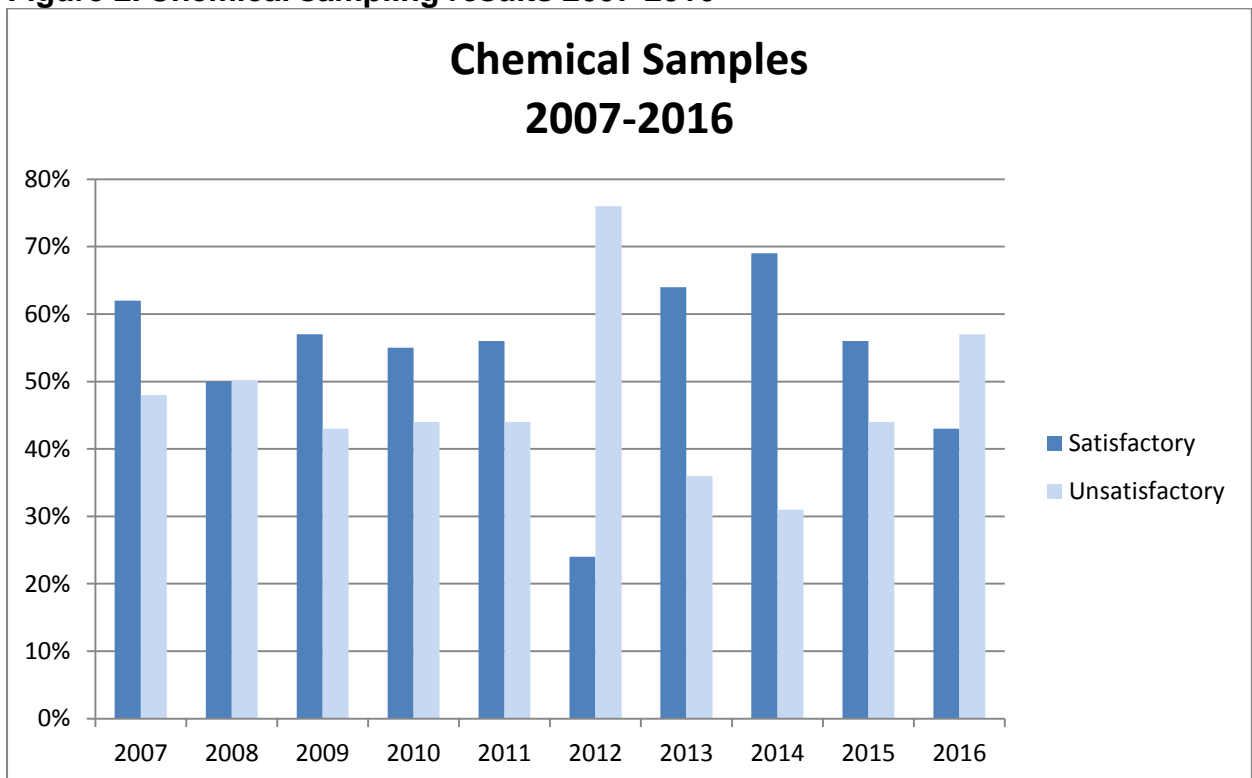


Table 2. Most sampled food categories

Food Category	Satisfactory	Unsatisfactory	Grand Total	% Satisfactory	% Unsatisfactory
Meat and Meat Products, Game and Poultry	1563	1495	3058	51%	49%
Fruit and Vegetables	976	402	1378	71%	29%
Prepared Dishes	787	543	1330	59%	41%
Bakery and Cereal Products	239	192	431	55%	45%
Dairy Products	209	143	352	59%	41%
Cakes and Confectionery	133	182	315	42%	58%
Egg and Egg Products	184	128	312	59%	41%
Fish and Shellfish	202	110	312	65%	35%
Ice Cream and Desserts	205	96	301	68%	32%
Soups, Broths and Sauces	166	90	256	65%	35%
Others	52	144	196	27%	73%
Drinks	94	100	194	48%	52%
Foods for Particular Nutritional Uses	7	58	65	11%	89%
Herbs and Spices	15	6	21	71%	29%
Beverages	11	8	19	58%	42%
Nuts and Nut Products, Snacks	8	11	19	42%	58%
Additives	2	0	2	100%	0%
Grand Total	4853	3708	8561	57%	43%

Table 2 shows that the most sampled food category was Meat and Meat Products, with the Foods for Particular Nutritional Uses category having the highest failure rate (89% - 58 samples out of a total of 65).

Table 3. Most sampled Microbiological categories

Food Category	Satisfactory	Unsatisfactory	Grand Total	% Satisfactory	% Unsatisfactory
Meat and Meat Products, Game and Poultry	1051	863	1914	55%	45%
Fruit and Vegetables	910	350	1260	72%	28%
Prepared Dishes	637	386	1023	62%	38%
Egg and Egg Products	181	124	305	59%	41%
Dairy Products	170	120	290	59%	41%
Ice Cream and Desserts	189	72	261	72%	28%
Bakery and Cereal Products	172	77	249	69%	31%
Fish and Shellfish	130	97	227	57%	43%
Soups, Broths and Sauces	153	51	204	75%	25%
Cakes and Confectionery	72	57	129	56%	44%
Drinks	45	2	47	96%	4%
Others	23	17	40	58%	43%
Foods for Particular Nutritional Uses	7	5	12	58%	42%
Herbs and Spices	6	3	9	67%	33%
Beverages	6	0	6	100%	0%
Nuts and Nut Products, Snacks	2	0	2	100%	0%
Grand Total	3754	2224	5978	63%	37%

Table 3 shows the food category most sampled for microbiological analysis was Meat and Meat Products, Game and Poultry. The three categories with the highest failure rates were 'Meat and Meat Products, Game and Poultry (45% of 1914 samples), 'Prepared Dishes' (38% of 1023 samples) and 'Fruit and Vegetables' (28% of 1260 samples).

Table 4. Most sampled Chemical categories

Food Category	Satisfactory	Unsatisfactory	Grand Total	% Satisfactory	% Unsatisfactory
Meat and Meat Products, Game and Poultry	512	632	1144	45%	55%
Prepared Dishes	150	157	307	49%	51%
Cakes and Confectionery	61	125	186	33%	67%
Bakery and Cereal Products	67	115	182	37%	63%
Others	29	127	156	19%	81%
Drinks	49	98	147	33%	67%
Fruit and Vegetables	66	52	118	56%	44%
Fish and Shellfish	72	13	85	85%	15%
Dairy Products	39	23	62	63%	37%
Foods for Particular Nutritional Uses		53	53	0%	100%
Soups, Broths and Sauces	13	39	52	25%	75%
Ice Cream and Desserts	16	24	40	40%	60%
Nuts and Nut Products, Snacks	6	11	17	35%	65%
Beverages	5	8	13	38%	62%
Herbs and Spices	9	3	12	75%	25%
Egg and Egg Products	3	4	7	43%	57%
Additives	2		2	100%	0%
Grand Total	1099	1484	2583	43%	57%

Table 4 shows the food category most sampled for Chemical analysis was 'Meat and Meat Products, Game and Poultry'. 'Foods for Particular Nutritional Uses' had the highest failure rate (100% of 53* samples), 'Others' (81% of 156 samples) and 'Soups, Broths and Sauces' (75% of 52 samples).

**These were targeted samples as part of Operation OPSON 2016*

Table 5. Most sampled Premises - overall

Premises Type	Satisfactory	Unsatisfactory	Grand Total	% Satisfactory	% Unsatisfactory
Restaurants and other Caterers	2528	1417	3945	64%	36%
Retailers	1188	1217	2405	49%	51%
Manufacturers/processors	850	700	1550	55%	45%
Manufacturers mainly selling by retail	183	221	404	45%	55%
Distributors/Transporters	62	103	165	38%	62%
Importers/Exporters	32	13	45	71%	29%
Packers	8	27	35	23%	77%
Primary Producers	2	6	8	25%	75%
Slaughterhouses*		4	4	0%	100%
Grand Total	4853	3708	8561	57%	43%

*It should be noted that the four premises noted at 'Slaughterhouses were actually retail premises.

Table 5 shows that the most sampled premises was Restaurants and Other Caterers. The highest failure rate was the 'Packers' category (77% of 9 samples).

Table 6. Most sampled premises for Microbiological

Premises Type	Satisfactory	Unsatisfactory	Grand Total	% Satisfactory	% Unsatisfactory
Restaurants and other Caterers	2264	1244	3508	65%	35%
Retailers	897	645	1542	58%	42%
Manufacturers/processors	475	233	708	67%	33%
Manufacturers mainly selling by retail	71	76	147	48%	52%
Distributors/Transporters	23	15	38	61%	39%
Importers/Exporters	21	2	23	91%	9%
Packers	1	8	9	11%	89%
Primary Producers	2	1	3	67%	33%
Grand Total	3754	2224	5978	63%	37%

Table 6 shows 'Restaurants and other Caterers' accounted for 59% of microbiological samples. The category with the highest failure rate was 'Packers' (89% - 8 samples from a total of 9).

Table 7. Most sampled premises for Chemical

Premises Type	Satisfactory	Unsatisfactory	Grand Total	% Satisfactory	% Unsatisfactory
Retailers	291	572	863	34%	66%
Manufacturers/processors	375	467	842	45%	55%
Restaurants and other Caterers	264	173	437	60%	40%
Manufacturers mainly selling by retail	112	145	257	44%	56%
Distributors/Transporters	39	88	127	31%	69%
Packers	7	19	26	27%	73%
Importers/Exporters	11	11	22	50%	50%
Primary Producers	0	5	5	0%	100%
Slaughterhouses	0	4	4	0%	100%
Grand Total	1099	1484	2583	43%	57%

*It should be noted that the four premises noted at 'Slaughterhouses were actually retail premises.

Table 7 shows the premises most food samples were taken from for Chemical analysis was 'Retailers'. The premises from which food samples had the highest failure rate was 'Primary Producers (100% of 5 samples).

2. Microbiological Sampling Data

Table 8. Pathogen table

Table 8 represents tests carried out on food samples for the presence of pathogenic micro-organisms in food. Most food samples are automatically tested for all pathogens, except E.coli 0157 and Campylobacter. These pathogens are only tested for at the request of an EHO. It should be noted that the borderline sample count contributes to the overall unsatisfactory number.

Pathogen	Unsatisfactory/borderline foodstuffs	No. unsatisfactory samples	No. borderline samples	No. samples tested	% Satisfactory
Salmonella	Cooked Kebab Meat	1	0	5760	99.98%
Campylobacter	0	0	0	265	100%
E.coli 0157	0	0	0	49	100%
Listeria monocytogenes (enumeration)		0	6	5377	99.89%
	Coleslaw		2		
	Cooked Pork		1		
	Cooked Chicken		2		
	Turkey		1		
Listeria monocytogenes (detection in 25g)		0	7	1069	99.06%
	Cous cous		1		
	Mock cream		1		
	Cooked ham		1		
	Pepperoni		1		
	Chicken		1		
	Ham Salad roll		1		
	Chicken curry		1		
Clostridium perfringens		0	16	5152	99.69%
	Chicken		4		
	Pork		2		
	Chicken And Ham Baguette		1		
	Curry Sauce		1		
	Massala Sauce		1		
	Stuffing		1		
	Mayo		1		
	Apple and Celery Salad		1		
	Coleslaw		1		
	Potato Salad		1		
	Salad		1		
	Sliced Tomatos		1		

* includes only samples which only gave overall "Satisfactory" results

Table 8 continued

Pathogen	Unsatisfactory/borderline foodstuffs	No. unsatisfactory samples	No. borderline samples	No. samples tested	% Satisfactory
Bacillus cereus		2	61	5210	98.79%
	Bakery and Cereal Products	0	2		
	Cakes and Confectionery	1	1		
	Dairy Products	0	1		
	Egg and Egg Products	0	5		
	Fish and Shellfish	0	1		
	Fruit and Vegetables	0	24		
	Meat and Meat Products, Game and Poultry	1	13		
	Others	0	1		
	Prepared Dishes	0	9		
	Soups, Broths and Sauces	0	4		
Staphylococcus aureus		4	123	5676	97.76%
	Bakery and Cereal Products	2	0		
	Cakes and Confectionery	0	1		
	Dairy Products	1	5		
	Egg and Egg Products	0	3		
	Fish and Shellfish	0	7		
	Fruit and Vegetables	0	37		
	Meat and Meat Products, Game and Poultry	0	42		
	Prepared Dishes	1	27		
	Soups, Broths and Sauces	0	1		

Salmonella

Salmonella was detected in one sample of cooked kebab meat. This result will have received the necessary follow up and action by the EHO.

Campylobacter

Campylobacter was not detected in any of the 265 samples that tested for it.

Listeria monocytogenes

There were no unsatisfactory results for Listeria Monocytogenes, but there were some results recorded as Borderline. Two of these were in cooked chicken and the other two were in coleslaw.

E.coli O157

It is reassuring to see that E.coli O157 was not found in any of the 49 samples tested for it.

Table 9. Hygiene Indicators

Pathogen	Unsatisfactory/borderline foodstuffs	No. unsatisfactory samples	No. borderline samples	No. samples tested	% Satisfactory
<i>Enterobacteriaceae</i>		234	607	4618	81.79%
	Bakery and Cereal Products	15	22		
	Cakes and Confectionery	9	22		
	Dairy Products	5	30		
	Egg and Egg Products	6	36		
	Fish and Shellfish	10	28		
	Fruit and Vegetables	4	14		
	Ice Cream and Desserts	8	41		
	Meat and Meat Products, Game and Poultry	134	277		
	Others	0	1		
	Prepared Dishes	43	128		
	Soups, Broths and Sauces	0	8		
<i>E. coli (non-pathogenic)</i>		75	82	5761	97.27%
	Bakery and Cereal Products	4	4		
	Cakes and Confectionery	8	4		
	Dairy Products	10	5		
	Egg and Egg Products	1	3		
	Fish and Shellfish	12	1		
	Fruit and Vegetables	10	29		
	Ice Cream and Desserts	2	2		
	Meat and Meat Products, Game and Poultry	17	19		
	Prepared Dishes	10	13		
Soups, Broths and Sauces	1	2			
<i>Listeria species (enumeration)</i>		3	7	5377	99.81%
	Cooled Cooked Rice	0	1		
	Salad Bowl	0	1		
	Ham	0	1		
	Chicken & Sauce Filler for Pies	0	1		
	Cooked Chicken Fillets Sliced	0	1		
	Bacon, Brie and Cranberry	0	1		
	Chicken Taco Sandwich	0	1		
	Cooked Chicken Fillets Sliced	1	0		
	Chicken and Broccoli Bake	1	0		
	Chicken Salad Sandwich	1	0		
<i>Listeria species (detection in 25g)</i>		0	3	1066	99.72%
	Chicken Sauce Filler for Pies	0	1		
	Cooked Chicken		2		

* Includes only samples which only gave overall "Satisfactory" results

Hygiene indicator organisms such as *Enterobacteriaceae*, non-pathogenic *E.coli* and *Listeria* species (not *Listeria monocytogenes*) are used to assess issues relating to process control such as the control of raw materials, undercooking and cross contamination. These indicators allow EHOs/sampling officers to focus on potential areas for concern in the production and handling of food.

3. Microbiological Recommendations

District Councils should consider the data in the above tables when setting new sampling plans and targeting food groups.

It is also recommended that DCs considering targeting Kebab style takeaway food, as the last UK Kebab Survey was 2007, and a Kebab sample from 2016 was positive for Salmonella. This will help ensure the requirement that food business are providing consumers with safe food, especially in the takeaway sector

4. Chemical Sampling

Data categorised as chemical sampling covers a wide range of analysis types including the presence of contaminants, nutritional constituents, additives, substitution and undesirable substances. The majority of samples submitted for chemical analysis are also assessed for compliance with The Food Information Regulations (Northern Ireland) 2014 as well as other relevant legislation which includes labelling requirements. As each sample is tested for a range of labelling and chemical testing issues, each category of analyses is associated with a number of different results. It should be noted that unsatisfactory results are defined as those which fail to comply with guideline values as well as those which are found to be in breach of legislative standards, therefore appropriate follow-up will not involve enforcement in all cases.

Meat/Fish Substitution and Speciation

Table 10. Summary of failures for meat substitution tests

Row Labels	Absent	Present Not Permitted	Grand Total
Bovine species (semi quant)	1	4	5
Lean Mince Beef	1	0	1
Pork Sausage	0	4	4
DNA from porcine species	0	1	1
Mince Steak	0	1	1
Fish Species	4	0	4
Cod	2	0	2
Smoked Cod	2	0	2
Ovine species (semi quant)	2	0	2
Lamb Koftas	1	0	1
Mince Lamb	1	0	1
Porcine species (semi quant)	0	4	4
Halal Beef Salami	0	4	4
Grand Total	7	9	16

Meat substitution

Table 10 shows 7 samples of meat or fish were not the named species, and a further 9 samples of meat /meat products contained species that should not have been present, in addition to that described (e.g. species other than pork in pork sausages, and pork in products described as “Halal”).

Use of additives in food

Table 11. Food samples containing colours either above the regulatory limit or not permitted

Colour Tested and Food	Above Limit/Declaration/Guideline	Present Not Permitted	Grand Total
Allura Red	2	0	2
Chicken Tikka Masala	1	0	1
Red Velvet Cupcakes	1	0	1
Brilliant Blue Fcf	2	0	2
Honeycomb Violet	2	0	2
Carmoisine	4	0	4
Honeycomb Red	2	0	2
Honeycomb Violet	2	0	2
Patent Blue	2	0	2
Honeycomb Blue	2	0	2
Ponceau 4R	0	5	5
Chicken Tikkia Kebab	0	1	1
Chicken Tikka Masala	0	2	2
Red Velvet Cupcakes	0	2	2
Quinoline Yellow	2	0	2
Coffee Sandwich	1	0	1
Neopolitan Sponge	1	0	1
Sunset Yellow Fcf	0	16	16
Cheese Flavored Snacks	0	1	1
Chicken Doner	0	2	2
Chicken Tikka	0	8	2
Pilu Rice	0	2	2
Pork Ribs	0	1	1
Portion Of Cooked Chinese Takeaway Ribs	0	2	2
Tartrazine	2	2	4
Honeycomb Green	2	0	2
Pilu Rice	0	2	2
Grand Total	14	23	37

Colours

Table 11 shows 14 samples had a colour Above Limit/Declaration/Guideline. 23 samples had a colour present that was not permitted.

Table 12. Food samples containing preservatives either not permitted or above the regulatory limit

Additive Type	Above Limit/Declaration/Guideline	Present Not Permitted	Grand Total
Benzoic Acid	2	0	2
Soft Drinks - Regular Non-Carbonated	2	0	2
Nitrate (as NO3)	4	0	4
Bacon	4	0	4
Nitrate as Sodium Nitrate	4	0	4
Meat Products - Other	1	0	1
None	2	0	2
Pork - Fresh	1	0	1
Nitrite as Sodium Nitrite	2	0	2
Ham Joints - Raw	1	0	1
Meat Products - Other	1	0	1
Sorbic Acid	8	0	8
Sauces - Other	6	0	6
Soft Drinks - Regular Non-Carbonated	2	0	2
Sulphur Dioxide	23	26	49
Burgers	9	5	14
Comminuted Meat Products - Other	2	0	2
Mince - "Standard" Beef	0	9	9
Mince - "Standard" Pork	0	2	2
Mince - Extra Lean Beef	0	5	5
Mince - Lean Beef	0	5	5
Sausages - Beef	2	0	2
Sausages - Meat and Vegetable/Fruit	2	0	2
Sausages - Pork	8	0	8
Grand Total	43	26	69

Preservatives

Table 12 shows 69 samples failed because they had a preservative 'Above Limit/Declaration/Guideline' (43 samples) or a preservative that was Present and not permitted (26 samples).

Food supplements

Four samples were tested for prohibited substances (2,4-DNP and 1,3-DMAA) or composition relating to claims. Two samples had high levels detected and two were free from DNP.

Plastics food packaging (migration formaldehyde or PAA's)

No samples were received to the Laboratory in 2016 to be tested for the above.

Honey (adulteration/substitution)

There were 5 samples tested conducted on Honey products for:

- i. organoleptic analysis
- ii. electrical conductivity
- iii. diastase activity
- iv. microscopic pollen analysis
- v. sugar profile (HPLC)

There were no issues identified regarding adulteration or substitution.

Pesticide residues

There were only two samples submitted in 2016 to be tested for pesticide levels. Both samples were satisfactory.

Table 13. Mycotoxins (aflatoxins/ochratoxin A)

	Above Limit/Declaration/Guideline	Satisfactory	Grand Total
Aflatoxin	1	8	12
Muesli	0	4	4
Nuts - Peanuts	1	0	4
Spices - Chilli	0	2	2
Spices - Other	0	2	2
Aflatoxin B1	1	8	12
Muesli	0	4	4
Nuts - Peanuts	1	0	4
Spices - Chilli	0	2	2
Spices - Other	0	2	2
Aflatoxin B2	1	8	12
Muesli	0	4	4
Nuts - Peanuts	1	0	4
Spices - Chilli	0	2	2
Spices - Other	0	2	2
Aflatoxin G1	0	12	12
Muesli	0	4	4
Nuts - Peanuts	0	4	4
Spices - Chilli	0	2	2
Spices - Other	0	2	2
Aflatoxin G2	0	12	12
Muesli	0	4	4
Nuts - Peanuts	0	4	4
Spices - Chilli	0	2	2
Spices - Other	0	2	2
Ochratoxin A	0	16	16
Coffee - Beans	0	4	4
Coffee - Ground	0	4	4
Fruit - Dried	0	4	4
Muesli	0	4	4
Grand Total	3	64	76

Table 13 shows 76 tests that had been carried out on 11 samples submitted. One sample failed due to a high level of total Aflatoxins (a combination of Aflatoxins B1 and B2)

3-MCPD

2 samples were tested for 3-MCPD. One sample was unsatisfactory and this was in a Soy sauce from Singapore.

5. Recommendations for Chemical Standards

District Councils should consider the data in the above tables when setting new sampling plans and targeting food groups. The below recommendations are also suggested:

1. Water soluble colours in takeaway meals continues to be problematic even two years after the change to the Regulations which restricted or prohibited the use of several colours which were formerly permitted in sauces and marinades.
2. Allergens in foods from markets, farm shops, local bakers and low cost food shops. There have also been a number of major recalls on breakfast cereal with nuts during 2016. Egg allergen has also been found in takeaways particularly fried rice. Nut allergens continue to be a problem in takeaways.
3. Food supplements (including internet sales), due to non-compliant labelling of products, compositional failures, and the potential presence of illegal additives and novel food ingredients.
4. Meat species authenticity testing continues to produce a large number of failures.

Residue Surveillance

European law requires all Member States to monitor residues of veterinary drugs and prohibited substances in food products of animal origin. This is implemented in the UK by the National Residues Control Plan (NRCP). The number and type of samples taken is determined on a UK wide basis according to output, with NI taking a proportionate share of the samples. The Meat Inspection Scheme also operates in Northern Ireland on a statutory basis. This scheme focuses on testing suspect animals in abattoirs, mainly cattle, for a range of antibiotics and hormones. DAERA inspectors select animals for sampling on the basis of treatment history, information received, and ante and post mortem inspection.

In addition to statutory testing, a risk based programme (RISK) which covers sheep, cattle pigs, poultry, eggs and milk is undertaken. EU law provides Member States with the flexibility to undertake additional discretionary testing in situations where further investigation is necessary or a survey is considered appropriate.

A non-compliant result from any of the testing schemes will trigger follow-up action which may include on-farm investigations and sampling, and possible targeted sampling of animals from the farm in question when presented for slaughter.

Compliance with EU residues surveillance legislation is an essential requirement for the export of Northern Ireland produce. Both domestic and export markets increasingly demand high quality products, with safety as a key element. An efficient and effective residues surveillance programme is vital in meeting this requirement. The additional testing makes an important contribution to product safety and provides added assurance to existing and potential customers.

Commentary on non-compliant results for 2016

1. National Surveillance Scheme
2. Meat Inspection Scheme
3. RISK Scheme

1. NATIONAL SURVEILLANCE SCHEME

Samples collected under the UK National Surveillance Scheme may be taken at abattoirs or on-farm, and provide retrospective surveillance data. As a consequence, carcasses are not detained pending the laboratory result.

a) Prohibited and unauthorised substances

1. A number of samples tested non-compliant for a range of illegal growth-promoting hormones and for thiouracil, a thyrostat that promotes growth by increasing water retention. However, all these compounds can occur naturally because of dietary, pregnancy and injury related factors, etc. In all cases no evidence of misuse was uncovered.
2. **Triclabendazole.** This is an antiparasitic drug, active against liver fluke, that is licensed for use in cattle and sheep. It is not however authorised for use in cattle producing milk for human consumption. Residues were detected in a bovine milk sample. On- farm investigation revealed that human error may have led to this animal being treated inappropriately with the wrong drug.
3. **Monensin.** This is used as an aid in the prevention of coccidiosis however it should not be used in chickens or turkeys producing eggs. Residues were detected in an egg sample. On-farm investigation noted that monensin was used appropriately in some areas of the farm and that it was possible that an error in management had led to the positive finding. Follow up sampling of both eggs and feeding stuff were compliant.

b) Veterinary medicines

1. **Amoxicillin.** This is a β -Lactam antibiotic that is licensed for use in a wide range of animal species. Residues above the Maximum Residue Limit were found in bovine milk.
2. **Sulphadiazine.** This is a member of the sulphonamide class of antibiotics. Residues of sulphadiazine above the Maximum Residue Limit were found in a porcine kidney. On- farm investigation showed the use of this medicine in very young pigs but

provided no explanation for residues in a bacon weight animal. A further 16 samples were found non-compliant during follow-up analysis

3. **Sulphadimethoxine.** A member of the sulphonamide class of antibiotics; residues of sulphadimethoxine above the Maximum Residue Limit were found in a porcine kidney. On- farm investigation provided no explanation for the residues.
4. **Dihydrostreptomycin.** This is an aminoglycoside antibiotic licensed for use in cattle, sheep and pigs. Residues of dihydrostreptomycin above the Maximum Residue Limit were found in the kidney of an ovine. On farm investigation revealed that the animal had been treated with Pen & Strep and that while the recommended withdrawal period had been adhered to the manufacturer's instructions with respect to the use of multiple injection sites had not been followed. Twelve follow up samples were taken and were all compliant.
5. **Closantel.** This is an antiparasitic drug, active against liver fluke, that is licensed for use in cattle and sheep. Residues were detected in two ovine liver samples in excess of the Maximum Residue Limits. On-farm investigations revealed that in one instance dosage was based on average weight hence over dosing may have occurred. In the second instance the animal had been treated and withdrawn appropriately. The five follow up samples taken in each case were found compliant.

b) Contaminants

1. **Cadmium.** Cadmium is a metallic environmental contaminant that accumulates in kidney, with increasing age of the animal. In the EU, a Maximum Permitted Limit of 1.0 mg/kg has been established for this heavy metal. Cadmium was found in a bovine kidney. At an on-farm investigation, no obvious cadmium sources were identified.

2. MEAT INSPECTION SCHEME

Under this Scheme, the carcass is detained at sampling, and excluded from the food chain if a non-compliant result is obtained.

a) Prohibited and unauthorised substances

1. **Phenylbutazone.** This non-steroidal anti-inflammatory painkiller is licensed only for use in horses that are not intended to be slaughtered for human consumption. It is not licensed for use in cattle. Residues of phenylbutazone were detected in a bovine plasma sample which was taken as a follow-up to an earlier RISK scheme positive. On-farm investigation showed that a horse was treated with high doses of this drug in 2015 and that it may have shared grazing and bedding with cattle. Further follow up samples were compliant.
2. **Flubendazole.** This is a broad spectrum anthelmintic licensed in poultry and pigs. Residues were found in the livers taken from 5 sheep, belonging to one flock keeper. Its use in this species is unauthorised. On farm investigation found no explanation for this finding.

b) Veterinary medicines

1. **Oxytetracycline.** This is an antibiotic that is licensed for use in a wide range of animal species. Residues of oxytetracycline above the Maximum Residue Limit were found in four bovine kidneys, an ovine kidney and two ovine muscle samples. Subsequent investigation showed a number of reasons for these violations including failure to observe the withdrawal period and inappropriate dosing.
2. **Sulphadiazine.** A member of the sulphonamide class of antibiotics. Residues above the Maximum Residue Limit were found in the kidney of twenty pigs, sixteen were taken from one producer and four were taken from another producer. Follow up investigation provided no explanation for the non-compliance.
3. **Dihydrostreptomycin.** This is an aminoglycoside antibiotic licensed for use in cattle, sheep and pigs. Residues of dihydrostreptomycin above the Maximum Residue Limit were found in the kidney of two bovines. On-farm investigations showed that in one instance administration of the drug (pen & strep) was not carried out in accordance with the manufacturer's instructions i.e. subcutaneous injection was used rather than intramuscular. Investigation of the second finding showed no obvious explanation of the cause.
4. **Penicillin G.** This is a narrow spectrum β -Lactam antibiotic that is

licensed for use in a wide range of animal species. Residues of penicillin G above the Maximum Residue Limit were found in one cattle kidney. On-farm investigation failed to adequately explain the cause of this.

- 5. Marbofloxacin.** This is a fluoroquinolone antibiotic. Residues of marbofloxacin were found in the kidney of one bovine animal. On- farm investigation revealed that the animal had been purchased only 24 hours prior to sale.
- 5. Nitroxynil.** This is an antiparasitic drug licensed for use in cattle & sheep, which is active against immature and adult liver fluke and some gastro-intestinal roundworms. Residues were detected in four cattle liver samples in excess of the Maximum Residue Limit. Three of the animals were from the same herd animal where investigation revealed inadequate withdrawal prior to slaughter. In the final case the animal had only been purchased one week prior to slaughter.
- 6. Ivermectin.** This is a broad-spectrum antiparasitic agent. Residues were detected in a cattle liver sample in excess of the Maximum Residue Limit. This animal was purchased by the herd keeper one day prior to slaughter.
- 7. Closantel.** This is an antiparasitic drug, active against liver fluke, that is licensed for use in cattle and sheep. Residues were detected in eleven ovine liver samples, taken from two flocks, in excess of the Maximum Residue Limit. In one instance the sheep had been purchased immediately prior to slaughter while in the second instance all animals had been treated with the same dose hence lighter lambs may have been overdosed.
- 8. Tylosin.** This is a macrolide antibiotic with mainly bacteriostatic activity. Residues of tylosin above the Maximum Residue Limit were found in one cattle kidney. On-farm investigation noted that although the withdrawal period was completed prior to slaughter the manufacturer's recommendation with respect to the siting of injection had not been followed.
- 9. Meloxicam.** This is a non-steroidal anti-inflammatory. Residues were detected in a cattle liver sample in excess of the Maximum Residue Limit. On farm investigation revealed that the withdrawal period of the drug was not completed prior to slaughter.

a) Contaminants

- 1. Cadmium.** Cadmium was found in two bovine kidneys. Cadmium is a metallic environmental contaminant that accumulates in kidney, with increasing age of the animal. In the EU, a Maximum Permitted Limit of 1.0 mg/kg has been established for this heavy metal. At an on-farm investigation, no obvious cadmium sources were identified.

3. RISK SCHEME

The RISK scheme samples targets cattle, sheep, pigs, poultry, eggs and milk and is designed to provide risk-based surveillance data. The RISK scheme samples are taken at abattoirs (sheep, cattle, pig and poultry samples) while milk samples are taken from bulk tanks on farm and egg samples from packing stations. Non-compliant samples trigger follow up investigations and further sampling.

a) Prohibited and unauthorised substances

- 1. Phenylbutazone.** This non-steroidal anti-inflammatory painkiller is licensed only for use in horses that are not intended to be slaughtered for human consumption. It is not licensed for use in cattle. Residues of phenylbutazone was detected in a bovine plasma sample. On-farm investigation showed that a horse was treated with high doses of this drug in 2015 and that it may have shared grazing and bedding with cattle.

b) Veterinary medicines

- 2. Closantel.** This is an antiparasitic drug, active against liver fluke, that is licensed for use in cattle and sheep. Residues were detected in fourteen ovine liver samples and one cattle liver sample in excess of the Maximum Residue Limits. On-farm investigations failed to determine the cause of the residue in the majority of ovine cases due to the sheep having been purchased only a few days before slaughter. In addition no explanation was provided for the single bovine non-compliant sample.
- 3. Nitroxylnil.** This is an antiparasitic drug licensed for use in cattle and sheep, which is active against immature and adult liver fluke and some gastrointestinal roundworms. Residues were detected in two cattle and one sheep liver and in a bovine milk sample in excess of the Maximum Residue Limits. No satisfactory explanation was determined for any of the liver positives at on-farm investigation.

The milk non-compliance was as a result of a misunderstanding between herdkeeper and dairy.

- 4. Marbofloxacin.** This is a fluoroquinolone antibiotic. Residues of marbofloxacin were found in the kidney of one bovine animal in excess of the Maximum Residue Limits. Investigation revealed use of the drug however the herd keeper advised that this was fully in-line with manufacturer's instructions.
- 5. Fenbendazole.** This is an antiparasitic drug licensed for use in cattle and sheep for the treatment of mature and immature forms of gastro-intestinal roundworms, lungworms, tapeworms and nematode eggs. Residues of fendendazole were found in the liver of one ovine animal in excess of the Maximum Residue Limits. On investigation the flock keeper advised that at no time did he administer fenbendazole to the animal.
- 6. Rafoxanide.** This is an antiparasitic drug used in cattle and sheep for the treatment of liver fluke and nematodes. A single sheep liver was found to contain non-compliant concentrations of the drug. Investigation revealed that the herdkeeper had purchase the animal only days prior to slaughter and had not treated the animal.
- 7. Monensin.** This is used as an aid in the prevention of coccidiosis. Residues above the Maximum Residue Limit were detected in an avian liver sample. On-farm investigation revealed no intentional use of monesin by the flock keeper.

7. Acknowledgements

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