

## **VETERINARY RESIDUES COMMITTEE ANNOUNCEMENT ON THE RESULTS FOR THE BRAND NAMING SURVEY OF CHLORAMPHENICOL, COCCIDIOSTATS/NITROIMIDAZOLES AND NITROFURANS IN POULTRY PRODUCTS**

A survey carried out by the Veterinary Medicines Directorate (VMD) on behalf of the Veterinary Residues Committee (VRC) found no evidence of the use of chloramphenicol, coccidiostats/nitroimidazoles or nitrofurans in samples of imported and home produced poultry products.

The Committee recommended that poultry products such as nuggets and burgers should be tested for these substances because they wished to focus on foods that were typically consumed by children.

A total of 100 samples of mainly imported poultry products were analysed in the survey which was carried out between October 2008 and February 2009.

The VRC welcomes the findings of this survey, which showed no evidence of the use of these substances in the production of the poultry products sampled.

## **Results of the brand naming survey for chloramphenicol, coccidiostats/nitroimidazoles and nitrofurans in poultry products**

### **Summary**

A survey of chloramphenicol, coccidiostats/nitroimidazoles and nitrofurans in samples of imported and home produced poultry products was carried out by the Veterinary Medicines Directorate (VMD) between October 2008 and February 2009. The purpose of the survey was to assess the incidence of residues of these substances in poultry products available from retail outlets and Border Inspection Posts (BIPs).

A total of 100 samples of poultry products were analysed for residues of chloramphenicol, coccidiostats/nitroimidazoles and nitrofurans. Seventy five samples for the survey were purchased from a range of retailers by shoppers employed by the market research organisation Mintel International Group Ltd. Port Health Officers at two BIPs collected 25 samples. All the samples were analysed by the Central Science Laboratory (CSL)<sup>1</sup> using validated methods of analysis.

All samples tested compliant.

Annex 1 gives details of all the samples collected as part of the survey. Annex 2 gives details of sample preparation and the method of analysis.

### **Background**

Poultry products such as chicken nuggets have never been tested under the non-statutory programme. These types of products are popular with children and are therefore likely to be consumed by them on a regular basis. The Committee were also concerned that lower quality raw ingredients may be included in pre-prepared products.

Chloramphenicol is a powerful broad-spectrum antibiotic used for a wide range of bacterial infections in many species. Chloramphenicol also has various uses in human medicine and can be contained in products such as eye drops and topical creams.

Chloramphenicol is **not authorised** for use in the treatment of animals for food production in the EU and **may not be used** in the production of food of animal origin which is imported into the EU. Chloramphenicol is considered to be a potential genotoxic carcinogen. Oral and intravenous use of chloramphenicol is associated with a rare idiosyncratic aplastic anaemia in humans which can be fatal. (There are no data to associate the use of chloramphenicol eye drops with aplastic anaemia.)

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<sup>1</sup> CSL became part of The Food and Environment Research Agency (Fera) with effect from 1 April 2009

The nitrofurans are a group of antibiotic drugs which were banned from use in food animal production in the European Union in the mid 1990s because of concerns about their carcinogenicity and mutagenicity (Commission Regulation 1442/95).

Coccidiostat drugs are widely used as feed additives in the poultry industry to control and treat coccidiosis, a protozoal disease that can cause diarrhoea and dysentery. Control of this infection is particularly important in the poultry industry where prophylactic use of coccidiostats prevents the disease from developing. Some of the coccidiostat drugs, for example the nitroimidazoles, have been banned from use due to their toxic properties.

The use of chloramphenicol, nitrofurans and some nitroimidazoles in the treatment of food producing animals is prohibited in the EU and residues should not be present in food products, whether home produced or imported, intended for human consumption. In recent years, under the European Commission's Rapid Alert System for Feed and Food, Member States have reported the following detection of residues in poultry:

- chloramphenicol in poultry from Belgium and Hungary in 2006
- nicarbazin (a coccidiostat) in chicken from Argentina and duck from Hungary in 2006
- ronidazole (a nitroimidazole) in turkey from the Netherlands in 2006
- metronidazole (a nitroimidazole) in chicken from Argentina in 2008
- salinomycin (a coccidiostat) in chicken from Brazil in 2008

## **Legislation**

EC legislation requires that all active substances used in veterinary medicines for food producing animals must be assessed so that a Maximum Residue Limit (MRL) can be set. Nitrofurans, chloramphenicol and three of the nitroimidazoles (dimetridazole, ronidazole and metronidazole) are listed under Annex IV of Council Regulation 2377/90 and their use in the treatment of food producing animals is prohibited in the EU. Countries that wish to export food of animal origin to the EU must respect the requirements of this legislation and thus all exports to the EU should not contain residues of Annex IV substances.

Commission Decision 2002/657/EC introduced the concept of Minimum Required Performance Limits (MRPLs). This recognises the need for EU harmonisation of analytical detection limits, particularly for banned substances, and is the concentration at which regulatory laboratories should be able to detect and confirm the presence of particular substances. In March 2003, Commission Decision 2003/181/EC set an MRPL of 0.3µg/kg for chloramphenicol in meat, milk, eggs, aquaculture products and honey and 1µg/kg for nitrofurans metabolites in poultry meat and aquaculture products. Article 2 of Commission Decision 2005/34/EC, states that the MRPLs laid down in Annex II to Decision 2002/657/EC shall be used as reference points for action irrespective of the matrix tested.

Lasalocid, nicarbazin and salinomycin, which are all coccidiostats, have MRLs set for poultry muscle as follows:

- salinomycin – 5µg/kg
- lasalocid – 20µg/kg
- nicarbazin (dinitrocarbanilide fraction) – 200µg/kg, based on international Joint FAO/WHO Expert Committee on Food Additives (JECFA) considerations

All methods were validated at CSL according to the requirements of Commission Decision 2002/657/EC. This required the determination of a number of key parameters including “CC $\alpha$ ” (decision limit). Values for CC $\alpha$  are given in Annex 2. A measured concentration at or above the CC $\alpha$  indicates that the sample is non-compliant. No further action would be taken on poultry products found to contain residues of salinomycin, lasalocid or nicarbazin (dinitrocarbanilide fraction) at concentrations below the CC $\alpha$ .

### Sampling

In this survey, 100 samples of poultry products were analysed. The countries of origin of the samples were as follows:

EU	Non-EU	More than 1 country of origin
1 Denmark	1 Argentina	2 UK & Brazil
22 France	27 Brazil	
8 Germany	26 Thailand	
3 Netherland		
2 Poland		
2 European Union		
6 UK		

Seventy five samples were purchased by Mintel International Group Ltd from retail outlets in England, Ireland, Scotland and Wales. Shoppers were asked to collect samples according to a sampling protocol and were advised to purchase samples which were more likely to be consumed by children such as chicken nuggets (breaded or batter coating), chicken burgers, goujons, dippers, pops and bites. Port Health Officers at Felixstowe and Tilbury BIPs collected 25 samples. The sample size was a minimum of 500g.

### Results

Full results of the survey are detailed in Annex 1. The survey found that all of the 100 samples tested were compliant.

### Conclusions

The purpose of this survey was to assess the incidence of residues of chloramphenicol, coccidiostats/nitroimidazoles and nitrofurans in poultry products typically consumed by children. The substances to test for were

chosen because of the probability that they would remain detectable in the retail product if they were being used. Also there were concerns that lower quality raw material may be included in pre-prepared products. The results of this survey found no evidence of the use of chloramphenicol, coccidiostats/nitroimidazoles or nitrofurans in any of the samples tested.

Sample Number	Product as Described	Brand	Date of Purchase/ Collection	Best Before/ Use By Date	Country Of Origin	Retailer/ Wholesaler Address	BIPs Samples Importer/ Distributor Address	Supplier/ Manufacturer Address From Packaging	Result/ Confirmed value ( $\mu\text{g}/\text{kg}$ )
08N1232	Breaded Chicken Nuggets	Asda Smart Price	06/10/2008	20/10/2009	Brazil	Asda 3 New Market Edinburgh EH14 1RJ	-	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1233	Southern Fried Chicken Pops	Tesco	06/10/2008	Dec-09	Thailand	Tesco 30 Meadow Place Road Corstorphine Edinburgh EH12 7UQ	-	Produced in Thailand for Tesco Stores Ltd Cheshunt EN8 9SL	Compliant
08N1234	Poppin Chicken	Morrisons	06/10/2008	06/10/2009	Thailand	Morrisons The Gyle Shopping Centre South Gyle Edinburgh EH12 9JU	-	Wm Morrison Supermarket PLC Gain Lane Bradford BD3 7DL	Compliant
08N1235	Breaded Chicken Nuggets	Disney	06/10/2008	Sep-09	Netherlands	Morrisons The Gyle Shopping Centre South Gyle Edinburgh EH12 9JU	-	Made in Holland for McEvoy Foods International Ltd International House Trentham Lakes South Stoke-on-Trent ST4 8LJ	Compliant
08N1236	Chicken Breast Fillet Strips	Iceland	06/10/2008	11/02/2010	Thailand	Iceland 37 Westside Plaza Wester Hailes Edinburgh EH14 1AA	-	Produced and Packed in Thailand for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant
08N1237	Premium Chicken Nuggets	Foxwood	03/10/2008	23-Jul-09	Thailand	Costco West Thurrock Way West Thurrock Essex RM20 3WY	-	Produced for Lakeside Food Group Ltd The Courtyard Ketteringham Hall Ketteringham Wymondham Norfolk NR18 9RS	Compliant

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08N1242	Chicken Nuggets	Tesco Value	04/10/2008	Sep-09	France	Tesco Transit Way Plymouth PL5 3TW	-	Produced in France for Tesco Stores Ltd	Compliant
08N1243	Breaded Chicken Burgers	Asda Smart Price	05/10/2008	17/09/2009	Brazil	Asda Estover District Centre Leypark Drive Plymouth PL6 8TB	-	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1244	Chicken Burgers	Birds Eye	05/10/2008	Nov-09	France	Asda Estover District Centre Leypark Drive Plymouth PL6 8TB	-	Birds Eye Ltd Freeport ADM3939 London SW1A 1YS. In ROI: Birds Eye Ireland Ltd 20 Riverwalk Citywest Dublin 24	Compliant
08N1245	Chicken Burgers	Maitre Jean-Pierre	04/10/2008	Aug-09	France	Lidl Transit Way Plymouth PL5 3TW	-	SAS Soprat La Vraie Croix F-56250 Elven	Compliant
08N1246	Battered Chickwich Nuggets	Moy Park	03/10/2008	Aug-09	France	Booker Branch 357 Ettingshall Road Wolverhampton West Midlands WV2 2NG	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1247	Ready to Use Diced Chicken Breast	Meadow Vale	03/10/2008	Nov-09	Thailand	Booker Branch 357 Ettingshall Road Wolverhampton West Midlands WV2 2NG	-	Produced for Meadow Vale Foods Wrexham Road Malpas Cheshire SY14 7EJ	Compliant
08N1248	Battered Chicken Dippers	Iceland	04/10/2008	26/12/2009	Brazil	Iceland Foods Ltd 3B Market Place Cannock Staffs WS11 1BS	-	Produced and Packed in Brazil for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant

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08N1249	Breaded Chicken Nuggets	Iceland	04/10/2008	Jan-10	Brazil	Iceland Foods Ltd 3B Market Place Cannock Staffs WS11 1BS	-	Produced and Packed in Brazil for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant
08N1250	Breaded Chicken Chunks	Iceland	04/10/2008	Dec-09	Thailand	Iceland Foods Ltd 3B Market Place Cannock Staffs WS11 1BS	-	Produced and Packed in Thailand for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant
08N1218	Battered Chicken Dippers	Iceland	24/09/2008	Jan-10	Brazil	-	Iceland Foods Ltd Second Avenue Deeside Industrial Park Deeside Flintshire CH5 2NW	Produced and Packed in Brazil for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant
08N1219	Breaded Chicken Nuggets	Iceland	26/09/2008	22-Jan-10	Brazil	-	Iceland Foods Ltd Second Avenue Deeside Industrial Park Deeside Flintshire CH5 2NW	Produced and Packed in Brazil for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant
08N1220	Garlic Chicken Breast Kiev	Asda	01/10/2008	15-Feb-10	Brazil	-	Turners Cold Storage & Distribution Fordham Road Newmarket Suffolk CB8	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1221	Breaded Chicken Breast Steaks	Asda	02/10/2008	12-Feb-10	Brazil	-	Turners Cold Storage & Distribution Fordham Road Newmarket Suffolk CB8	-	Compliant

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08N1225	Battered Chicken Breast	Not provided	01/10/2008	-	Thailand	-	L & M Food Group Ltd 2nd Floor Bldg B Turnford Place Great Cambridge Road Turnford Broxbourne Hertsfordshire EN10	-	Compliant
08N1226	Chicken Nuggets	Not provided	29/09/2008	-	Thailand	-	The Authentic Food Company Ltd Unit 4/5 Sharston Green Business Park Robeson Way Sharston Manchester M22 4SW	-	Compliant
08N1227	Chicken Nuggets	Not provided	02/10/2008	-	Thailand	-	CP Foods (UK) Ltd Avon House Hartlebury Trading Estate Hartlebury Kidderminster Worcestershire DY10	-	Compliant
08N1228	Chicken Breast Bites In Batter	Easy Cookin'	05/10/2008	16/02/2010	Thailand	-	Westbridge Foods Ltd 32 Church Street Malvern Worcestershire WR14	Produced in Thailand for Westbridge Foods Malvern WR14 2AZ	Compliant

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08N1251	Southern Fried Chicken Breast Fillet Strips	Iceland	10/11/2008	11/12/2010	Thailand	Iceland Unit 10 Scotts Corner Kings Heath Birmingham B14 7EG	-	Produced and Packed in Thailand for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant
08N1252	Chicken Burgers	Maitre Jean-Pierre	10/11/2008	Sep-09	France	Lidl Silver Street Kings Heath Birmingham B14 7QU	-	SAS Soprat La Vraie Croix F-56250 Elven	Compliant
08N1253	Premium Chicken Nuggets	Glenfell	10/11/2008	18/09/2009	Germany	Lidl Silver Street Kings Heath Birmingham B14 7QU	-	Gebr Stolle Gmbh & Co KG D-49429 Visbek	Compliant
08N1254	American Style Chicken Strips	Alfies	10/11/2008	19/07/2009	Thailand	Cooltrader 727A Bristol Road South Northfield Birmingham B31 2NG	-	Produced in Thailand for Thai House Enterprises UK Ltd. PO Box 3382 Chester CH2 4ZT	Compliant
08N1255	Southern Fried Chicken Nibbles	Foston	10/11/2008	15/02/2009	Poland	Cooltrader 727A Bristol Road South Northfield Birmingham B31 2NG	-	-	Compliant
08N1256	Southern Fried Boneless Chicken Strips and Pops	Tesco	10/11/2008	Oct-09	Thailand	Tesco Warwick Road Carlisle CA1 2SB	-	Produced in Thailand, packed in UK for Tesco Stores Ltd	Compliant
08N1257	Battered Chickwich Nuggets	Moy Park	10/11/2008	Jun-09	France	Pioneer Foods Montgomery Way Rosehill Carlisle CA1 2RR	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant

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08N1258	Breaded Chicken Dippers	Moy Park	10/11/2008	Mar-10	France	Pioneer Foods Montgomery Way Rosehill Carlisle CA1 2RR	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1259	Breaded Chicken Breast Nuggets	Moy Park	10/11/2008	Jan-10	France	Pioneer Foods Montgomery Way Rosehill Carlisle CA1 2RR	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1260	Chicken Burgers	Birds Eye	08/11/2008	01/09/2009	United Kingdom	Booker 68 -74 Purley Way Croydon Surrey CR0 3JS	-	Birds Eye Ltd Freepost ADM3939 London SW1A 1YS. In ROI: Birds Eye Ireland Ltd 20 Riverwalk Citywest Dublin 24	Compliant
08N1261	Crispy Chicken Dippers	Birds Eye	08/11/2008	Oct-09	United Kingdom	Booker 68 -74 Purley Way Croydon Surrey CR0 3JS	-	Birds Eye Ltd Freepost ADM3939 London SW1A 1YS. In ROI: Birds Eye Ireland Ltd 20 Riverwalk Citywest Dublin 24	Compliant
08N1262	Breaded Chicken Nuggets	Moy Park	08/11/2008	Apr-10	France	Booker 68 -74 Purley Way Croydon Surrey CR0 3JS	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1263	Breaded Chicken Dippers	Moy Park	08/11/2008	Mar-10	France	Booker 68 -74 Purley Way Croydon Surrey CR0 3JS	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant

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08N1264	Battered Chickwich Nuggets	Moy Park	08/11/2008	Sep-09	France	Booker 68 -74 Purley Way Croydon Surrey CR0 3JS	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1265	Hot and Spicy Chickwich Dippers	Moy Park	08/11/2008	26/08/2009	European Union	Booker Branch 201 Sunderland System Addison Street Hendon Sunderland SR2 8BL	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1266	Battered Chickwich Nuggets	Moy Park	08/11/2008	Aug-09	France	Booker Branch 201 Sunderland System Addison Street Hendon Sunderland SR2 8BL	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1267	Breaded Chicken Nuggets	Moy Park	08/11/2008	Jan-10	France	Booker Branch 201 Sunderland System Addison Street Hendon Sunderland SR2 8BL	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1268	Premium Chicken Nuggets	Glenfell	08/11/2008	01/10/2009	Germany	Lidl Ryhope Road Sunderland SR2 9ST	-	Gebr Stolle Gmbh & Co KG D-49429 Visbek	Compliant
08N1269	Chicken Burgers	Maitre Jean-Pierre	08/11/2008	Oct-09	France	Lidl Ryhope Road Sunderland SR2 9ST	-	SAS Soprat La Vraie Croix F-56250 Elven	Compliant

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08N1222	Garlic Chicken Breast Kiev	Asda	09/10/2008	-	Brazil	-	Turners Cold Storage & Distribution Fordham Road Newmarket Suffolk CB8	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1223	Battered Chicken Breast Steaks	Asda	09/10/2008	-	Brazil	-	Turners Cold Storage & Distribution Fordham Road Newmarket Suffolk CB8	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1224	Battered Chicken Dippers	Iceland	08/10/2008	-	Brazil	-	Iceland Foods Ltd Second Avenue Deeside Industrial Park Deeside Flintshire CH5 2NW	Produced and Packed in Brazil for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant
08N1229	Thai Chicken Nuggets	Not provided	07/11/2008	-	Thailand	-	A1 Cold Store Whams Lane Bay Horse Nr Galgate Lancaster Lancashire LA2	-	Compliant
08N1231	Cooked Chicken Breast Southern Fried Goujon	Not provided	05/11/2008	-	Thailand	-	Oakfield (Foods) Ltd 1st Floor Kingmaker House Station Road New Barnet EN5	-	Compliant
08N1389	Cooked Henmeat	Pukka Pies	19/11/2008	20/10/2009	Argentina	-	Pukka Pies Ltd The Half Croft Syston Leicester LE7	-	Compliant

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08N1390	Cooked Chicken With Juices In Pouch	Not provided	21/11/2008	-	Brazil	-	Vestey Foods UK (Contracts) Special Contracts Division 16 St John Lane London EC1	-	Compliant
08N1391	Chicken McNuggets	McDonald's	24/11/2008	-	Brazil	-	Sun Valley Food Ltd Grandstand Road Hereford HR4	-	Compliant
08N1392	Fully Cooked Crispy Strip	Not given	19/11/2008	-	Thailand	-	Westbridge Foods Ltd 32 Church Street Malvern Worcestershire WR14	Imported By Westbridge Foods Ltd Malvern WR14 2AZ	Compliant
08N1393	Fully Cooked Crispy Strip	Not given	28/11/2008	-	Thailand	-	Westbridge Foods Ltd 32 Church Street Malvern Worcestershire WR14	Imported By Westbridge Foods Ltd Malvern WR14 2AZ	Compliant
08N1394	Battered Chicken Chunks	Brake Brothers	02/12/2008	-	Thailand	-	CP Foods (UK) Ltd Avon House Hartlebury Trading Estate Hartlebury Kidderminster Worcestershire DY10		Compliant
08N1432	Chicken Burgers	Maitre Jean-Pierre	05/12/2008	Oct-09	France	Lidl Shore Road Belfast BT29 4SR	-	SAS Soprat La Vraie Croix F-56250 Elven	Compliant
08N1433	Premium Chicken Nuggets	Glenfell	05/12/2008	29/08/2009	Germany	Lidl Shore Road Belfast BT29 4SR	-	Gebr Stolle Gmbh & Co KG D-49429 Visbek	Compliant

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08N1434	Battered Chicken Breast Dippers	Asda	05/12/2008	04-Feb-10	Brazil	Asda 219 Shore Road Belfast BT15 3QB	-	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1435	Jumbo Battered Chicken Nuggets	Grampian	05/12/2008	May-09	Brazil	Cam Seng 1-25 Lower Windsor Ave Lisburn Road Belfast BT9 7DW	-	-	Compliant
08N1436	Premium Breaded Chicken Nuggets	Meadow Vale	05/12/2008	09/01/2010	Denmark	Asia Supermarket 189 Ormeau Road Belfast BT71 1SQ	-	Produced and Packed in Denmark For Meadow Vale Foods Wrexham Road Malpas Cheshire SY14 7EJ	Compliant
08N1437	Breaded Chicken Breast Dippers	Asda	08/12/2008	30/03/2010	Brazil	Asda The Forge Parkhead G31 4EB	-	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1438	Battered Chicken Breast Dippers	Asda	08/12/2008	04/02/2010	Brazil	Asda The Forge Parkhead G31 4EB	-	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1439	Breaded Chicken Burgers	Asda Smart Price	08/12/2008	24/12/2009	Brazil	Asda The Forge Parkhead G31 4EB	-	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1440	Breaded Chicken Nuggets	Asda Smart Price	08/12/2008	31/03/2009	Brazil	Asda The Forge Parkhead G31 4EB	-	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant
08N1443	Breaded Chicken Burgers	Asda Smart Price	07/12/2008	30/12/2009	Brazil	Asda Stores Ltd 1 Market Street Chapelton Sheffield S35 2UW	-	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant

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08N1444	Premium Chicken Nuggets	Glenfell	08/12/2008	11/09/2009	Germany	Lidl Halifax Road Sheffield S6 1LH	-	Gebr Stolle Gmbh & Co KG D-49429 Visbek	Compliant
08N1445	Chicken Nuggets	Morrisons Favourites	08/12/2008	Nov-09	United Kingdom	Morrisons 699 Penistone Road Sheffield S6 2GY	-	-	Compliant
08N1446	American Style Chicken Strips	Alfies	08/12/2008	11/09/2009	Thailand	Frozen Value Ltd T/A Jack Fulton Hillsborough Shopping Centre Sheffield S6 4HL	-	-	Compliant
08N1447	Chicken Burgers	Birds Eye	07/12/2008	Dec-09	France	Farmfoods Unit 1 Bradfield Road Hillsborough Sheffield S6 2BY	-	Birds Eye Ltd Freeport ADM3939 London SW1A 1YS. In ROI: Birds Eye Ireland Ltd 20 Riverwalk Citywest Dublin 24	Compliant
08N1448	Crispy Chicken Dippers	Birds Eye	07/12/2008	Nov-09	United Kingdom	Farmfoods Unit 1 Bradfield Road Hillsborough Sheffield S6 2BY	-	Birds Eye Ltd Freeport ADM3939 London SW1A 1YS. In ROI: Birds Eye Ireland Ltd 20 Riverwalk Citywest Dublin 24	Compliant
08N1449	Premium Chicken Nuggets	Glenfell	08/12/2008	23/09/2009	Germany	Lidl Sway Road Morrison Swansea SA6 6JA	-	Gebr Stolle Gmbh & Co KG D-49429 Visbek	Compliant

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08N1450	Chicken Burgers	Maitre Jean-Pierre	08/12/2008	Nov-09	France	Lidl Sway Road Morrison Swansea SA6 6JA	-	SAS Soprat La Vraie Croix F-56250 Elven	Compliant
08N1451	American Style Chicken Goujons	LA Diner	08/12/2008	Nov-09	Thailand	Farmfoods Unit 6F Lion Way Swansea Enterprise Park Swansea SA7 9EH	-	LA Diner Sandhills Business Park Sandhills Lane Liverpool L5 9ZS	Compliant
08N1452	Big Dippers	SFC	08/12/2008	May-10	European Union	Farmfoods Unit 6F Lion Way Swansea Enterprise Park Swansea SA7 9EH	-	-	Compliant
08N1453	Chickwich Battered Steak	Moy Park	08/12/2008	31-Oct-09	France	Booker Upper Forest Way Enterprise Park Morrison SA6 8PJ	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1454	Battered Chickwich Nuggets	Moy Park	08/12/2008	31/10/2009	France	Booker Upper Forest Way Enterprise Park Morrison SA6 8PJ	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1455	Poppin Chicken	Morrisons	12/01/2009	10/04/2010	Thailand	Morrisons James Watt Way Erith Kent DA8 2AH	-	-	Compliant
08N1456	Chicken Dippers	Sainsbury's	12/01/2009	Mar-10	Brazil	Sainsbury's 55 Bugsby's Way Greenwich London SE10 0QJ	-	-	Compliant

Sample Number	Product as Described	Brand	Date of Purchase/ Collection	Best Before/ Use By Date	Country Of Origin	Retailer/ Wholesaler Address	BIPs Samples Importer/ Distributor Address	Supplier/ Manufacturer Address From Packaging	Result/ Confirmed value (µg/kg)
08N1457	Mini Chicken Satay	Taste Original	12/01/2009	04/02/2009	Netherlands	Sainsbury's 55 Bugsby's Way Greenwich London SE10 0QJ	-	Taste Original Foodconcepts Boekel	Compliant
08N1458	Chicken Burgers	Maitre Jean-Pierre	12/01/2009	Dec-09	France	Lidl Brocklebank Road London SE7 7SX	-	SAS Soprat La Vraie Croix F-56250 Elven	Compliant
08N1459	Battered Chicken Dippers	Iceland	12/01/2009	20-Apr-10	Brazil	Iceland 1 Joyce Dawson Way Thamesmead London SE28 8RA	-	Produced and Packed in Brazil for Iceland Foods Ltd Deeside Flintshire CH5 2NW	Compliant
08N1460	Chicken Goujons	Birds Eye	10/01/2009	30/11/2009	United Kingdom	Sainsbury's 170 Heaton Park Road West Blackley Manchester M9 0QS	-	Birds Eye Ltd Freeport ADM3939 London SW1A 1YS	Compliant
08N1461	Southern Fried Style Chicken Breast Pop'ems	Sainsbury's	10/01/2009	Apr-10	United Kingdom and Brazil	Sainsbury's 170 Heaton Park Road West Blackley Manchester M9 0QS	-	Produced in the UK for Sainsbury's Supermarkets Ltd London EC1N 2HT	Compliant
08N1462	Chicken Dippers	Sainsbury's	10/01/2009	Mar-10	Brazil	Sainsbury's 170 Heaton Park Road West Blackley Manchester M9 0QS	-	-	Compliant
08N1463	Crispy Chicken Dippers	Birds Eye	10/01/2009	Feb-10	United Kingdom	Sainsbury's 170 Heaton Park Road West Blackley Manchester M9 0QS	-	Birds Eye Ltd Freeport ADM3939 London SW1A 1YS	Compliant

Sample Number	Product as Described	Brand	Date of Purchase/ Collection	Best Before/ Use By Date	Country Of Origin	Retailer/ Wholesaler Address	BIPs Samples Importer/ Distributor Address	Supplier/ Manufacturer Address From Packaging	Result/ Confirmed value (µg/kg)
08N1604	Chicken Nuggets	Sainsbury's	10/01/2009	Dec-09	Brazil	Sainsbury's 170 Heaton Park Road West Blackley Manchester M9 0QS	-	-	Compliant
08N1605	Chicken Burgers	Sainsbury's basics	10/01/2009	May-10	United Kingdom and Brazil	Sainsbury's 170 Heaton Park Road West Blackley Manchester M9 0QS	-	Sainsbury's Supermarkets Ltd London EC1N 2HT	Compliant
08N1468	Premium Chicken Nuggets	Glenfell	08/01/2009	29/08/2009	Germany	Lidl Whitchurch Road Shrewsbury SY1 4HA	-	Gebr Stolle Gmbh & Co KG D-49429 Visbek	Compliant
08N1469	Chicken Burgers	Maitre Jean-Pierre	08/01/2009	Jul-09	France	Lidl Whitchurch Road Shrewsbury SY1 4HA	-	SAS Soprat La Vraie Croix F-56250 Elven	Compliant
08N1470	Chicken Nuggets	Gut Frielingshof	08/01/2009	11/06/2009	Germany	Lidl Whitchurch Road Shrewsbury SY1 4HA	-	-	Compliant
08N1471	Breaded Chicken Nuggets	Moy Park	08/01/2009	Jun-10	France	Booker Arlington Way Shrewsbury SY1 4YA	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant
08N1472	Chickwich Battered Steak	Moy Park	08/01/2009	Nov-09	Germany	Booker Arlington Way Shrewsbury SY1 4YA	-	Moy Park Ltd Gonerby Hill Foot Grantham NG31 8HZ	Compliant

Sample Number	Product as Described	Brand	Date of Purchase/ Collection	Best Before/ Use By Date	Country Of Origin	Retailer/ Wholesaler Address	BIPs Samples Importer/ Distributor Address	Supplier/ Manufacturer Address From Packaging	Result/ Confirmed value ( $\mu\text{g}/\text{kg}$ )
08N1598	Breaded Goujons	Mostell	17/01/2009	May-10	Thailand	-	Oakfield (Foods) Ltd 1st Floor Kingmaker House Station Road New Barnet EN5	Mostell Limited Catherinefield Ind Estate Dumfriesshire DG1 3PQ	Compliant
08N1610	Southern Fried Chicken Nibbles	Foston	11/01/2009	15-Feb-09	Poland	Makro Marsh Barton Exeter EX2 8LB	-	Elbar Worldwide Group Hay Lane Foston Derby DE65 5PJ	Compliant
08N1611	Poppin Chicken	Grampian	11/01/2009	May-10	Thailand	Makro Marsh Barton Exeter EX2 8LB	-	Grampian Foods (Europe) Ltd Roman Ridge Main Street Aberford Leeds LS25 3AW	Compliant
08N1612	Chicken Breast Goujons	Grampian	11/01/2009	Mar-10	Thailand	Makro Marsh Barton Exeter EX2 8LB	-	-	Compliant
08N1613	Sweet Chilli Chicken Satay	Taste Original	11/01/2009	30-Jan	Netherlands	Makro Marsh Barton Exeter EX2 8LB	-	-	Compliant
08N1395	Chicken McNuggets	McDonald's	29/12/2008	19/03/2009	Brazil	-	Sun Valley Food Ltd Grandstand Road Hereford HR4	-	Compliant
08N1396	Cooked Chicken Meat 9MM Diced	Seara	29/12/2008	08/05/2010	Brazil	-	Sun Valley Food Ltd Grandstand Road Hereford HR4	-	Compliant
08N1397	Breaded Chicken Nuggets	Asda Smart Price	30/12/2008	14/05/2010	Brazil	-	Turners Cold Storage & Distribution Fordham Road Newmarket Suffolk CB8	Produced by Perdigao Agroindustrial SA Capinzal - SC - Brazil	Compliant

Sample Number	Product as Described	Brand	Date of Purchase/ Collection	Best Before/ Use By Date	Country Of Origin	Retailer/ Wholesaler Address	BIPs Samples Importer/ Distributor Address	Supplier/ Manufacturer Address From Packaging	Result/ Confirmed value ( $\mu\text{g}/\text{kg}$ )
08N1398	Breaded Chicken Breast Fillets	Easy Cookin'	05/02/2009	30/06/2010	Thailand	-	Westbridge Foods Ltd 32 Church Street Malvern Worcestershire WR14	Produced in Thailand for Westbridge Foods Malvern WR14 2AZ	Compliant
08N1399	Chilli Chicken Batons	Authentic Food Company	03/02/2009	12/11/2010	Thailand	-	The Authentic Food Company Ltd Unit 4/5 Sharston Green Business Park Robeson Way Sharston Manchester M22 4SW	Manufactured by The Authentic Food Company Ltd Unit 4/5 Sharston Green Business Park Robeson Way Sharston Manchester M22 4SW	Compliant

## ANALYTICAL METHODOLOGY

All poultry product samples were transported to the Central Science Laboratory (CSL) frozen. For breaded or battered samples the coating was removed. Wherever possible the meat content of the sample only was sub-sampled and tested (e.g. samples may be washed with cold water and tissue below the surface sub-sampled to minimise contamination with other ingredients). Single-piece samples had testing aliquots cut from the bulk sample without homogenisation. For subsequent analyses these aliquots were taken from adjacent sites. Multiple-piece samples (e.g. steaks) were maintained whole. Test aliquots were taken from individual pieces and any subsequent related assay was taken from an adjacent site on that same piece. For diced products containing several small chunks (e.g. nuggets), the sample was homogenised by passing through a mincer before test portions were taken.

Test samples were divided to give separate sub-samples for screening and confirmation analysis. Screening and confirmation sub-samples were stored separately. For breaded or battered samples and where sufficient sample existed, a further portion of each sample was retained as intact product. Similarly, for samples that required mincing a further portion of each sample was retained intact where possible. All prepared sub-samples were stored frozen at approximately -20 °C prior to analysis.

Samples were analysed in accordance with the quality criteria defined in EU legislation<sup>a</sup> including using ISO17025 accredited methodology. With the exception of chloramphenicol (CAP) screening, which was performed using a biosensor, all samples were screened and confirmed using Liquid Chromatography-Mass Spectrometry/Mass Spectrometry (LC-MS/MS). All screening and confirmation analyses were carried out at CSL. Overviews of the analytical methods are as follows:

### *Chloramphenicol (screening)*

CAP is extracted from the processed poultry muscle by sonicating and homogenising in methanol/water. The extract is centrifuged, applied to a pre-conditioned reverse phase (C18) Solid Phase Extraction (SPE) cartridge, washed and eluted with methanol. The eluate is reduced to dryness under nitrogen and reconstituted in buffer. Samples are analysed using an immunoassay performed in a biosensor. The detection principle employed is Surface Plasmon Resonance (SPR). The immunoassay configuration is competitive inhibition format with the antigen (CAP) immobilised on the sensor chip surface. The sample and CAP antibody are pre mixed and injected over the sensor surface where binding occurs. Extracted matrix standards are used for calibration which gives implicit recovery correction.

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<sup>a</sup> Commission Decision 2002/657/EC of 12 August 2002 implementing Council Directive 96/23/EC concerning the performance of analytical methods and the interpretation of results

#### *Chloramphenicol (confirmation)*

CAP is extracted from the processed poultry muscle by homogenising in acetonitrile. The extract is centrifuged and applied to a disposable cartridge packed with a specially cleaned diatomaceous earth and eluted with dichloromethane. The eluate is reduced to near dryness under nitrogen, reconstituted in hexane/ethyl acetate and loaded onto a pre-conditioned amino (NH<sub>2</sub>) SPE cartridge. The cartridge is washed with ethyl acetate and the analyte eluted with ethyl acetate/methanol. The eluate is reduced to dryness under nitrogen and reconstituted in water. Samples are analysed using LC-MS/MS. Identification of CAP residues in a sample is made *via* two LC-MS/MS transitions. Solvent standards are used for calibration. A deuterated internal standard d<sub>5</sub>-CAP is used in the quantification of CAP residues, which gives implicit recovery correction.

#### *Nitrofurans*

Nitrofuran metabolites are extracted from tissue with dilute hydrochloric acid. The metabolites are derivatised with 2-nitrobenzaldehyde, and the sample neutralised with alkaline buffer. The resulting extract, containing 2-nitrobenzaldehyde derivatives of nitrofuran metabolites, is applied to a reverse phase (styrene-divinylbenzene) SPE cartridge. The analytes are eluted from the cartridge with ethyl acetate, which is evaporated to dryness and the residue reconstituted in methanol/water prior to analysis by LC-MS/MS. Extracted matrix standards are used for calibration and d<sub>5</sub>-3-amino-5-morpholinomethyl-2-oxazolidone (AMOZ), d<sub>4</sub>-3-amino-2-oxazolidone (AOZ), 2,4,5-[<sup>13</sup>C<sub>3</sub>]-1-aminohydantoin (AHD) and 1,2-[<sup>15</sup>N<sub>2</sub><sup>13</sup>C]-semicarbazide (SEM) are used as internal standards, which gives implicit recovery correction for all analytes.

For confirmation of SEM residues initial washing of the confirmation sub-sample is performed according to EU CRL guidelines to remove free SEM and leave bound SEM for measurement. The sample pre-treatment involves washing with methanol, ethanol, and diethyl ether prior to hydrolysis and derivatisation.

#### *Coccidiostats/Nitroimidazoles*

Tissue is extracted with 1% v/v acetic acid in acetonitrile using homogenisation. The extract is dried with anhydrous sodium sulphate and an aliquot cleaned up by dispersive SPE using a mixed C<sub>18</sub>/NH<sub>2</sub> packing material. The supernatant is reduced to dryness under nitrogen and reconstituted in acetonitrile/water. An additional clean-up step is required for nitroimidazoles in which the C<sub>18</sub>/NH<sub>2</sub> cleaned extract is loaded onto a strong cation exchange (SCX) SPE cartridge. Nitroimidazoles are eluted by passing 35% ammonia in acetonitrile (5:95) through the column. For nitroimidazoles, the eluate is reduced to dryness under nitrogen and reconstituted in methanol/water. Determination is by LC-MS/MS. Matrix matched standards are used for calibration. Use of internal standards d<sub>8</sub>-dinitrocarbanilide, d<sub>3</sub>-metronidazole, d<sub>3</sub>-dimetridazole, d<sub>3</sub>-ronidazole, d<sub>3</sub>-ipronidazole and d<sub>3</sub>-hydroxyipronidazole gives implicit recovery correction for those analytes only. For the other analytes, recovery correction is as described in the following section.

## Quality Assurance

All *screening batches* included known blank samples, along with other Quality Assurance samples and standards as follows:

### *Chloramphenicol*

Screening batches included multi-level extracted matrix matched standards (*i.e.* a known amount of analyte added to a known blank sample prior to extraction) to produce a calibration curve. Additional extracted matrix matched standards at half the reporting limit were also included. Calibration based on extracted matrix matched standards gives implicit recovery correction.

### *Nitrofurans*

Screening batches included two-level extracted matrix matched standards. All results were recovery corrected against  $d_5$ -AMOZ,  $d_4$ AOZ, 2,4,5- $[^{13}\text{C}_3]$ -AHD and 1,2- $[^{15}\text{N}_2^{13}\text{C}]$ -SEM internal standards.

### *Coccidiostats/Nitroimidazoles*

Screening batches included multi-level matrix matched standards (*i.e.* a known amount of analyte added to a known blank sample after extraction), together with extracted matrix matched standards at the reporting limit. Where suitable materials were available ( $d_8$ -dinitrocarbanilide,  $d_3$ -metronidazole,  $d_3$ -dimetridazole,  $d_3$ -ronidazole,  $d_3$ -ipronidazole and  $d_3$ -hydroxyipronidazole), results were recovery corrected against internal standards. For the other analytes, results were recovery corrected using recovery factors obtained from results from the extracted matrix matched standards at the reporting limit.

Suspect “positive” (non-compliant) samples from these initial screening analyses were subject to confirmatory tests.

All *confirmatory analyses* were conducted in duplicate using test portions taken from the retained sample and included known blank samples, along with Quality Assurance samples and multi-level standards as follows:

### *Chloramphenicol*

Confirmation batches included a matrix matched standard, extracted matrix matched standards (including at the reporting limit) and multi-level solvent standards. Results were recovery corrected against  $d_5$ -CAP internal standard.

### *Nitrofurans*

Confirmation batches included multi-level extracted matrix matched standards with recovery correction as for screening.

### *Coccidiostats/Nitroimidazoles*

Confirmation batches included multi-level matrix matched standards and extracted matrix matched standards (including at the reporting limit), with recovery correction as for screening.

Quality assurance was also demonstrated by regular participation in both UK and EU-wide proficiency schemes and collaborative studies.

### Decision limit (CC $\alpha$ ) and detection capability (CC $\beta$ )

All methods were validated at CSL according to the requirements of Commission Decision 2002/657/EC. This required the determination of a number of key parameters including “CC $\alpha$ ” (decision limit) and “CC $\beta$ ” (detection capability):

Method	Analyte	CC $\alpha$ ( $\mu\text{g kg}^{-1}$ )	CC $\beta$ ( $\mu\text{g kg}^{-1}$ )
Chloramphenicol (screening)	Chloramphenicol	0.07	0.11
Chloramphenicol (confirmation)	Chloramphenicol	0.07	0.09
Nitrofurantoin metabolites*	SEM	0.3	0.51
	AHD	0.32	0.54
	AMOZ	0.47	0.8
	AOZ	0.2	0.35
Coccidiostats/Nitroimidazoles	Dimetridazole	0.45	0.76
	Dinitrocarbanilide	2.3	3.9
	Hydroxydimetridazole	0.55	0.94
	Hydroxyipronidazole	0.57	0.96
	Hydroxymetronidazole	0.55	0.94
	Ipronidazole	0.27	0.46
	Lasalocid	22.8	26.4
	Maduramycin	12.4	21.1
	Metronidazole	1	1.7
	Monensin	1.3	2.3
	Narasin	9.2	15.6
	Ronidazole	0.36	0.6
	Salinomycin	7.4	12.5

\* Key to abbreviations as follows: SEM, semicarbazide; AHD, 1-aminohydantoin; AMOZ, -3-amino-5-morpholinomethyl 2-oxazolidone; AOZ, 3-amino-2-oxazolidone.