NATIONAL RESIDUE CONTROL PLAN REPORT 2022

Background on the National Residue Control Plan

1. Under EU legislation (Article 19 of Regulation (EU) 2017/625[1]), each Member State is required to implement a residue control plan and to submit their programmes annually to the European Commission for approval. Ireland's National Residue Control Programme (NRCP) for 2022 was approved by the European Commission. Third Countries wishing to export animal products to the EU are similarly required to satisfy the European Commission that their legislation, controls and residue surveillance measures provide equivalent guarantees for EU consumers.

2. The scope of testing under the 2022 NRCP is comprehensive, covering 8 food production systems as well as milk, eggs and honey and 18 distinct residue groups (each residue group is, in turn, comprised of a number of sub-groups). These residue-groups fall into four broad categories: banned substances, such as growth-promoting hormones; authorised veterinary medicines; approved animal feed additives and environmental contaminants. Implementation of the NRCP involves taking samples from food producing species at farm and primary processing/packing levels. This strategic approach reflects current scientific and analytical advice designed to maximise the effectiveness of the testing regime by sampling the most appropriate matrix for each substance.

3. Most samples (c. 93%) are taken in accordance with risk-based criteria designed to target animals or products that are more likely to contain illegal residues ('targeted sampling'). The results also reflect the outcome of sampling conducted in specific cases where the presence of illegal residues was suspected ('suspect sampling') by Department or Local Authority inspectors. This can arise, for example, based on the ante or post-mortem examinations of animals at slaughterhouses or following further detailed risk analysis. In such cases, the animals/products concerned are withheld from the food chain, pending the outcome of the analysis. In the event of a positive result from routine targeted samples, where animals/products are not detained, food is withdrawn

[1] Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products, amending Regulations (EC) No 999/2001, (EC) No 396/2005, (EC) No 1069/2009, (EC) No 1107/2009, (EU) No 1151/2012, (EU) No 652/2014, (EU) 2016/429 and (EU) 2016/2031 of the European Parliament and of the Council, Council Regulations (EC) No 1/2005 and (EC) No 1099/2009 and Council Directives 98/58/EC, 1999/74/EC, 2007/43/EC, 2008/119/EC and 2008/120/EC, and repealing Regulations (EC) No 854/2004 and (EC) No 882/2004 of the European Parliament and of the Council, Council Directives 89/608/EEC, 89/662/EEC, 90/425/EEC, 91/496/EEC, 96/23/EC, 96/93/EC and 97/78/ EC and Council Decision 92/438/EEC (Official Controls Regulation

or recalled from the market, if deemed necessary in the interests of public health following a risk assessment carried out by the Food Safety Authority of Ireland (FSAI).

4. The majority of positive results lead to a follow-up investigation at the farm of origin coordinated by the Department of Agriculture, Food and the Marine (the Department) officials. This investigation involves not just an examination of the cause of the particular breach, but also a review of the arrangements in place on the farm in relation to veterinary medicines, including record-keeping. Follow-up measures are taken, including, where appropriate, restriction of farms and application of the appropriate penalty to the farmer's Direct Payment arising from Cross-Compliance requirements. Positive results also usually result in an increased level of residue monitoring for the farmer or supplier concerned.

5. Samples are analysed at officially approved laboratories holding accreditation to the International Standard (ISO 17025) and incorporating current analytical technology. The laboratory network employed by the Department continuously engages in research and development of analytical methodologies in line with scientific developments under the guidance of the EU reference laboratories. This ensures improvement in analytical capability with a view to meeting current and future requirements towards enhancement of consumer protection. The fruits of this work are evidenced by the fact that laboratories are now capable of detecting residues at extremely low levels.

6. In 2022, in addition to the official testing carried out by the Department and Local Authorities, primary processors in the red and white meat and milk sector implement a risk-based residues monitoring program under their own HACCP plans. The Department is notified of any positives by the Food Business Operator (FBO) for follow up investigation. Under this regime, processors applied a progressively increasing scale of testing to suppliers of residue positive animals or milk.

Outcome of 2022 official testing

7. In 2022, a total of 14,085 samples were taken from all 8 food production systems, as well as from milk, eggs and honey. The overall number of non-compliant samples across all substances was 23 or 0.16%. The comparable numbers for 2021 was 18, or 0.10% of samples taken (18/15,922), 2020 was 20, or 0.12% (20/16,196), 2019 was 53, or 0.31% (53/16,911), 2018 was 0.24% (42/17,344), 2017 was 0.3% (51/18,513).

8. An overview of the distribution of sampling across species/products and residue groups is provided in Appendix 1. A summary of the analysis is given in Appendix 2. An overview of all positive results is provided in Appendix 3, while more detailed information on these positive results is given in Appendix 4.

9. The Department has a particular focus on laboratory findings that indicate a potential use of banned substances i.e., hormones or other growth promoters prohibited under the EU Hormone Ban (Directive 96/22/EC[2]) or otherwise banned on public health grounds (Table 2 to Commission Regulation 37/2010).

10. The substance Salbutamol was detected in a bovine sample. Additional samples were taken which were returned as not detected. The Department's investigations concluded that the non-compliance was most likely due to cross contamination at the time the sample was taken rather than arising from any illegal use.

11. 6 cases of Nitrofurans (SEM) were also identified in the bovine sector in 2022. Following detailed investigations including the carrying out of additional testing, it was determined that there was no evidence of any illegal use with any of the non-compliances. The contributing factors identified in a number of these cases were due to the bovines ingesting foliage (seaweed – farms located close to the coast) and no further action was deemed necessary. DAFM allocated additional residues testing for Nitrofurans in 2023 and will continue to monitor results for this substance.

[2] Council Directive 96/22/EC concerning the prohibition on the use in stock-farming of certain substances having a hormonal or thyrostatic action and of beta-agonists, and repealing Directives 81/602/EEC, 88/146/EEC and 88/299/EEC

12. Residues of authorised veterinary medicines greater than the Maximum Residue Limits (MRLs) set for the major food-producing species under Commission Regulation (EU) No 37/2010 were found in a total of 16 samples.
13. The Department's laboratory introduced a new LC-MSMS method to test antibiotics. Up to the end of 2021, samples of muscle, milk, eggs and kidney were screened for antibiotics using microbiological inhibition-based methods, the 6-plate microbiological test or its variations. The method was developed in the 90's and introduced in the Irish national plan to handle large sample throughputs providing a quick but not very precise answer as to whether microbiological substances were present in the samples.

    Work was undertaken in the Food Chemistry laboratories to develop a High-Resolution Accurate Mass (HRAM) method to replace this microbiological test. DAFM invested €0.5 million to purchase a new instrument for this work and a new method is now in place. The validation required to show that this method is fit for purpose was carried out and the method was evaluated and accredited by INAB in February 2021. At the end of 2021 the Food Chemistry Division was preparing to implement this method into the routine work of the laboratory. Training was carried out and the method was implemented from the beginning of 2022.

    The scope of this method covers approximately 80 analytes from the classes of penicillins, cephalosporins, sulphonamides, tetracyclines, quinolones, macrolides, lincosamides, phenicols, pleuromutilins and a small number from other classes. It provides unequivocal identification and quantification to low levels of all these 80 antibiotics, reducing to almost zero the occurrences of false positive and false negative results and the cost of confirmation as the results are very accurate.

14. There were 5 antibiotic non-compliances reported in 2022 in the bovine sector. Two of these were targeted samples and the remaining 3 were identified as suspects. In the case of the suspects, the carcases are detained on suspicion by Department veterinary inspectors in the slaughter plant and are excluded from the food chain on foot of the analytical results. Risk assessments conducted by the FSAI did not indicate an unacceptable risk to consumer health and therefore it was not necessary to recall any products.

15. In the milk sector, 5 samples (3 anthelmintic and 2 antibiotic) contained residues of anthelmintics (medicines for the control and treatment of parasites) and antibiotics (medicines for control and treatment of bacterial infections) which indicated that specified post-treatment withdrawal periods had not been observed or incorrect administration had occurred.

16. In the ovine sector, a total of 3 samples (2 anthelmintic and 1 antibiotic) contained residues of anthelmintics and antibiotics, which indicated that specified post-treatment withdrawal periods had not been observed or incorrect administration had occurred. Risk assessments conducted by the FSAI did not indicate an unacceptable risk to consumer health and therefore it was not necessary to recall the products. It should be noted that anthelmintic positives have decreased from 19 in 2019 to 2 for 2022.

17. In the equine sector, 2 samples both tested positive for Diclofenac (Non-Steroidal Anti-Inflammatory Drug (NSAIDs)). NSAIDs are prohibited for use in equines intended for human consumption. The follow up investigation determined that the probable cause was contamination by the sampling officer. The carcases for these animals did not enter the food chain and were sent for destruction, and no further action was required.

18. In the poultry sector, 1 sample tested positive for Cyromazine (Anticoccidials). The follow up investigation determined that there was no evidence of illegal use, and no further action was required.

19. In the aquaculture sector, the Sea Fisheries Protection Authority (SFPA), in conjunction with the Department with support from the Marine Institute (MI), are responsible for residue controls on farmed finfish under the NRCP. In 2022, more than 850 tests were carried out on 138 samples of farmed finfish for a range of residues. No non-compliant results were reported from the national monitoring programme for farmed finfish in 2022. Overall, as in recent years, the outcome for aquaculture remains one of consistently low occurrence of residues in farmed finfish, with no non-compliant target residues results for the periods 2006-2014 and 2017-2021. There were 0.11% and 0.10% non-compliant target residues results for 2015 and 2016 respectively.

20. Separate from the NRCP and in order to monitor conformity with Community legislation, products of animal origin entering the EU through Ireland are subject to sampling and analysis for residues. Tests are carried out under monitoring plans or on suspicion of an irregularity. In 2022,

76 samples were taken from consignments imported directly into Ireland from countries outside the EU/EEA. No positive samples were identified.

APPENDIX 1

OVERVIEW OF THE NUMBER OF SAMPLES TAKEN UNDER THE DEPARTMENT OF AGRICULTURE, FOOD & THE MARINE'S RESIDUE MONITORING PROGRAMME FOR 2022

Product Category	Sampling Point	Suspect Sampling	Targeted Sampling	Total
Bovine	Farm	5	2,133	2,138
	Slaughter	878	4,734	5,612
	Total	**883**	**6,867**	**7,750**
Porcine	Farm	11	51	62
	Slaughter	85	1,359	1,444
	Total	**96**	**1,410**	**1,506**
Sheep	Farm	0	0	0
	Slaughter	5	1,492	1,497
	Total	**5**	**1,492**	**1,497**
Goats	Slaughter	0	4	4
	Total	**0**	**4**	**4**
Poultry	Farm	1	85	86
	Slaughter	1	1,016	1,017
	Total	**2**	**1,101**	**1,103**
Horses	Slaughter	2	117	119
	Total	**2**	**117**	**119**
Wild Game*	Slaughter	0	85	85
	Total	**0**	**85**	**85**
Milk	Farm	22	1,392	1,414
	Total	**22**	**1,392**	**1,414**
Eggs	Farm	0	401	401
	Total	**0**	**401**	**401**
Honey	Farm	0	68	68
	Total	**0**	**68**	**68**
Aquaculture	Farm	0	138	138
	Total	**0**	**138**	**138**
Total		**1,010**	**13,075**	**14,085**

*Includes 12 Farmed Game Samples

APPENDIX 2

SUMMARY OF THE ANALYSIS OF DEPARTMENT OF AGRICULTURE, FOOD & THE MARINE'S RESIDUE MONITORING PROGRAMME FOR 2022

*Group A Prohibited Substances

Substance Group	Bovine		Pigs		Sheep/Goats		Poultry		Milk		Horses		Aquaculture		Eggs		Farm Game/Wild Game		Honey	
	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.
A1	251		42		18		86				1						1			
A2	264		41		17		12				1						1			
A3	1770		268		85		58		53		10		51							
A4	291		58		42		89				1									
A5	1077	1	105		76		72				4						1			
A6	2449	6	532		439		324		87		25		155		91		2		25	
Total No. Analyses	**6102**	**7**	**1046**	**0**	**677**	**0**	**641**	**0**	**140**	**0**	**42**	**0**	**206**	**0**	**91**	**0**	**5**	**0**	**25**	**0**

**Group B - Veterinary Drugs and Contaminants

B 1 – Antibacterial Substances

Substance Group	Bovine		Pigs		Sheep/Goats		Poultry		Milk		Horses		Aquaculture		Eggs		Farm Game		Honey	
	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.
B1	**2112**	**5**	**441**		**386**	**1**	**169**		**405**	**2**	**19**		**114**		**152**		**2**			

B 2 - Other Veterinary Drugs

Substance Group	Bovine		Pigs		Sheep/Goats		Poultry		Milk		Horses		Aquaculture		Eggs		Farm Game/Wild Game		Honey	
	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.
B2a	552		72		453	2	401		468	3	7		92				1			
B2b	157		46		106				87		2		91		182				17	
B2c	199		40		100		265	1			5		92		27		1		23	
B2d	65		43		16						6									
B2e	146		61		39		24		74		48	2					1			
B2f	246		161		114		246		77		8		101		147				24	
Total No. Analyses	**1365**	**0**	**423**	**0**	**828**	**2**	**936**	**1**	**706**	**3**	**76**	**2**	**376**	**0**	**356**	**0**	**3**	**0**	**64**	**0**

B 3 - Other Substances and Environmental Contaminants

Substance Group	Bovine		Pigs		Sheep/Goats		Poultry		Milk		Horses		Aquaculture		Eggs		Farm Game/Wild Game		Honey	
	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.
B3a	157		65		95		31		85		7		27		45				13	
B3b	142		55		77		21		85		2				27				13	
B3c	222		35		59		61		59		3		9				76		14	
B3d	146		60		34		114		107		2									
B3e													74							
B3f	102		27		43		43				4		92				1		36	
Total No. Analyses	**769**	**0**	**242**	**0**	**308**	**0**	**270**	**0**	**336**	**0**	**18**	**0**	**202**	**0**	**72**	**0**	**77**	**0**	**76**	**0**

OVERALL RESULT - TOTAL GROUP A + GROUP B

	Bovine		Pigs		Sheep/Goats		Poultry		Milk		Horses		Aquaculture		Eggs		Farm Game/Wild Game		Honey	
	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.	Num.	Pos.
Overall Total Analyses	**10348**	**12**	**2152**	**0**	**2199**	**3**	**2016**	**1**	**1587**	**5**	**155**	**2**	**898**	**0**	**671**	**0**	**87**	**0**	**165**	**0**

***Group A – (Prohibited Substances) Substances having anabolic effect and unauthorised substances**

A1 - Stilbenes, stilbene derivatives, and their salts and esters
A2 - Antithyroid agents
A3 - Steroids
A4 - Resorcylic acid lactones including zeranol
A5 - Beta-agonists
A6 - Other non-allowed pharmacologically active substances – chloramphenicol, chlorpromazine, dapsone, nitrofurans and nitroimidazoles

****Group B - Veterinary drugs and contaminants**

B1- Antibacterial substances, including sulphonamides, quinolones

B2 - Other veterinary drugs

B2a Anthelmintics
B2b Anticoccidials
B2c Carbamates and pyrethroids
B2d Sedatives
B2e Non-steroidal anti-inflammatory drugs (NSAIDs)
B2f Other pharmacologically active substances

B3 - Other substances and environmental contaminants

B3a Organochlorine compounds
B3b Organophosphorus compounds
B3c Chemical elements
B3d Mycotoxins
B3e Dyes
B3f Others

Appendix 3: Details of Non-compliant Results

Species/ Animal produce	Total No. Of Samples*	Total No. of Analyses	Total No. of Non-compliant samples*	Substance
Farmed Fish	138	859	0	
Bovine	7,750	10,384	12	6 Nitrofurans (SEM) 1 Beta-agonist (Salbutamol) 5 Antibiotics (2 Sulfamethazine, 2 oxytetracycline, 1 Sulfadiazine)
Eggs	401	671	0	
Equine	119	155	2	2 NSAIDs (Diclofenac)
Farmed Game (Deer) / Wild Game	85	87	0	
Honey	68	140	0	
Milk	1,414	1,585	5	3 Anthelmintics (1 Ivermectin, 2 Levamisole) 2 Antibiotics (1 Benzylpenicillin, 1 Amoxicillin)
Ovine/Caprine	1,501	2,204	3	2 Anthelmintics (1 Ivermectin, 1 Levamisole) 1 Antibiotic (Oxytetracycline)
Porcine	1,506	2,149	0	
Poultry	1,103	1,961	1	1 Anticoccidials (Cyromazine)
Total:	**14,085**	**20,195**	**23**	

*Numbers relate to samples taken on a routine targeted basis and on suspicion, including follow-up investigations.

Appendix 4

FOLLOW-UP ACTIONS FOR NON-COMPLIANT RESULTS IN 2022

Group A substances

Non-compliant results	**Follow-up actions**
7 non-compliant results	**Bovine**
• *Bovine* • *Beta-Agonists* • *Urine* • *1 non-compliant result*	**1 target samples confirmed non-compliant for Salbutamol:** **1. Salbutamol @ 1.568** µg/L The follow up investigation concluded that there was no evidence of illegal use. Additional samples were taken on follow up which were returned as not detected. The contamination was determined to be due to cross contamination by the sampling officer.
• *Bovine* • *Nitrofurans* • *Plasma* • *6 non-compliant results*	**6 Nitrofuran results confirmed non-compliant for SEM:** **1. SEM @0.19µg/kg** The follow up investigation concluded that there was no evidence of illegal use. Additional samples were taken on follow up which came back negative. Probable cause of contamination considered to be the ingestion of seaweed. **2. SEM @0.19µg/kg** The follow up investigation concluded that there was no evidence of illegal use. The holding was restricted, and additional samples were taken. The farm restriction was lifted following the negative results returned of the additional sampling, no further action was required. **3. SEM @ 0.22µg/kg** Additional samples were taken on follow up which came back negative. The investigation concluded that there was no evidence of illegal use. The holding is coastal and probable cause determined to be due to ingestion of foliage/seaweed. **4. SEM @ 0.22µg/kg** The follow up investigation concluded that there was no evidence of illegal use. Additional samples were taken on follow up visit and the farm was restricted. The restrictions were subsequently lifted as the herd owner only had the animals for a few days also, further sampling came back negative. **5. SEM @ 0.23µg/kg** The follow up investigation concluded that there was no evidence of illegal use. Record keeping by the herd owner was noted as being of good quality. **6. SEM @ 0.17µg/kg** The follow up investigation concluded that there was no evidence of illegal use and that no further action was required.

Group B substances

Non-compliant results	Follow-up actions
5 non-compliant results	**Bovine**
• *Bovine* • *Antibiotics* • *Muscle* • *5 non-compliant results*	**5 Antibiotics confirmed non-compliant for antibiotics:** **1. Sulfamethazine @8031.9µg/kg.** The investigation concluded that the animal in question had been administered sulpha powders. The herdowner failed to observe and respect the required withdrawal period. Case referred to Cross Compliance resulting in a 3% penalty being imposed. **2. Sulfamethazine @186.15µg/kg.** The investigation concluded that the herdowner had a farming assistant for this period due to suffering a broken leg, however, there was no evidence identified as to where Sulfamethazine was prescribed from. Case referred to Cross Compliance resulting in a 5% penalty being imposed. **3. Oxytetracycline @>400µg/kg.** The investigation found that while some farm records were not quite in order (noted as with an auditor) that the non-recording of Oxytetracycline was due to human error. Case referred to Cross Compliance resulting in a 5% penalty being imposed. **4. Sulfadiazine @237.3µg/kg** The investigation concluded that the medicine was administered to some calves in herd and this animal was possibly mixed up **with the animals sampled – conclusion reached was that the animals treated were not clearly identified.** Case referred to Cross Compliance resulting in a 3% penalty being imposed. **5. Oxytetracycline @>400µg/kg.** The investigation concluded that the herd owner kept poor medical records, and that the animals treated were not clearly identified. The case was referred to Cross-Compliance on the basis that animals were not clearly identified. Case referred to Cross Compliance resulting in a 5% penalty being imposed.

Non-compliant results	Follow-up actions
2 non-compliant results	**Equine**
• *NSAID* • *Kidney* • *2 non-compliant results*	**2 target samples confirmed non-compliant for NSAIDs:** **1. Diclofenac @7.6ng/g** The investigation was conducted at the slaughter plant and concluded that the cause of the non-compliance was probable contamination by sampling officer. No further action was required. **2. Diclofenac @9.7ng/g** The investigation was conducted at the slaughter plant and concluded that the cause of the non-compliance was probable contamination by sampling officer. No further action was required.
5 non-compliant results	**Milk**
• *Anthelmintics* • *Milk* • *3 non-compliant results*	**3 target samples confirmed non-compliant for Anthelmintics:** **1. <u>Ivermectin @ 0.52 ug/k</u>** The follow up investigation concluded that the animal in question was treated in error by the farmer. No further action was required in this case. **2. <u>Levamisole @0.17µg/kg</u>** The follow up investigation concluded that weanlings on farm were dosed with levamisole however the gun used was subsequently used for other cows without being cleaned. Case referred to Cross Compliance. **3. <u>Levamisole @0.15µg/kg</u>** The follow up investigation concluded that there was no evidence of illegal use, that the herdowner record-keeping was of good quality and that no further action was required.
• *Antibiotics* • *MILK* • *2 non-compliant results*	**2 target samples confirmed non-compliant for Antibiotics:** **1. <u>Benzylpencillin @5.4µg/kg</u>** The follow up investigation concluded that there was no evidence of illegal use. Additional samples were taken on follow up which were all reported back as negative. **2. <u>Amoxicillin @18µg/kg</u>** The follow up investigation concluded that the record keeping on this holding was inadequate. Herd owner advised to put in measures to avoid any re-occurrences of these breaches in the future. Case referred to Cross Compliance resulting in a 5% penalty.

Non-compliant result	Follow-up actions
3 non-compliant results	**Ovine**
• Anthelmintics • *Liver* • *2 non-compliant results*	**2 target samples confirmed non-compliant for Anthelmintics:** **1. Ivermectin @197ug/kg** The investigation in this case was inconclusive. Risk assessment conducted by the FSAI concluded that this case did not pose any risk to consumer health. **2. Levamisole @247µg/kg** The investigation concluded that the herd owner kept inaccurate medicines records. The investigation noted that the Anthelmintics on site were not recorded by the herdowner. The herdowner was advised of their requirements to keep accurate records. The case was referred to Cross Compliance for follow up sanction. However, no penalty imposed because herdowner not in receipt of any payments.
• *Antibiotics* • *Muscle* • *1 non-compliant results*	**1 target sample confirmed non-compliant for Antibiotics:** **1. Oxytetracycline @482.5 µg/kg** The investigation concluded that the owner kept good records. The investigation noted that the animal in question was purchased 3 days before it was slaughtered/sampled. A visit to the animal's previous owner was carried out by the investigating officer. The outcome of this visit was that no further action was required in this case.
1 non-compliant result	**Poultry**
• *Anticoccidials* • *Muscle* • *1 non-compliant results*	**1 target sample confirmed non-compliant for Anticoccidials:** 1. **Cyromazine @2.7µg/kg** The investigation concluded that there was no evidence of illegal use. FSAI risk assessment concluded there was unlikely to be any risk to the consumer and consequently no further action was deemed necessary.