TECHNICAL REPORT

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Report for 2019 on the results from the monitoring of veterinary medicinal product residues and other substances in live animals and animal products

European Food Safety Authority

Abstract

The report summarises the monitoring data collected in 2019 on the presence of residues of veterinary medicinal products and certain substances in live animals and animal products in the European Union, Iceland and Norway. A total of 671,642 samples were reported to the European Commission by the 27 out of the 28 EU Member States, Iceland and Norway. They consisted of 368,594 targeted samples and 5,016 suspect samples reported under Council Directive 96/23/EC, and of 2,342 samples collected at import and 295,690 samples collected in the framework of programmes developed under the national legislation. The majority of countries fulfilled the minimum requirements for sampling frequency laid down in Council Directive 96/23/EC and in Commission Decision 97/747/EC. Overall, the percentage of non-compliant samples in 2019 (0.32%) was comparable to the previous 11 years (0.25%-0.37%). Compared to the results from 2017 and 2018, in 2019 the frequency of non-compliant results was slightly increased for antithyroid agents and steroids. For chemical elements, compared to 2018, the frequency of non-compliance in 2019 was higher, although lower compared to 2017. Slight decreases were noted in 2019, for resorcylic acid lactones, prohibited substances, antibacterials, anticoccidials, and dyes, compared to 2017 and 2018.

Key words: veterinary medicinal products, residue monitoring, Directive 96/23/EC, food safety

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Summary

The present report summarises the monitoring data from 2019 on the presence of residues of veterinary medicinal products and certain substances in live animals and animal products in the European Union (EU), Iceland and Norway.

The presence of unauthorised substances, residues of veterinary medicinal products or chemical contaminants in food may pose a risk factor for public health. The EU legislative framework defines maximum limits permitted in food and monitoring programmes for the control of the presence of these substances in the food chain. Regulation (EU) No 37/2010 establishes maximum residue limits for residues of veterinary medicinal products in food-producing animals and animal products. Maximum residue levels for pesticides in or on food and feed of plant and animal origin are laid down in Regulation (EC) No 396/2005. Commission Regulation (EC) 1881/2006 lays down the maximum levels for the presence of certain contaminants in animal products. Council Directive 96/23/EC lays down measures to monitor certain substances and residues thereof, mainly veterinary medicinal products, in live animals and animal products. Additionally, Commission Decision 97/747/EC lays down levels and frequencies of sampling for certain animal products.

In the framework of Article 31 of Regulation EC 178/2002, the European Commission (EC) requested the assistance of the European Food Safety Authority (EFSA) to collect data obtained by the Member States, Iceland and Norway in accordance with Directive 96/23/EC.

In 2019, 27 out of 28 European Union (EU) Member States, Iceland and Norway, reported in the framework of the residue monitoring the results for 671,642 samples. A total of 368,594 targeted samples and 5,016 suspect samples were reported under Council Directive 96/23/EC. Additionally, 295,690 samples collected in the framework of other programmes developed under the national legislation and 2,342 samples checked at import, were reported. The data analysis presented in this report was focused on the targeted samples reported under Council Directive 96/23/EC. Samples collected through other sampling strategies (suspect, import or 'other') do not follow a designed monitoring plan; therefore, results on those samples were reported separately from the results on targeted samples.

The majority of countries fulfilled the requirements for sampling frequency laid down in Council Directive 96/23/EC and in Commission Decision 97/747/EC.

Overall, there were 1,191 or 0.32% of non-compliant samples out of the 368,594 targeted samples in 2019.

For Group A, no non-compliant samples were reported for stilbenes and derivatives (A1). For antithyroid agents (A2), there were 0.58% non-compliant samples, all for thiouracil, and possibly due to feeding diets rich in cruciferous plants. In the group of steroids (A3), non-compliant samples (all for anabolic steroids) were found in bovines (0.51%), pigs (0.45%), poultry (0.18%) and sheep and goats (5.23%). In the group of resorcylic acid lactones (A4), 0.11% of the samples were non-compliant for zearalanone and derivatives; the non-compliant samples were found in bovines (0.13%), pigs (0.09%), sheep and goats (0.25%) and horses (2.26%). For beta-agonists (A5), there were no non-compliant samples reported. Prohibited substances (A6) were found in 0.01% of samples. Substances identified were chloramphenicol (n = 8), nitrofurans (n = 1) and nitroimidazoles (n = 7).

For Group B1 (antibacterials), 0.14% of the samples analysed under the Directive 96/23/EC monitoring were non-compliant. The highest frequency of non-compliant samples for antibacterials was found in honey (0.98%).

In Group B2 (other veterinary drugs), the highest proportion of non-compliant samples was found for non-steroidal anti-inflammatory drugs (NSAIDs) (B2e) (0.19%). For NSAIDs, the non-compliant samples were reported across the different species as follows; bovines (0.27%), poultry (0.09%), horses (0.63%), pigs (0.04%), sheep and goats (0.05%) and milk (0.36%).

Instances of non-compliance for anthelmintics (B2a) were reported in bovines (0.05%), sheep and goats (0.48%), pigs (0.09%), horses (0.8%), poultry (0.02%) and milk (0.08%).

For anticoccidials (B2b), 0.05% of the samples analysed were non-compliant and were reported across the different species as follows: sheep and goats (0.09%), pigs (0.04%), poultry (0.03%) and eggs

(0.21%). Since 2009, an important decrease has been observed in the frequency of non-compliant samples for anticoccidials (B2b) in poultry. This decrease is most likely the result of the awareness and the measures that followed the implementation of the Commission Directive 2009/8/EC setting up maximum levels of unavoidable carry-over of coccidiostats in non-target feed.

No non-compliant samples were reported for pyrethroids (B2c) or sedatives (B2d). Non-compliant samples were reported for 'other pharmacologically active substances' (B2f), in bovines (0.11%), rabbits (1.14%), poultry (0.03%) and pigs (0.02%).

In the Group B3 (other substances and environmental contaminants), the 'chemical elements' (B3c) had the highest overall percentage of non-compliant samples (4.21%), with cadmium, lead, mercury and copper being most frequently identified. Non-compliant samples were reported for organochlorine compounds (B3a) and organophosphorus compounds (B3b); 0.17% and 0.02%, respectively. For mycotoxins (B3d), non-compliant samples were reported for bovines (0.13%), pigs (0.16%), horses (1.04%) and milk (0.18%), with those identified being zearalenone and aflatoxin M_1. For dyes (B3e), non-compliant samples were reported for aquaculture (1.09%). The substances found were leuco-malachite green, crystal violet, sum of crystal violet and leucocrystal violet and sum of malachite green and leuco-malachite green. For 'other substances' (B3f), non-compliant samples were reported for honey (0.24%), eggs (0.33%), bovines (0.42%) and poultry (0.1%). The substances identified were didecyldimethylammonium chloride, fipronil and clopyralid.

Overall, the percentage of non-compliant samples in 2019 (0.30%) was comparable to the previous 11 years (0.25%-0.37%).

Compared to the results from 2017 and 2018, in 2019 the frequency of non-compliant results was slightly increased for antithyroid agents (A2) and steroids (A3). For chemical elements (including metals) (B3c), compared to 2018, the frequency on non-compliance in 2019 was higher, although lower compared to 2017. Slight decreases were noted for resorcylic acid lactones (A4) and prohibited substances (A6), antibacterials (B1), anticoccidials (B2b), and dyes (B3e), compared to 2017 and 2018 results. For the other substance groups, there were no notable variations.

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1. Introduction

1.1. Background and Terms of Reference as provided by the European Commission

1.1.1. Background

Council Directive 96/23/EC[1] requires the Member States to implement a national residue monitoring plan for specific groups of residues specified in its Annexes I and II, in accordance with the sampling strategy and sampling frequency laid down in Annexes III and IV. Member States must submit their monitoring data and resulting control measures no later than 31 March of the following year. Since 2018, these data have been collected by EFSA. Member States must also publish the outcome of the implementation of their plans.

The Commission has the obligation to make available to the public an annual report on the outcome of official controls in the Member States.

1.1.2. Terms of reference as provided by the European Commission

In the framework of Article 31 of Regulation (EC) No 178/2002, the Commission requests EFSA's assistance in the collection of the data obtained by the Member States in accordance with Directive 96/23/EC.

EFSA shall develop a data collection system allowing direct data submission by the Member States.

This data collection system shall:

- collect information on all samples analysed in the framework of residue monitoring, and explore the possibility of its extension to all analyses concerning residues of veterinary medicinal products;
- allow the Member States to provide information on follow-up actions directly linked to the respective non-compliant results;
- allow differentiated access to the data for Commission services and Member States.

The data collection system should at least allow the extraction of:

- reports on the implementation of the residue monitoring plan. Each Member State shall be able to extract a report containing only their respective national data. The structure of the report shall be agreed with the Member States and Commission services;
- an annual compilation of the monitoring data of all Member States. EFSA shall annually extract such a compilation containing data submitted by the Member States for the past year. EFSA shall use the current format and level of detail as a basis for future compilations;
- a summary overview of the actions taken by the Member States as follow-up to non-compliant results. The Commission services shall be the only party that can extract such data for all Member States. The Member States shall be able to extract their own respective data. The structure of this overview shall be agreed with the Commission services.

EFSA shall present each annual compilation in the Standing Committee of the Food Chain and Animal Health two months after the last data submission by the Member States and collect comments from the Commission and the Member States. EFSA shall send the final annual compilation taking into account the comments received to the Commission services.

1.2. Additional information

The presence of unauthorised substances, residues of veterinary medicinal products or chemical contaminants in food may pose a risk factor for public health. The EU legislative framework defines maximum limits permitted in food and monitoring programmes for the control of the presence of these substances in the food chain.

Council Directive 96/23/EC on measures to monitor certain substances and residues thereof in live animals and animal products requires Member States to adopt and implement a national residue

[1] Council Directive 96/23/EC on measures to monitor certain substances and residues thereof in live animals and animal products and repealing Directives 85/358/EEC and 86/469/EEC and Decisions 89/187/EEC and 91/664/EEC (OJ L 125, 23.5.1996, p. 10).

monitoring plan for the groups of residues detailed in its Annex I in accordance with the sampling rules referred to in Annex IV. The Directive lays down sampling levels and frequency for bovines, pigs, sheep and goats, equine animals, poultry and aquaculture, as well as the groups of substances to be monitored for each food commodity. Commission Decision 97/747/EC[2] lays down rules for levels and frequencies of sampling for milk, eggs, honey, rabbit meat and game.

National residue control plans should be targeted to take the following minimum criteria into account: species, gender, age, fattening system, all available background information and all evidence of misuse or abuse of substances. Additionally, suspect samples may also be taken as part of the residue control.

The requirements for the analytical methods to be applied in the testing of official samples and the common criteria for the interpretation of analytical results are laid down in Commission Decision 2002/657/EC[3] of 12 August 2002 implementing Council Directive 96/23/EC.

Targeted samples are taken with the aim of detecting illegal treatment or controlling compliance with the maximum levels laid down in the relevant legislation. This means that, the national plans of each reporting country, target the groups of animals (species, gender, age) where the probability of finding residues is the highest. Conversely, the objective of random sampling is to collect significant data to evaluate, for example, consumer exposure to a specific substance.

Suspect samples are taken as a consequence of i) non-compliant results on samples taken in accordance with the monitoring plan, ii) possession or presence of prohibited substances at any point during manufacture, storage, distribution or sale through the food and feed production chain, or iii) suspicion or evidence of illegal treatment or non-compliance with the withdrawal period for an authorised medicinal veterinary product.

Residues of pharmacologically active substances mean active substances, excipients or degradation products and their metabolites, which remain in food.

Unauthorised substances or products mean substances or products prohibited under European Union legislation.

Illegal treatment refers to the use of unauthorised substances or products or the use of substances or products authorised under EU legislation for purposes or under conditions other than those laid down in EU legislation or, where appropriate, in the various national legislation.

Withdrawal period represents the period necessary between the last administration of the veterinary medicinal product to animals under normal conditions of use and the production of foodstuffs from such animals, in order to ensure that such foodstuffs do not contain residues in quantities in excess of the maximum limits laid down in EU legislation.

Non-compliant result since the entry into force of Decision 2002/657/EC, the term for analytical results exceeding the permitted limits (in previous reports termed 'positives') is 'non-compliant'. The result of an analysis shall be considered non-compliant if the decision limit of the confirmatory method for the analyte is exceeded.

Non-compliant sample is a sample that has been analysed for the presence of one or more substances and failed to comply with the legal provisions for at least one substance. Thus, a sample can be non-compliant for one or more substances.

Maximum residue limit (MRL) is the maximum concentration of residue resulting from the use of a veterinary medicinal product which may be accepted by the Community to be legally permitted or recognised as acceptable in or on a food. For veterinary medicinal products, MRLs are established according to the procedures laid down in Regulation (EC) No 470/2009[4] of the European Parliament and

[2] Commission Decision 97/747/EC fixing the levels and frequencies of sampling provided for by Council Directive 96/23/EC for the monitoring of certain substances and residues thereof in certain animal products. OJ L 303, 6.11.1997, p. 12–15.

[3] 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. OJ L 221, 17.8.2002, p. 1-29.

[4] Regulation (EC) No 470/2009 of the European Parliament and of the Council of 6 May 2009 laying down Community procedures for the establishment of residue limits of pharmacologically active substances in foodstuffs of animal origin, repealing Council Regulation (EEC) No 2377/90 and amending Directive 2001/82/EC of the European Parliament and of the Council and Regulation (EC) No 726/2004 of the European Parliament and of the Council. OJ L 152, 16.6.2009, p. 11–22.

of the Council of 6 May 2009. Pharmacologically active substances and their classification regarding maximum residue limits are set out in Commission Regulation (EU) No 37/2010[5] of 22 December 2009. In addition, Commission Directive No 2009/8/EC[6] lays down maximum levels of unavoidable carry-over of coccidiostats or histomonostats in non-target feed and Commission Regulation (EC) No 124/2009[7] lays down maximum levels for the presence of coccidiostats or histomonostats in food resulting from the unavoidable carry-over of these substances in non-target feed.

For pesticides, MRLs are laid down in Regulation (EC) No 396/2005.[8] Some substances (e.g. carbamates, pyrethroids, organophosphorus compounds) are recognised both as veterinary medicinal products and pesticides and therefore they might have different MRLs in the corresponding legislation.

Maximum levels for contaminants are laid down in Commission Regulation (EC) No 1881/2006.[9] For contaminants where no EU maximum levels had been fixed at the time when data included in this report were collected, national tolerance levels were applied.

Minimum Required Performance Limits (MRPLs) - according to the Annex to Commission Decision 2002/657/EC, MRPL is the minimum content of an analyte in a sample which has to be detected and confirmed. It is intended to harmonise the analytical performance of methods for substances for which no permitted limit has been established. MRPLs for chloramphenicol, nitrofurans metabolites and medroxyprogesterone acetate were established by Commission Decision 2003/181/EC[10] and for malachite and leuco-malachite green were established by Commission Decision 2004/25/EC.[11]

1.3. Objectives

The present report summarises the monitoring data from 2019 submitted by the EU Member States, Iceland and Norway to the EFSA. Data analysis was mainly focused on data submitted under Directive 96/23/EC and aimed to provide an overview on:

- production volume and number of samples collected in each EU Member State, Iceland and Norway. These data were used to check whether the countries had fulfilled the minimum requirements on sampling frequency as stated in Directive 96/23/EC and Commission Decision 97/747/EC.
- number of samples analysed in each animal species or food commodity for substance groups and subgroups as defined in Annex I to Directive 96/23/EC (see Appendix E);
- summary of non-compliant results per animal species or food commodity and substance group;
- identification of main substances contributing to non-compliant results within a group;
- overall distribution of non-compliant samples in the substance groups.

2. Data and Methodologies

Data used in this report have been collected from EU Member States, Iceland and Norway, under Directive 96/23/EC. The samples included in the monitoring were taken from the production process of animals and primary products of animal origin (live animals, their excrements, body fluids and tissues, animal products, animal feed and drinking water). Each country assigns the coordination of the national

[5] Commission Regulation (EC) No 37/2010 of 22 December 2009 on pharmacologically active substances and their classification regarding maximum residue limits in foodstuffs of animal origin. OJ L 15, 20.1.2010, p. 1–72.

[6] Commission Directive 2009/8/EC of 10 February 2009 amending Annex I to Directive 202/32/EC of the European Parliament and of the Council as regards maximum levels of unavoidable carry-over of coccidiostats or histomonostats in non-target feed. OJ L 40, 11.2.2009, p. 19–25.

[7] Commission Regulation (EC) No 124/2009 of 10 February 2009 setting maximum levels for the presence of coccidiostats or histomonostats in food resulting from the unavoidable carry-over of these substances in non-target feed. OJ L 40, 11.2.2009, p. 7–11.

[8] Regulation (EC) 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC. OJ L 70, 16.3.2005, p. 1–16.

[9] Commission Regulation (EC) 1881/2006 setting maximum levels for certain contaminants in foodstuffs. OJ L 364, 20.12.2006, p. 5–24.

[10] Commission Decision 2003/181/EC of 13 March 2003 amending Decision 2002/657/EC as regards the setting of minimum required performance limits (MRPLs) for certain residues in food of animal origin. OJ L 71, 15.3.2003, p. 17–18.

[11] Commission Decision 2004/25/EC of 22 December 2003 amending Decision 2002/657/EC as regards the setting of minimum required performance limits (MRPLs) for certain residues in food of animal origin. OJ L 6, 10.1.2004, p. 38–39.

monitoring plan to a central public department or body which is also in charge of the data collection at national level (Directive 96/23/EC Art. 4) and reporting the results to EFSA.

The samples taken in 2019 were reported using Standard Sample Description Version 2.0 format (EFSA, 2013). This standard can be used to report the results of laboratory tests performed on samples of food, feed, animals and plants. Specific requirements for reporting the results of laboratory tests for veterinary medicinal products are described in EFSA, 2015a and EFSA, 2020. The standard allows results for all marker residues analysed for in a sample of animals or animal products to be reported. The following information is recorded:

Sampling event: one or more tissues taken from an animal at a specific location and at a specific point in time (e.g. kidney and muscle samples taken from a single pig carcass at slaughter). The sampling event requires the sampling point and sampling strategy to be recorded. The sampling strategy can be targeted, suspect, import or other.

Sample taken: The sample taken is described using EFSA FoodEx2 classification (e.g. beef liver or chicken eggs) (EFSA, 2015b). These samples are then categorised as bovines, pigs, sheep & goats, horses, poultry, rabbit, farmed game, wild game, aquaculture, milk, eggs and honey. Samples of game birds such as quail, partridge and pheasant are classified in the poultry category, unless they are reported as 'wild or gathered or hunted'; in the latter case, the samples have been classified in the wild game category. Due to this approach, which differ from the classification methodology followed by some countries, discrepancies might be noted between the National Plans submitted to the EC and the results included in this report.

The country where the sample was taken, the date of sampling and the country of origin are also recorded.

Analytical method: Both screening and confirmatory tests can be reported. CCbeta – i.e. the detection capability - is reported for screening tests and CCalpha the decision limit is reported for confirmatory tests.

Marker residue: The results for all residues, both above and below the limits of detection and covered by the scope of a laboratory method, are reported. An analysis hierarchy groups the residues according to the substance groups described in Annex I of Directive 96/23/EC.

Non-compliant results: Each result is classified as compliant or non-compliant by the reporting country. Additional information on investigation outcomes in the case of non-compliant results is also recorded, where available. In cases where the control results have been reported for the 'Multicomponent/Sum' residue definition (e.g. for the marker residue 'Sum of enrofloxacin and ciprofloxacin') in addition to the single components' results (e.g. in cases where the results were also reported for enrofloxacin and/or for ciprofloxacin), the non-compliant results at sample event level have been totalled considering only the sum-results to avoid double-counting.

The data was submitted in XML format to the EFSA data collection framework. Automatic data quality checks were performed as described in EFSA, 2020. Reporting countries were provided with the opportunity to validate their data submission by examining and confirming the content of a national report which summarises the data that had been submitted.

Production volumes: The number of animals for bovines, pigs, sheep and goats, and horses, and in tonnes for poultry, rabbit, farmed game, wild game, aquaculture, milk, eggs and honey were downloaded from the residues database of the Directorate General for Health and Food Safety (DG SANTE). This information was used to verify whether the minimum sampling frequencies had been fulfilled.

The reported data is aggregated counting the number of distinct sampling events (**samples analysed**), the number of sampling events where one or more results are non-compliant (**non-compliant samples**) and the number of non-compliant results (**non-compliant results**) by reporting country, animal category/product, marker residue and substance group. Since more than one result can be non-compliant in a sample the sum of non-compliant results might be higher than the sum of non-compliant samples. The percent non-compliant samples were calculated with non-compliant samples as the nominator and samples analysed as the denominator. Previously, in the data analysis performed up to the control activities carried out in 2016, the number of samples analysed for a specific residue was not always available from countries where there were no non-compliant results. Using the current approach,

the percent non-compliant samples may in some cases be higher, as in the previous approach samples which had not been tested for a specific residue may have been included in the denominator. The percentage of non-compliance is estimated for each substance group and within each substance group. Also, exact binomial 95% confidence intervals are produced in order to account for the uncertainty around the point estimates, considering the amount of samples that were tested for each of the substances and animal/product combinations, reflecting potential ranges in which the non-compliance level could be (see Figures 1 to 4). The resulting confidence intervals could be used to highlight the potential upper bounds for non-compliance observed.

The data analysis was performed using SAS Enterprise Guide 7.1.

The data used in the preparation of this report were extracted from the EFSA database on 09 December 2020 and are reflective of the database during this time period. The 2019 monitoring data from Malta were not submitted in time to be included in this report.

Following review of the report by the reporting countries (from 06 to 19 January 2021), comments were received from Czechia, France, Germany, Lithuania, the Netherlands and the United Kingdom, in relation to either text edit suggestions, clarifications or errors identified in data submission to EFSA. These comments are presented in Appendix F. It was not possible to update the report with additional data provided following the review, except in the case of changes to minimum sampling requirements, (see comments from Lithuania and the United Kingdom in Appendix F), where updates to sampling frequency fulfilment have been made to the text.

3. Results

The structure and data analysis performed in the present report follows that of previous reports:

- the overall assessment includes all animal/animal product categories and is presented for each main substance group;
- assessment of samples analysed, non-compliant samples and non-compliant results are presented for each animal/animal product category separately;
- suspect samples are evaluated separately from the targeted samples;
- results which were not reported under the Council Directive 96/23/EC (import and 'others') are not included in the overall assessment but treated separately;
- non-compliant results for the individual substances in each animal/animal product category are listed in Appendix A (targeted samples), Appendix B (suspect samples), Appendix C (import samples) and Appendix D ('other' samples).

3.1. Overall assessment

The aim of this assessment is to give an overview of the total number of samples analysed for the individual substance groups and to summarise the non-compliant samples for the major substance overall for the EU Member States, Iceland and Norway. Further details on the non-compliant samples found in each animal/product category are presented in Sections 3.2 to 3.13.

In 2019, 671,642 samples were reported by 27 out of 28 EU Member States[12], Iceland and Norway, for analysis of substances and residues covered by Directive 96/23/EC. Out of this, 368,594 were targeted samples collected in conformity with the specifications of the National Residue Control Plans (NRCPs) for 2019. Additionally, 5,016 suspect samples were reported as follow-up of non-compliant targeted samples or suspicion of illegal treatment or non-compliance with the withdrawal period. Apart from the data submitted in accordance to NRCPs, Member States reported in total 295,690 samples collected in the framework of other programmes developed under the national legislation. A relatively limited number of data were reported for samples checked at import (n = 2,342). This is because the control of samples at import is more linked to the third country monitoring than to the residue monitoring in

[12] The 2019 monitoring data from Malta were not submitted in time to be included in this report.

EU; thus Member States report those results to the EC (using other tools e.g. the Trade Control and Expert System (TRACES) and the Rapid Alert System for Food and Feed (RASFF)).

Of the total targeted samples, 56% were analysed for substances having an anabolic effect and unauthorised substances (group A) and 66% for veterinary drugs and contaminants (group B)[13]. Of the 368,594 targeted samples, 1,191 were non-compliant (0.32%) (1,336 non-compliant results). The percentage of non-compliant samples calculated from the total number of samples analysed for substances in that category was: 0.16% for substances having an anabolic effect and unauthorised substances (A), 0.14% for antibacterials (B1), 0.1% for the 'other veterinary drugs' (B2) and 1.27% for 'other substances and environmental contaminants' (B3) (Table 1, Figure 1).

Table 1: Number of targeted samples analysed, non-compliant samples and non-compliant results in all species and product categories

Substance group[(a)]	Samples analysed[(b)]	% samples analysed	Non-compliant samples[(c)]	% Non-compliant samples	Non-compliant results[(d)]
A	206,606	56.1	341	0.17	370
A1	25,909	7	0	0	0
A2	9,908	2.7	57	0.58	57
A3	44,297	12	244	0.55	261
A4	22,422	6.1	25	0.11	36
A5	36,698	10	0	0	0
A6	106,882	29	15	0.01	16
B	242,437	65.8	860	0.35	966
B1	104,367	28.3	150	0.14	185
B2	121,965	33.1	121	0.1	127
B2a	31,463	8.5	36	0.11	39
B2b	38,793	10.5	21	0.05	22
B2c	13,236	3.6	0	0	0
B2d	9,718	2.6	0	0	0
B2e	24,387	6.6	46	0.19	47
B2f	31,725	8.6	18	0.06	19
B3	46,490	12.6	592	1.27	654
B3a	15,248	4.1	26	0.17	32
B3b	11,839	3.2	2	0.02	2
B3c	12,448	3.4	524	4.21	579
B3d	10,613	2.9	14	0.13	14
B3e	1,478	0.4	16	1.08	17
B3f	5,659	1.5	10	0.18	10
Total	**368,594**	**100**	**1,191**	**0.32**	**1,336**

(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

[13] Some samples were analysed for substances in both groups therefore the sum of percentages is higher than 100.

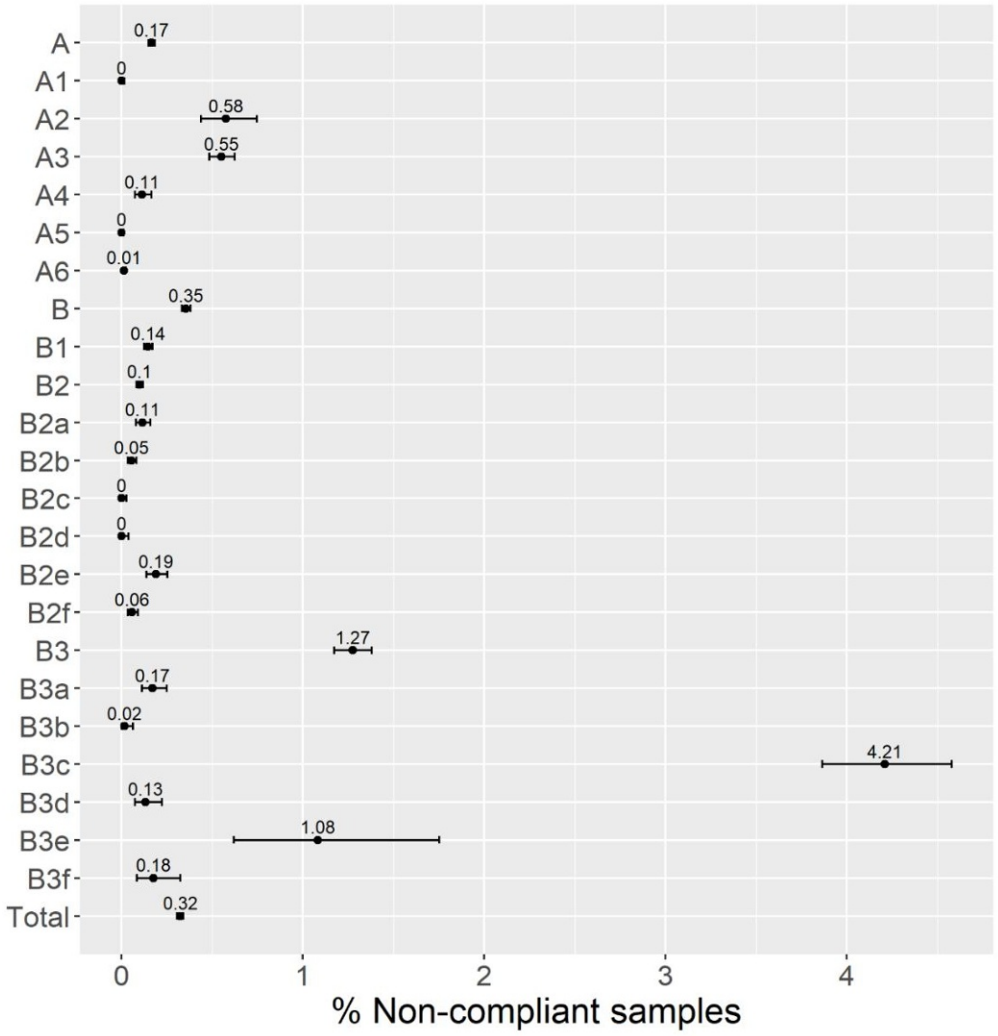


Figure 1: Percentage of non-compliant samples (with confidence intervals) in each substance group

3.1.1. Hormones

Directive 96/22/EC[14] prohibits the use of hormones in food producing animals except for well-defined therapeutic and zootechnical purposes and under strict veterinary control.

This group includes also synthetic, hormonally active substances such as stilbenes and their derivatives (A1), antithyroid agents (A2) and steroids (A3). Resorcylic acid lactones (A4) are hormonally active as well and potentially used for growth promoting purposes, but their presence in animals and products of animal origin could also be linked to the ingestion of feed contaminated with fungi belonging to the genus *Fusarium*.

Of all the targeted samples analysed for the category 'hormones' in all animal/product categories (102,536 samples) there were 326 non-compliant samples (0.31%) (354 non-compliant results).

The number of targeted samples analysed for stilbenes and derivatives (A1) in all animal/product categories together, was 25,909 and no non-compliant samples were reported for this group.

Antithyroid agents (A2) were analysed in 9,908 targeted samples of which 57 samples were non-compliant (0.58%) (57 non-compliant results). All non-compliant samples in the group A2 were for thiouracil and were found in bovines (n = 50; 1.06%), pigs (n = 5; 0.13%) and sheep/goats (n = 2; 0.74%). Residues of thiouracil resulted most probably from feeding diets rich in cruciferous plants. Pinel

[14] Council Directive 96/22/EC of 29 April 1996 concerning the prohibition on the use in stockfarming of certain substances having a hormonal or thyrostatic action and of ß-agonists, and repealing Directives 81/602/EEC, 88/146/EEC and 88/299/EEC. OJ L 125, 23.5.1996, p. 3–9.

et al. (2006) demonstrated that urinary excretion of thiouracil in adult bovines fed with cruciferous plants can give erroneous indications of the possible illegal use of thyrostats in meat production animals.

For steroids (A3), of the 44,297 samples analysed in all animal species and product categories, 244 samples were non-compliant (0.55%) (261 non-compliant results). The non-compliant samples were found in bovines (n = 130; 0.51%), pigs (n = 49; 0.45%), poultry (n = 11, 0.18%) and sheep and goats (n = 54; 5.23%). Some Member States have indicated that residue findings on steroid hormones may not be attributable to illegal treatment, as the source was most likely the endogenous production, as reported in previous studies (Clouet et al., 1997; Samuels et al., 1998).

For resorcylic acid lactones (A4), of 22,422 samples analysed in all animal species and product categories, 25 were found non-compliant (0.11%) (36 non-compliant results), for zearalanone and derivatives. The non-compliant samples were found for bovines (n = 16; 0.13%), pigs (n = 5; 0.09%), sheep and goats (n = 1; 0.25%) and horses (n = 3; 2.26%).

3.1.2. Beta-agonists

Beta-agonists (A5) are used therapeutically in human and animal medicine for specific effects on smooth muscle. When misused at higher doses, they can also act as growth promoters by stimulating the increase of the muscular mass and reducing the adipose tissue. Directive 96/22/EC prohibits the use of beta-agonists in food producing animals except for well-defined therapeutic purposes and under strict veterinary control. In 2019, 36,698 targeted samples were analysed for beta-agonists, with no non-compliant samples reported.

3.1.3. Prohibited substances

This group (A6) includes substances listed in Commission Regulation (EU) No 37/2010 under prohibited substances for which MRLs cannot be established. These substances are not allowed to be administered to food-producing animals. Examples of substances belonging to this group are chloramphenicol, nitrofurans and nitroimidazoles.

In the framework of the 2019 residue monitoring, 106,882 targeted samples were analysed for prohibited substances and 15 samples (0.01%) were non-compliant (16 non-compliant results). Altogether, there were 8 non-compliant results for chloramphenicol, 1 for nitrofurans and 7 for nitroimidazoles (Table 2).

The distribution of the non-compliant results, by individual substance and country, are presented in Appendix A.

Table 2: Overview on the non-compliant results for prohibited substances

Substance	Species/Product	Number of non-compliant results	Countries reporting non-compliant results
Chloramphenicol			
Chloramphenicol	Bovines	1	Bulgaria
	Milk	3	Italy, Latvia, Poland
	Pigs	1	Spain
	Poultry	3	France
Nitroimidazoles			
Dimetridazole	Aquaculture	1	Denmark
	Bovines	1	Slovakia
Hydroxymetronidazol (MNZOH)	Pigs	1	Spain
Metronidazole	Honey	2	Poland
	Pigs	2	France, Spain
Nitrofurans			
SEM (semicarbazide)	Bovines	1	Ireland

3.1.4. Antibacterials

The group of antibacterials (B1) includes antibiotics (e.g. beta-lactams, tetracyclines, macrolides, aminoglycosides) but also sulphonamides and quinolones.

The total number of analyses carried out in 2019 for antimicrobials in targeted samples was 104,367 of which 150 (0.14%) were non-compliant (185 non-compliant results) (Table 1). The highest frequency of non-compliant samples for antibacterials was observed in honey (0.98%) (Figure 2).

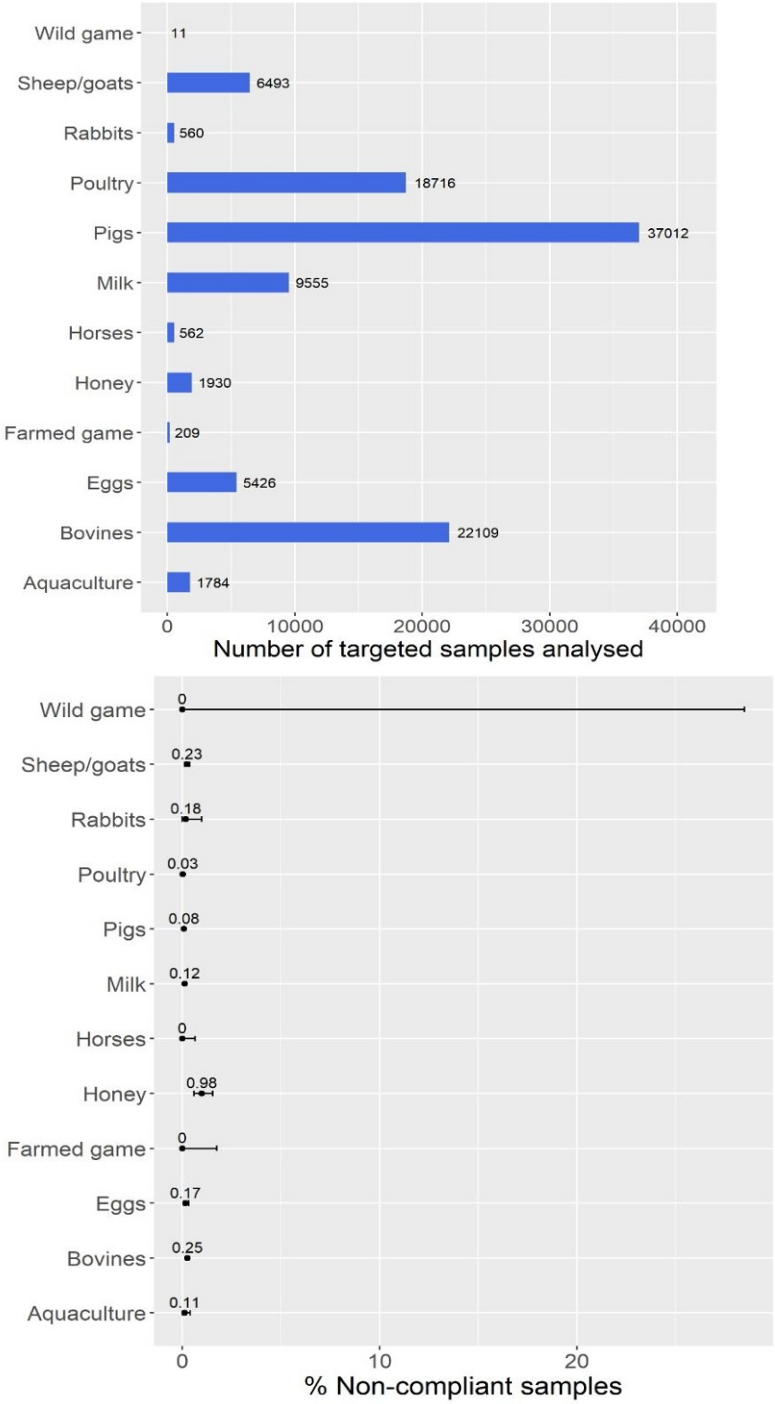


Figure 2: Number of targeted samples analysed and percentage of non-compliant samples (with confidence intervals) for antibacterials (B1) in animal/product categories

More details on the number of samples analysed and the non-compliant samples found in each category are given in Sections 3.2 to 3.13 and in Appendix A.

3.1.5. Other veterinary drugs

The group 'other veterinary drugs' (B2) includes a variety of veterinary medicinal products classified according to their pharmacological action in:

- anthelmintics (B2a);
- anticoccidials (B2b);
- carbamates and pyrethroids (B2c);
- sedatives (B2d);
- non-steroidal anti-inflammatory drugs (NSAIDs) (B2e), and
- other pharmacologically active substances (B2f).

In the 2019 monitoring, 121,965 targeted samples were analysed for substances in the group B2 and 121 samples (0.1%) were non-compliant. The total number of targeted samples analysed for each subgroup in the group B2 and the percentage of non-compliant samples is presented in Figure 3. It is important to note that the frequency of analyses for substances in the B2 subgroups follows a different pattern in each species, depending on their animal specific therapeutic application. An overview of the number of samples analysed and the percentage of non-compliant samples for the B2 subgroups in the specific animal/product category is presented in Table 3.

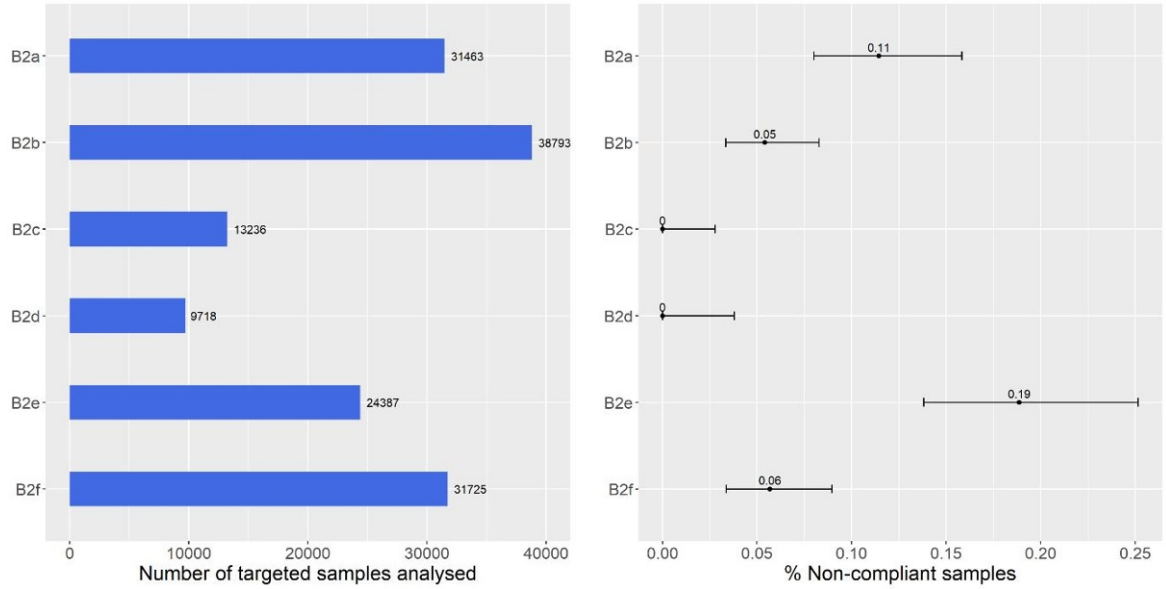


Figure 3: Number of targeted samples analysed within the group 'other veterinary drugs' (B2) and the percentage of non-compliant samples (with confidence intervals)

Table 3: Number of targeted samples analysed for B2 subgroups in different animal categories and the frequency of non-compliant samples (percentage from the total number of samples analysed in each animal category)

Group	B2a % NC	B2a Samples	B2b % NC	B2b Samples	B2c % NC	B2c Samples	B2d % NC	B2d Samples	B2e % NC	B2e samples	B2f % NC	B2f samples
Aquaculture	0	741	0	412	0	422	0	3	0	8	0	451
Bovines	0.05	6,592	0	4,229	0	2,167	0	1,798	0.27	6,198	0.11	12,877
Eggs	0	1,157	0.21	5,587	0	1,058	0	48	NA	NA	0	1,070
Farmed game	0	207	0	109	0	77	0	5	0	38	0	50
Honey	0	384	0	153	0	1,077	0	2	NA	NA	0	808
Horses	0.8	251	0	145	0	178	0	209	0.63	637	0	279
Milk	0.08	5,985	0	1,646	0	394	0	77	0.36	5,335	0	926
Pigs	0.09	8,109	0.04	10,093	0	2,782	0	7,007	0.04	7,935	0.02	10,168
Poultry	0.02	4,007	0.03	15,038	0	2,537	0	119	0.09	2,165	0.03	3,952
Rabbits	0	130	0	245	0	70	0	2	0	74	1.14	88
Sheep/goats	0.48	3,751	0.09	1,117	0	2,448	0	448	0.05	1,991	0	1,053
Wild game	0	149	0	19	0	26	NA	NA	0	6	0	3

%NC: Percentage of non-compliant samples. NA: Not Applicable.

Regarding the number of samples analysed in each B2 subgroup, the highest proportion of non-compliant samples (0.19%) was observed for non-steroidal anti-inflammatory drugs (B2e), non-compliant samples were reported in bovines (0.27%), poultry (0.09%), horses (0.63%), pigs (0.04%), sheep and goats (0.05%) and milk (0.36%).

For anthelmintics (B2a), non-compliant samples were reported in bovines (0.05%), poultry (0.02%), sheep and goats (0.48%), pigs (0.09%), horses (0.8%) and milk (0.08%).

Non-compliant samples for anticoccidials (B2b) were reported in pigs (0.04%), poultry (0.03%), sheep and goats (0.09%) and eggs (0.21%).

No non-compliant samples were reported for pyrethroids (B2c) and sedatives (B2d).

For 'other pharmacologically active substances' (B2f), non-compliant samples were observed for bovines (0.11%), rabbits (1.14), poultry (0.03) and pigs (0.02): 18 non-compliant results were reported for corticosteroids by seven countries and the substances identified were dexamethasone, prednisolone, prednisone and 17-beta-boldenone glucuronide (Table 4). It is important to note that studies suggest that prednisolone could be produced endogenously by animals, especially by those found in a state of stress (Pompa et al., 2011; Fidani et al., 2012).

Table 4: Overview on corticosteroids non-compliant results (B2f)

Substance	Species/Product	Number of non-compliant results	Country reporting non-compliant results
17-Beta-Boldenone Glucuronide	Pigs	1	Netherlands
Dexamethasone	Bovines	13	France, Germany, Ireland, Italy, Netherlands, Poland, Spain
	Rabbits	1	Spain
Prednisolone	Bovines	1	Spain
	Rabbits	1	Spain
Prednisone	Pigs	1	Ireland

3.1.6. Other substances and environmental contaminants

The group 'other substances and environmental contaminants' (B3) includes the following subcategories:

- organochlorine compounds including PCBs (B3a);
- organophosphorus compounds (B3b);

- chemical elements (B3c);
- mycotoxins (B3d);
- dyes (B3e), and
- others (B3f).

In the 2019, 46,490 samples were analysed for substances in group B3 of which 592 samples were non-compliant (1.27%) (654 non-compliant results). The total number of targeted samples analysed for each subgroup in group B3 and the percentage of non-compliant samples is presented in Figure 4. Similar to group B2, the frequency of analyses for certain B3 subgroups is highly variable with the targeted animal/product category. While chemical contaminants (B3c) are analysed in all animal/product categories, dyes (B3e) are analysed only in aquaculture products. An overview of the number of samples analysed and the percentage of non-compliant samples for the B3 subgroups in the specific animal group and animal product category is presented in Table 5.

The highest percentage of non-compliant samples was found in almost all species, in the subgroup B3c 'chemical elements' (4.21%). Similar to previous years, cadmium, lead, mercury and copper were the chemical elements frequently identified as responsible for non-compliance.

Instances of non-compliance for organochlorine compounds (B3a) and organophosphorus compounds (B3b) were 0.17% and 0.02%, respectively.

There were non-compliant samples reported in subgroup B3d mycotoxins (n = 14; 0.13%), for bovines (n = 5; 0.13%), pigs (n = 5; 0.16%), horses (n = 1; 1.04%) and milk (n = 3; 0.18%).Those identified being zearalenone and aflatoxin M_1.

Dyes (B3e) were reported in aquaculture (16 non-compliant samples; 1.09%). Substances found were leuco-malachite green, crystal violet, sum of crystal violet and leucocrystal violet and sum of malachite green and leuco-malachite green.

There were non-compliant samples reported in subgroup B3f 'others' (n = 10; 0.18%), for bovines (n =3; 0.42%), poultry (n = 1; 0.1%) honey (n = 2; 0.24%) and eggs (n = 4; 0.33%). Those identified being didecyldimethylammonium chloride, fipronil, clopyralid.

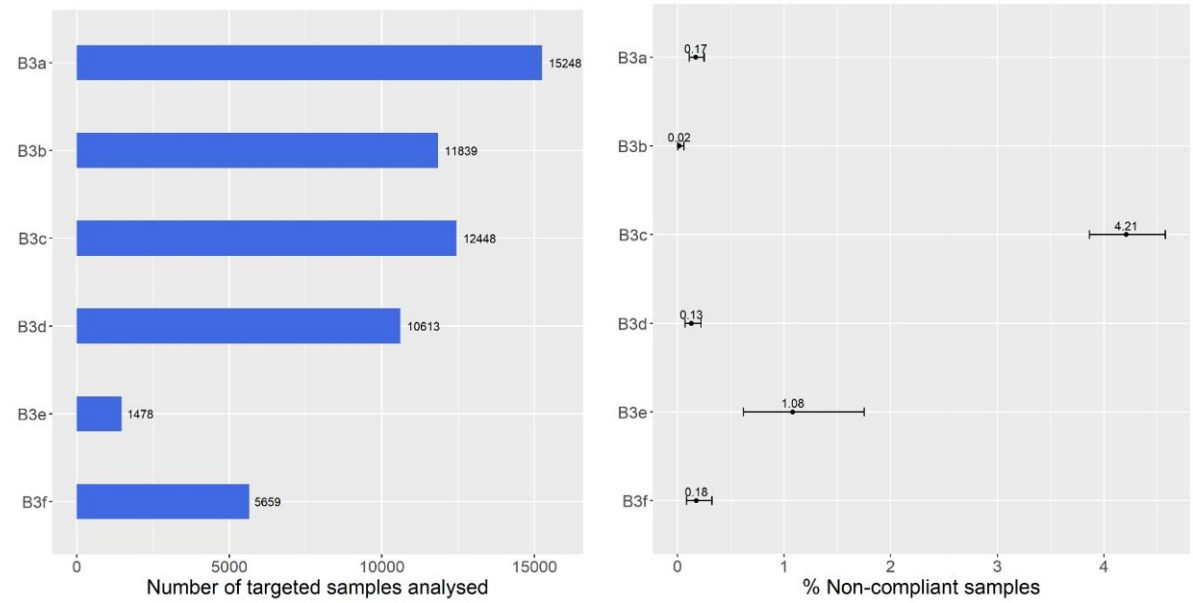


Figure 4: Number of samples analysed within the group 'other substances and environmental contaminants' (B3) and the percentage of non-compliant samples (with confidence intervals)

Table 5: Number of targeted samples analysed for B3 subgroups in different animal and product categories and the frequency of non-compliant samples (percentage from the total number of samples analysed in each animal/product category)

Group	B3a % NC	B3a samples	B3b % NC	B3b samples	B3c % NC	B3c samples	B3d % NC	B3d samples	B3e % NC	B3e samples	B3f % NC	B3f samples
Aquaculture	0	575	0	236	0	521	0	178	1.09	1,463	0	153
Bovines	0.04	2,476	0	1,974	7.13	1,977	0.13	3,721	NA	NA	0.42	709
Eggs	0.23	1,707	0	998	0	125	0	4	NA	NA	0.33	1,198
Farmed game	2.22	135	0	57	16.46	316	0	21	NA	NA	0	33
Honey	0.1	1,020	0.21	973	10.22	460	0	3	NA	NA	0.24	826
Horses	1.13	177	0	127	2.76	471	1.04	96	NA	NA	0	67
Milk	0.08	1,286	0	1,697	0	597	0.18	1,682	0	15	0	373
Pigs	0.02	4,150	0	3,184	3.13	3614	0.16	3,131	NA	NA	0	1,034
Poultry	0.04	2,736	0	1,372	0.19	1,578	0	1,487	NA	NA	0.1	982
Rabbits	0	70	0	37	0	70	0	15	NA	NA	0	15
Sheep/goats	0.13	761	0	1,167	7.28	536	0	271	NA	NA	0	243
Wild game	7.1	155	0	17	5.31	2,183	0	4	NA	NA	0	26

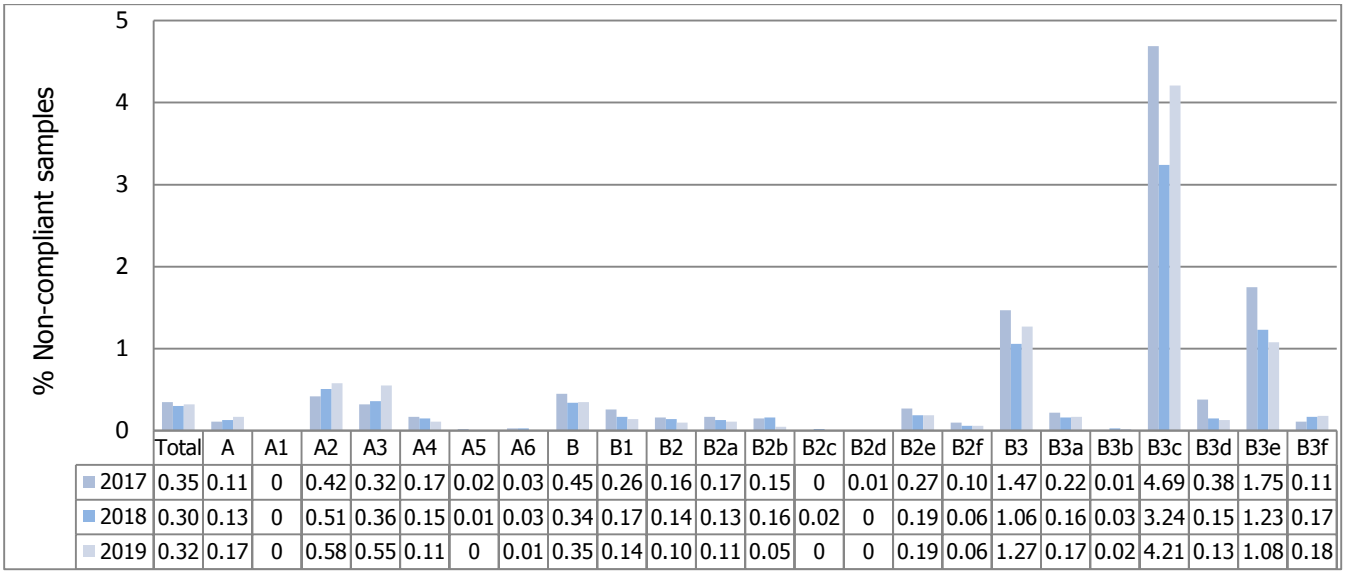
%NC: percentage of non-compliant samples; NA: not applicable.

More details on the number of samples analysed and non-compliant samples in each category are given in the Sections 3.2 to 3.13 and in Appendix A.

3.1.7. Multi-year comparison

As this is the third year that the monitoring data were reported to EFSA using the SSD (Version 2.0) format (see Section 2 on Data and Methodologies), comparisons have been performed only between the results from 2017, 2018 and 2019. Detailed comparisons with those from earlier years have not been performed due to differences in the reporting and calculation methods. It is important to note that this analysis is based on data that were partially aggregated. In addition, the number of samples analysed for each substance and animal/product category was not necessarily the same over the 3 year period. Furthermore, this the first year that the results data from Iceland and Norway have been included in the annual report. In addition, the 2019 data from Malta were not submitted in time to be included in this report. Therefore, this analysis should be regarded as having a certain degree of uncertainty.

The purpose of this exercise was to check whether major variations of the proportion of non-compliant samples occurred at substance group level overall. When such variations are noted, a more in-depth analysis of the monitoring plans per species, country and pattern of substances analysed has to be carried out in order to identify the trigger for the differences observed and in consequence to take corrective measures.



	Total	A	A1	A2	A3	A4	A5	A6	B	B1	B2	B2a	B2b	B2c	B2d	B2e	B2f	B3	B3a	B3b	B3c	B3d	B3e	B3f
2017	0.35	0.11	0	0.42	0.32	0.17	0.02	0.03	0.45	0.26	0.16	0.17	0.15	0	0.01	0.27	0.10	1.47	0.22	0.01	4.69	0.38	1.75	0.11
2018	0.30	0.13	0	0.51	0.36	0.15	0.01	0.03	0.34	0.17	0.14	0.13	0.16	0.02	0	0.19	0.06	1.06	0.16	0.03	3.24	0.15	1.23	0.17
2019	0.32	0.17	0	0.58	0.55	0.11	0	0.01	0.35	0.14	0.10	0.11	0.05	0	0	0.19	0.06	1.27	0.17	0.02	4.21	0.13	1.08	0.18

Figure 5: Percentage of non-compliant samples reported in relation to the total number of targeted samples analysed for the respective group in 2017 - 2019 (substance groups are detailed in Appendix E)

Overall, the percentage of non-compliant samples in 2019 (0.30%) was comparable to the previous 11 years (0.25%-0.37%).

Compared to the results from 2017 and 2018, in 2019 the frequency of non-compliant results was slightly increased for antithyroid agents (A2), steroids (A3). For chemical elements (including metals) (B3c), compared to 2018, the frequency of non-compliance in 2019 was higher, although lower compared to 2017. Slight decreases were noted in 2019, for resorcylic acid lactones (A4), prohibited substances (A6), antibacterials (B1), anticoccidials (B2b), and dyes (B3e), compared to 2017 and 2018. For the other substance groups, there were no notable variations (see Figure 5).

3.2. Bovines

Council Directive 96/23/EC requires that the minimum number of bovine animals to be controlled each year for all kinds of residues and substances is 0.4% of the bovine animals slaughtered the previous year. Overall, the minimum requirements for the number of samples were fulfilled in 2019 (Table 6). Bulgaria, France, Greece, Poland, Portugal and Spain did not achieve the minimum sampling frequency for bovines (Table 7).

Table 6: Production of bovines and number of targeted samples over 2007–2019

Year	Production (animals)	Targeted samples	% Animals tested[a]	Minimum 96/23/EC
2007 (EU 27)	27,087,367	129,201	0.47	
2008 (EU 27)	26,898,702	122,648	0.48	
2009 (EU 27)	26,677,946	127,897	0.48	
2010 (EU 27)	26,267,917	128,130	0.48	
2011 (EU 27)	26,566,593	126,540	0.48	
2012 (EU 27)	25,759,645	130,554	0.49	
2013 (EU 28)	25,481,237	126,307	0.49	0.4
2014 (EU 28)	25,315,582	125,552	0.49	
2015 (EU 28)	25,463,018	127,187	0.50	
2016 (MS 27[b])	21,414,980	109,881	0.53	
2016 (EU 28)	*26,099,292*			
2017 (EU 28)	26,394,612	102,647	0.39[c]	
2018 (EU 28)	26,688,499	100,784	0.38	
2018 (EU 27[d], IS, NO)	*26,814,009*			
2019 (EU 27[d], IS, NO)	26,913,406	106,651	0.4	

IS: Iceland; NO: Norway
(a): in relation to the production of the previous year;
(b): Data from France were not available for inclusion in the 2016 results report.
(c): calculated based on 2016 production data from 28 Member States (MS);
(d): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 7: Production volume and number of targeted samples collected in bovines

Country[a]	Production data[b] (animals)	Number of samples[b] 2019	Animals tested (%)
Austria	639,077	3,797	0.59
Belgium	922,797	5,661	0.61
Bulgaria	34,815	123	0.35
Croatia	184,675	800	0.43
Cyprus	16,856	121	0.72
Czechia	249,351	1,382	0.55
Denmark	492,605	2,005	0.41
Estonia	35,408	175	0.49
Finland	273,436	1,162	0.42
France	4,670,298	12,507	0.27
Germany	3,524,588	14,289	0.41
Greece	136,036	490	0.36
Hungary	109,443	436	0.40
Iceland	22,807	99	0.43
Ireland	1,884,729	7,626	0.40
Italy	2,617,124	13,356	0.51
Latvia	86,117	357	0.41
Lithuania	157,289	628	0.40
Luxembourg	26,893	110	0.41
Netherlands	2,159,873	9,129	0.42
Norway	298,013	1,435	0.48
Poland	1,968,010	6,565	0.33
Portugal	389,029	1,054	0.27
Romania	237,325	1,095	0.46

Slovakia	28,785	349	1.21
Slovenia	115,597	502	0.43
Spain	2,391,003	8,817	0.37
Sweden	403,030	1,670	0.41
United Kingdom	2,739,000	10,911	0.40
Total	**26,814,009**	**106,651**	**0.4**

(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in bovines are presented in Table 8. Of the 106,651 samples analysed in this category, 433 (0.41%) were non-compliant (473 non-compliant results). The non-compliant samples were reported by 21 countries.

Table 8: Number of samples analysed, non-compliant samples and non-compliant results in bovines

Substance group[a]	Samples analysed[b]	% Samples analysed	Non-compliant samples[c]	% Non-compliant samples	Non-compliant results[d]
A	69,772	65.4	199	0.29	216
A1	13,454	12.6	0	0	0
A2	4,728	4.4	50	1.06	50
A3	25,710	24.1	130	0.51	139
A4	11,938	11.2	16	0.13	24
A5	18,173	17	0	0	0
A6	20,050	18.8	3	0.01	3
B	55,579	52.1	238	0.43	257
B1	22,109	20.7	56	0.25	70
B2	29,688	27.8	34	0.11	35
B2a	6,592	6.2	3	0.05	3
B2b	4,229	4	0	0	0
B2c	2,167	2	0	0	0
B2d	1,798	1.7	0	0	0
B2e	6,198	5.8	17	0.27	18
B2f	12,877	12.1	14	0.11	14
B3	9,348	8.8	150	1.6	152
B3a	2,476	2.3	1	0.04	1
B3b	1,974	1.9	0	0	0
B3c	1,977	1.9	141	7.13	143
B3d	3,721	3.5	5	0.13	5
B3e	NA	NA	NA	NA	NA
B3f	709	0.7	3	0.42	3
Total	**106,651**	**100**	**433**	**0.41**	**473**

NA: Not Applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

There were no non-compliant samples reported in group A1, A5, B2b-d and B3b.

In the group A2, six countries reported a total of 50 non-compliant samples (50 non-compliant results), all for thiouracil.

In the group A3, a total of 130 non-compliant samples (139 non-compliant results) were reported. Among the substances identified, the highest number of non-compliant results were noted for Progesterone (n =57).

In Group A4, there were 16 non-compliant samples and 24 results, reported for Beta and Alpha Zearalanol, by three countries.

For antibacterials (B1), 12 countries reported a total of 56 non-compliant samples (70 non-compliant results).

In Group B2, there were 3 non-compliant samples and results for anthelmintics (B2a), 17 non-compliant samples (18 non-compliant results) were reported by seven countries for non-steroidal anti-inflammatory drugs (NSAIDs) (B2e), and 14 non-compliant samples and results were reported by seven countries for steroidal anti-inflammatory drugs (B2f). Dexamethasone was the most frequently reported substance in B2f (n = 13 non-compliant results).

In the group B3, there were 141 non-compliant samples and 143 results for chemical elements (including heavy metals) (B3c), 5 non-compliant samples and results for mycotoxins (B3d) (for Zearalenone), 3 samples and results for 'Others' (B3f) (didecyldimethylammonium chloride) and 1 sample and result for Organochlorine compounds, including PCBs (B3a)

A detailed presentation on the specific substances identified and the number of non-compliant results reported by each country is given in Appendix A.

3.3. Pigs

Council Directive 96/23/EC requires that the minimum number of pigs that have to be controlled each year for all kinds of residues and substances is 0.05% of the pigs slaughtered the previous year. Overall, the minimum requirements for the number of samples to be taken were fulfilled in 2019 (Table 9). Belgium, Bulgaria, France, Hungary, Poland, Portugal and Spain did not achieve the minimum sampling frequency for pigs (Table 10).

Table 9: Production of pigs and number of targeted samples over 2007–2019

Year	Production (animals)	Targeted samples	% Animals tested[a]	Minimum 96/23/EC
2007 (EU 27)	241,501,638	144,378	0.06	
2008 (EU 27)	244,965,996	137,281	0.06	
2009 (EU 27)	242,260,526	138,137	0.06	
2010 (EU 27)	245,149,546	136,792	0.06	
2011 (EU 27)	249,082,904	133,255	0.05	
2012 (EU 27)	246,691,569	135,745	0.05	
2013 (EU 28)	243,680,241	131,565	0.05	0.05
2014 (EU 28)	244,508,972	135,129	0.06	
2015 (EU 28)	251,197,203	130,012	0.05	
2016 (MS 27[b])	229,09 0,419	121,953	0.05	
2016 (EU 28)	*252,921,158*			
2017 (EU 28)	252,107,558	125,810	0.05[c]	
2018 (EU 28)	260,530,951	120,434	0.05	
2018 (EU 27[d], IS, NO)	*257,079,739*			
2019 (EU 27[d], IS, NO)	256,267,449	120,944	0.05	

IS: Iceland; NO: Norway.
(a): in relation to the production of the previous year;
(b): Data from France were not available for inclusion in the 2016 results report.
(c): calculated based on 2016 production data from 28 Member States (MS);
(d): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 10: Production volume and number of targeted samples collected in pigs

Country[a]	Production data[b] (animals)	Number of samples 2019	Animals tested (%)
Austria	5,123,942	3,196	0.06
Belgium	10,978,554	4,716	0.04
Bulgaria	1,229,282	551	0.04
Croatia	1,028,506	613	0.06
Cyprus	556,247	321	0.06
Czechia	2,297,031	1,721	0.07
Denmark	18,108,470	9,093	0.05
Estonia	514,861	506	0.1
Finland	1,965,948	1,415	0.07
France	23,642,695	7,307	0.03
Germany	57,252,820	29,283	0.05
Greece	1,180,584	540	0.05
Hungary	4,705,321	1,674	0.04
Iceland	81,442	47	0.06
Ireland	3,451,212	2,035	0.06
Italy	11,009,119	5,888	0.05
Latvia	488,329	238	0.05
Lithuania	790,870	399	0.05
Luxembourg	156,111	92	0.06
Netherlands	16,239,199	8,372	0.05
Norway	1,648,097	1,151	0.07
Poland	22,724,461	8,400	0.04
Portugal	5,661,225	2,481	0.04
Romania	4,316,259	2,195	0.05
Slovakia	489,609	393	0.08
Slovenia	245,598	156	0.06
Spain	48,344,657	21,674	0.04
Sweden	2,576,290	1,274	0.05
United Kingdom	10,273,000	5,213	0.05
Total	**257,079,739**	**120,944**	**0.05**

(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in pigs are presented in Table 11. Of the 120,944 samples analysed in this category, 222 (0.18%) were non-compliant (262 non-compliant results). The non-compliant samples were reported by 16 countries.

Table 11: Number of targeted samples analysed, non-compliant samples and non-compliant results in pigs

Substance group[(a)]	Samples analysed[(b)]	% Samples analysed	Non-compliant samples[(c)]	% Non-compliant samples	Non-compliant results[(d)]
A	70,801	58.5	62	0.09	63
A1	7,426	6.1	0	0	0
A2	3,707	3.1	5	0.13	5
A3	10,830	9	49	0.45	49
A4	5,778	4.8	5	0.09	5
A5	10,708	8.9	0	0	0
A6	41,458	34.3	3	0.01	4
B	82,360	68.1	166	0.2	199
B1	37,012	30.6	31	0.08	35
B2	40,831	33.8	16	0.04	18
B2a	8,109	6.7	7	0.09	9
B2b	10,093	8.3	4	0.04	4
B2c	2,782	2.3	0	0	0
B2d	7,007	5.8	0	0	0
B2e	7,935	6.6	3	0.04	3
B2f	10,168	8.4	2	0.02	2
B3	12,365	10.2	119	0.96	146
B3a	4,150	3.4	1	0.02	1
B3b	3,184	2.6	0	0	0
B3c	3,614	3	113	3.13	140
B3d	3,131	2.6	5	0.16	5
B3e	NA	NA	NA	NA	NA
B3f	1,034	0.9	0	0	0
Total	**120,944**	**100**	**222**	**0.18**	**262**

NA: Not Applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

There were no non-compliant samples reported in group A1, A5, B2c, B2d, B3b and B3f.

In group A, five non-compliant samples and results were reported for antithyroid agents (A2) for thiouracil, by four countries. In the group A349 non-compliant samples and results were reported for steroids (A3) for Boldenone, Normethandrolone and Nandrolone, by 5 countries. In the group A4, five non-compliant samples and results were reported for alpha-zearalenol, by two countries. In Group A6, two countries reported three non-compliant samples and four non-compliant results; three results for metronidazole/hydroxymetronidazol and one for chloramphenicol).

For antibacterials (B1), 11 countries reported a total of 31 non-compliant samples (35 non-compliant results).

In Group B2, there were seven non-compliant samples (nine non-compliant results) for anthelmintics (B2a), four non-compliant samples and results for anticoccidials (B2b), three non-compliant samples and results for non-steroidal anti-inflammatory drugs (NSAIDs) (B2e) and two for the subgroup 'other pharmacologically active substances' (B2f).

In the group B3, there were 113 non-compliant samples (140 non-compliant results) for chemical elements (B3c), reported by four countries. In addition, non-compliant results were reported by two countries for B3d (mycotoxins; n = 5) and one non-compliant sample and result was reported for Organochlorine compounds, including PCBs (B3a).

The specific substances identified and the number of non-compliant results reported by each country, are presented in Appendix A.

3.4. Sheep and goats

Council Directive 96/23/EC requires that the minimum number of sheep and goats that have to be controlled each year for all kinds of residues and substances is 0.05% of the sheep and goats slaughtered the previous year. The minimum requirements for the number of samples were fulfilled in in 2019, overall (Table 12). France and Latvia did not achieve the minimum sampling frequency for sheep and goats (Table 13).

Table 12: Production of sheep and goats and number of targeted samples over 2007–2019

Year	Production (animals)	Targeted samples	% Animals tested[a]	Minimum 96/23/EC
2007 (EU 27)	40,935,665	26,599	0.06	
2008 (EU 27)	41,435,268	24,320	0.06	
2009 (EU 27)	39,584,954	26,265	0.06	
2010 (EU 27)	36,121,283	23,894	0.06	
2011 (EU 27)	37,217,484	23,112	0.06	
2012 (EU 27)	36,558,080	23,441	0.06	
2013 (EU 28)	35,831,474	22,761	0.06	0.05
2014 (EU 28)	36,188,624	26,218	0.07	
2015 (EU 28)	31,554,480	21,420	0.06	
2016 (MS 27[b])	26,783,426	16,846	0.06	
2016 (EU 28)	*31,274,756*			
2017 (EU 28)	31,160,255	16,348	0.05[c]	
2018 (EU 28)	32,094,485	15,927	0.05	
2018 (EU 27[d], IS, NO)	*34,092,932*			
2019 (EU 27[d], IS, NO)	34,546,310	18,257	0.05	

IS: Iceland; NO: Norway
(a): in relation to the production of the previous year;
(b): Data from France were not available for inclusion in the 2016 results report.
(c): calculated based on 2016 production data from 28 Member States (MS);
(d): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 13: Production volume and number of targeted samples collected in sheep and goats

Country[a]	Production data[b] (animals)	Number of samples 2019	Animals tested (%)
Austria	164,238	324	0.2
Belgium	155,382	239	0.15
Bulgaria	152,491	79	0.05
Croatia	88,070	64	0.07
Cyprus	279,448	156	0.06
Czechia	18,445	61	0.33
Denmark	77,459	66	0.09
Estonia	9,007	19	0.21
Finland	59,401	39	0.07
France	4,370,088	1,441	0.03
Germany	1,150,451	523	0.05
Greece	422,440	312	0.07
Hungary	57,908	32	0.06
Iceland	600,508	312	0.05
Ireland	3,297,564	1,901	0.06
Italy	357,679	835	0.23
Latvia	32,564	11	0.03
Lithuania	8,947	15	0.17
Luxembourg	2,444	11	0.45
Netherlands	607,797	366	0.06
Norway	1,404,934	841	0.06
Poland	69,927	87	0.12
Portugal	859,315	411	0.05
Romania	963,237	465	0.05
Slovakia	53,052	105	0.2

Slovenia	13,512	40	0.3
Spain	2,998,014	1,568	0.05
Sweden	261,610	134	0.05
United Kingdom	15,557,000	7,800	0.05
Total	**34,092,932**	**18,257**	**0.05**

(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in sheep and goats is presented in Table 14. Of the 18,257 samples analysed in this category, 132 (0.72%) were non-compliant (144 non-compliant results). The non-compliant samples were reported by 13 countries.

Table 14: Number of targeted samples analysed, non-compliant samples and non-compliant results in sheep and goats

Substance group[(a)]	Samples analysed[(b)]	% Samples analysed	Non-compliant samples[(c)]	% Non-compliant samples	Non-compliant results[(d)]
A	5,298	29	57	1.08	66
A1	819	4.5	0	0	0
A2	270	1.5	2	0.74	2
A3	1,032	5.7	54	5.23	62
A4	401	2.2	1	0.25	2
A5	715	3.9	0	0	0
A6	2,968	16.3	0	0	0
B	15,266	83.6	75	0.49	78
B1	6,493	35.6	15	0.23	15
B2	6,973	38.2	20	0.29	21
B2a	3,751	20.5	18	0.48	19
B2b	1,117	6.1	1	0.09	1
B2c	2,448	13.4	0	0	0
B2d	448	2.5	0	0	0
B2e	1,991	10.9	1	0.05	1
B2f	1,053	5.8	0	0	0
B3	2,475	13.6	40	1.62	42
B3a	761	4.2	1	0.13	1
B3b	1,167	6.4	0	0	0
B3c	536	2.9	39	7.28	41
B3d	271	1.5	0	0	0
B3e	NA	NA	NA	NA	NA
B3f	243	1.3	0	0	0
Total	**18,257**	**100**	**132**	**0.72**	**144**

NA: not applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

There were no non-compliant samples reported in group A1, A5, A6, B2c, B2d, B2f, B3b, B3d and B3f.

In group A, two non-compliant samples and results were reported against antithyroid agents (A2) for thiouracil, by one country. For steroids (A3), 54 non-compliant samples and 62 non-compliant results were reported (boldenone/boldenone-alpha (n = 42), epinandrolone (n =16), for nandrolone (n = 3), normethandrolone (n=1)), by four countries. For resorcylic acid lactones (A4), one non-compliant sample and two non-compliant results were reported (one result each for alpha-zearalanol and beta-zearalanol).

For antibacterials (B1), 4 countries reported a total of 15 non-compliant samples and results in total. The substance with the highest number of non-compliant results was oxytetracycline (n = 6).

In the group B2, 18 non-compliant samples (19 non-compliant results) were reported for anthelmintics (B2a), by three countries. The substance with the highest number of non-compliant results was closantel

(n = 11). One non-compliant sample and result were reported for both, anticoccidials (B2b) and NSAIDs (B2e).

In the group B3, in total, 40 non-compliant samples and 42 results were reported, mainly for heavy metals (B3c).

A detailed presentation on the specific substances identified and the number of non-compliant results reported by each country is given in Appendix A.

3.5. Horses

For horses, Council Directive 96/23/EC requires that the number of samples is to be determined by each country in relation to the identified problem. The number of targeted samples taken overall in 2019, was similar to previous years (Table 15). The percentage of targeted samples taken in each country for the reported horse production is presented in Table 16.

Table 15: Production of horses and number of targeted samples over 2007–2019

Year	Production (animals)	Targeted samples	% Animals tested[a]	Minimum 96/23/EC
2007 (EU 27)	312,969	3,115	1.16	
2008 (EU 27)	386,302	2,545	0.81	
2009 (EU 27)	264,538	3,000	0.78	
2010 (EU 27)	258,362	3,094	1.17	
2011 (EU 27)	249,403	3,309	1.28	
2012 (EU 27)	272,286	3,850	1.54	
2013 (EU 28)	284,035	4,453	1.63	
2014 (EU 28)	215,629	4,112	1.45	Not specified
2015 (EU 28)	190,540	3,749	1.74	
2016 (MS 27[b])	177,309	3,320	1.90	
2016 (EU 28)	*191,678*			
2017 (EU 28)	186,330	3,232	1.69[c]	
2018 (EU 28)	174,721	3,137	1.68	
2018 (EU 27[d], IS, NO)	*182,545*			
2019 (EU 27[d], IS, NO)	189,134	3,248	1.78	

IS: Iceland; NO: Norway
(a): in relation to the production of the previous year;
(b): Data from France were not available for inclusion in the 2016 results report.
(c): calculated based on 2016 production data from 28 Member States (MS);
(d): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 16: Production volume and number of targeted samples collected for horses

Country[(a)]	Production data[(b)] (animals)	Number of samples 2019	Animals tested (%)
Austria	618	52	8.41
Belgium	5,614	384	6.84
Bulgaria	132	13	9.85
Croatia	269	28	10.41
Cyprus	0	NA	NA
Czechia	140	33	23.57
Denmark	1,354	60	4.43
Estonia	16	NA	NA
Finland	1,281	49	3.83
France	9,366	274	2.93
Germany	6,546	110	1.68
Greece	0	NA	NA
Hungary	668	9	1.35
Iceland	7,614	50	0.66
Ireland	6,638	443	6.67
Italy	27,416	545	1.99
Latvia	71	14	19.72
Lithuania	637	14	2.2
Luxembourg	0	NA	NA
Netherlands	2,283	68	2.98
Norway	212	53	25
Poland	23,720	288	1.21
Portugal	827	26	3.14
Romania	37,355	241	0.65
Slovakia	0	NA	NA
Slovenia	1,069	38	3.55
Spain	44,277	156	0.35
Sweden	2,120	192	9.06
United Kingdom	2,302	108	4.69
Total	**182,545**	**3,248**	**1.78**

NA: not applicable.
(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in horses is presented in Table 17. Of the 3,248 samples analysed in this category, 25 samples (0.77%) were non-compliant (29 non-compliant results). The non-compliant samples were reported by 12 countries.

Table 17: Number of targeted samples analysed, non-compliant samples and non-compliant results in horses

Substance group[a]	Samples analysed[b]	% Samples analysed	Non-compliant samples[c]	% Non-compliant samples	Non-compliant results[d]
A	1,066	32.8	3	0.28	5
A1	103	3.2	0	0	0
A2	65	2	0	0	0
A3	218	6.7	0	0	0
A4	133	4.1	3	2.26	5
A5	280	8.6	0	0	0
A6	473	14.6	0	0	0
B	2,683	82.6	22	0.82	24
B1	562	17.3	0	0	0
B2	1,505	46.3	6	0.4	6
B2a	251	7.7	2	0.8	2
B2b	145	4.5	0	0	0
B2c	178	5.5	0	0	0
B2d	209	6.4	0	0	0
B2e	637	19.6	4	0.63	4
B2f	279	8.6	0	0	0
B3	795	24.5	16	2.01	18
B3a	177	5.4	2	1.13	2
B3b	127	3.9	0	0	0
B3c	471	14.5	13	2.76	15
B3d	96	3	1	1.04	1
B3e	NA	NA	NA	NA	NA
B3f	67	2.1	0	0	0
Total	**3,248**	**100**	**25**	**0.77**	**29**

NA: not applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

In group A, there were three non-compliant sample (five non-compliant results) for resorcylic acid lactones (A4).

In the group B2, two non-compliant samples and results were reported for anthelmintics (B2a) and four non-compliant samples and 4 results were reported for NSAIDs (B2e).

In the group B3, 16 non-compliant samples and 18 non-compliant results were reported in total, with the majority (13 non-compliant samples and 15 results) reported for the chemical compounds subgroup B3c.

A detailed presentation on the specific substances identified and the number of non-compliant results reported by each country is given in Appendix A.

3.6. Poultry

According to Directive 96/23/EC, the minimum number of samples for each category of poultry must be one per 200 t of annual production, with a minimum of 100 samples for each group of substances where annual production in the category concerned is over 5,000 t. Overall, the minimum requirement of one sample analysed per 200 t production was not achieved in 2019 (Table 18).

The percentage of targeted samples taken in each country for the reported production of poultry is given in Table 19. Bulgaria, Finland, France, Greece, Hungary, Poland and Spain did not achieve this requirement.

Table 18: Production of poultry and number of targeted samples over 2007–2019

Year	Production (t)	Targeted samples	% Samples tested/ 200 t[a]	Minimum 96/23/EC
2007 (EU 27)	10,912,500	62,101	1.15	1/200 t
2008 (EU 27)	12,421,566	60,406	1.11	
2009 (EU 27)	11,383,434	61,989	1.00	
2010 (EU 27)	11,804,262	61,259	1.08	
2011 (EU 27)	12,417,108	65,942	1.12	
2012 (EU 27)	12,845,333	68,770	1.11	
2013 (EU 28)	12,930,555	71,186	1.11	
2014 (EU 28)	12,909,837	72,486	1.12	
2015 (EU 28)	13,394,013	71,223	1.10	
2016 (MS 27[b])	12,239,495	64,501	1.10	
2016 (EU 28)	*13,906,572*			
2017 (EU 28)	14,320,889	67,630	0.97[c]	
2018 (EU 28)	14,683,847	69,096	0.96	
2018 (EU 27[d], IS, NO)	*14,789,918*			
2019 (EU 27[d], IS, NO)	15,186,857	73,088	0.99	

IS: Iceland; NO: Norway
(a): in relation to the production of the previous year;
(b): Data from France were not available for inclusion in the 2016 results report.
(c): calculated based on 2016 production data from 28 Member States (MS);
(d): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 19: Production volume and number of targeted samples collected for poultry

Country[a]	Production data (t)[b]	Number of samples 2019	Samples tested/200 t
Austria	127,714	824	1.29
Belgium	396,757	2,132	1.07
Bulgaria	110,767	480	0.87
Croatia	56,669	372	1.31
Cyprus	27,151	261	1.92
Czechia	159,076	951	1.2
Denmark	152,419	765	1
Estonia	19,434	200	2.06
Finland	128,446	634	0.99
France	1,705,840	6,583	0.77
Germany	1,567,973	9,530	1.22
Greece	243,193	630	0.52
Hungary	675,965	3,240	0.96
Iceland	9,484	208	4.39
Ireland	180,843	1,413	1.56
Italy	1,354,000	6,913	1.02
Latvia	34,000	182	1.07
Lithuania	89,256	446	1
Luxembourg	0	NA	NA
Netherlands	968,373	4,941	1.02
Norway	100,263	655	1.31
Poland	2,173,741	8,721	0.8
Portugal	353,227	2,148	1.22
Romania	475,952	2,540	1.07
Slovakia	104,686	661	1.26
Slovenia	61,414	322	1.05
Spain	1,528,845	7,170	0.94
Sweden	158,430	826	1.04
United Kingdom	1,826,000	9,340	1.02
Total	**14,789,918**	**73,088**	**0.99**

NA: not applicable.
(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in poultry are presented in Table 20. Of the 73,088 samples analysed in this category, 33 (0.05%) were non-compliant (33 non-compliant results). The non-compliant samples were reported by 11 countries.

Table 20: Number of targeted samples analysed, non-compliant samples and non-compliant results in poultry

Substance group[a]	Samples analysed[b]	% Samples analysed	Non-compliant samples[c]	% Non-compliant samples	Non-compliant results[d]
A	43,076	58.9	14	0.03	14
A1	3,853	5.3	0	0	0
A2	1,082	1.5	0	0	0
A3	5,996	8.2	11	0.18	11
A4	3,975	5.4	0	0	0
A5	6,068	8.3	0	0	0
A6	26,665	36.5	3	0.01	3
B	45,257	61.9	19	0.04	19
B1	18,716	25.6	6	0.03	6
B2	23,525	32.2	8	0.03	8
B2a	4,007	5.5	1	0.02	1
B2b	15,038	20.6	4	0.03	4
B2c	2,537	3.5	0	0	0
B2d	119	0.2	0	0	0
B2e	2,165	3	2	0.09	2
B2f	3,952	5.4	1	0.03	1
B3	6,756	9.2	5	0.07	5
B3a	2,736	3.7	1	0.04	1
B3b	1,372	1.9	0	0	0
B3c	1,578	2.2	3	0.19	3
B3d	1,487	2	0	0	0
B3e	NA	NA	NA	NA	NA
B3f	982	1.3	1	0.1	1
Total	**73,088**	**100**	**33**	**0.05**	**33**

NA: Not Applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

In group A, there were 11 non-compliant samples and results for steroids (A3), (for Normethandrolone, Boldenone and Estradiol-17-beta) reported by one country. There were 3 non-compliant samples and results reported for group A6, by one country.

For antibacterials (B1), three countries reported a total of 6 non-compliant samples and results.

In the group B2, 4 non-compliant samples and results were reported for anticoccidials (B2b), and two non-compliant samples and results were reported for NSAIDs (B2e). One non-compliant sample and result were reported for both, anthelmintics (B2a) and the subgroup 'other pharmacologically active substances' (B2f).

In the group B3, one non-compliant sample and result were reported for both organochlorine compounds (B3a) and the sub group 'others' (B3f). Three non-compliant samples and results were reported under chemical elements (B3c) (copper, cadmium).

The specific substances identified and the number of non-compliant results reported by each country are presented in Appendix A.

3.7. Aquaculture

Directive 96/23/EC specifies that the minimum number of samples to be collected each year must be at least one per 100 tonnes of annual production. Overall, the minimum requirements for the number of samples to be taken were fulfilled in 2019 (Table 21). The production volume and the number of samples analysed in each country, are given in Table 22. Bulgaria, Croatia, Denmark, France, Greece, Hungary, Ireland, Latvia, Portugal, Spain and Sweden did not analyse at least one sample/100 tonnes (t) of production.

Table 21: Production of aquaculture and number of targeted samples over 2007–2019

Year	Production (t)	Targeted samples	% Samples tested/ 100 t[a]	Minimum 96/23/EC
2007 (EU 27)	602,555	9,257	1.5	1/100 t
2008 (EU 27)	644,875	8,751	1.4	
2009 (EU 27)	627,109	8,606	1.3	
2010 (EU 27)	622,032	8,668	1.4	
2011 (EU 27)	655,772	8,241	1.3	
2012 (EU 27)	631,117	8,264	1.3	
2013 (EU 28)	614,191	7,971	1.3	
2014 (EU 28)	608,658	7,236	1.2	
2015 (EU 28)	633,541	7,246	1.2	
2016 (MS 27[b])	603,868	6,735	1.1	
2016 (EU 28)	*645,068*			
2017 (EU 28)	668,766	6,500	1.0[c]	
2018 (EU 28)	692,821	6,482	0.97	
2018 (EU 27[d], IS)	*709,535[e]*			
2019 (EU 27[d], IS)[f]	713,932[e]	6,759	0.95	

IS: Iceland
(a): in relation to the production of the previous year;
(b): Data from France were not available for inclusion in the 2016 results report.
(c): calculated based on 2016 production data from 28 Member States (MS);
(d): the 2019 results data from Malta were not available for inclusion in this report, see section 2 for further details;
(e): Production data from Norway not included in total, as no targeted samples were reported.
(f): With the inclusion of a further 375 samples from the United Kingdom (see Appendix F for details), the overall minimum sampling frequency requirement is met (samples tested/100 t = 1.0).

Table 22: Production volume and number of targeted samples collected for aquaculture

Country[a]	Production data (t)[b]	Number of samples 2019	Samples tested/ 100 t
Austria	3,485	229	6.57
Belgium	2,000	242	12.1
Bulgaria	8,605	66	0.77
Croatia	16,506	146	0.88
Cyprus	7,388	96	1.3
Czechia	17,690	300	1.7
Denmark	35,074	345	0.98
Estonia	871	18	2.07
Finland	14,587	181	1.24
France	52,041	217	0.42
Germany	19,358	298	1.54
Greece	104,483	567	0.54
Hungary	7,112	51	0.72
Iceland	19,077	198	1.04
Ireland	18,989	176	0.93
Italy	54,250	665	1.23
Latvia	808	7	0.87
Lithuania	3,402	59	1.73
Luxembourg	0	NA	NA
Netherlands	6,000	64	1.07
Norway	1,306,035[c]	NA	NA
Poland	32,805	393	1.2
Portugal	15,502	115	0.74
Romania	7,300	109	1.49
Slovakia	1,787	140	7.83
Slovenia	1,730	28	1.62
Spain	67,461	537	0.8
Sweden	12,800	100	0.78
United Kingdom[d]	178,424	1,412	0.79
Total	**709,535**	**6,759**	**0.95**

NA: not applicable.
(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2016, 2017, 2018 or 2019.
(c): The production data for Norway are not included in the total, as no targeted samples were reported.
(d): For the United Kingdom, a further 375 samples should have been submitted (see Appendix F for details), resulting in the minimum sampling frequency requirement being met (samples tested/100 t = 1.0).

The distribution of samples analysed, non-compliant samples and non-compliant results in aquaculture are presented in Table 23. Of the 6,759 samples analysed for aquaculture, 19 samples (0.28%) and 20 results were non-compliant. The non-compliant samples were reported by 10 countries.

Table 23: Number of targeted samples analysed, non-compliant samples and non-compliant results in aquaculture

Substance group[(a)]	Samples analysed[(b)]	% Samples analysed	Non-compliant samples[(c)]	% Non-compliant samples	Non-compliant results[(d)]
A	2,590	38.3	1	0.04	1
A1	186	2.8	0	0	0
A2	6	0.1	0	0	0
A3	373	5.5	0	0	0
A4	123	1.8	0	0	0
A5	98	1.4	0	0	0
A6	2,104	31.1	1	0.05	1
B	5,368	79.4	18	0.34	19
B1	1,784	26.4	2	0.11	2
B2	1,477	21.9	0	0	0
B2a	741	11	0	0	0
B2b	412	6.1	0	0	0
B2c	422	6.2	0	0	0
B2d	3	0	0	0	0
B2e	8	0.1	0	0	0
B2f	451	6.7	0	0	0
B3	2,680	39.7	16	0.6	17
B3a	575	8.5	0	0	0
B3b	236	3.5	0	0	0
B3c	521	7.7	0	0	0
B3d	178	2.6	0	0	0
B3e	1,463	21.6	16	1.09	17
B3f	153	2.3	0	0	0
Total	**6,759**	**100**	**19**	**0.28**	**20**

(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

For group A, one non-compliant sample and result was reported in group A6, for Dimetridazole.

In group B1, two non-compliant samples and results were reported by two countries.

In the group B3, 16 non-compliant samples and 17 results, were reported for dyes (B3e) (crystal violet, leuco-malachite green), by nine countries.

The specific substances identified and the number of non-compliant results reported by each country are presented in Appendix A.

3.8. Milk

Commission Decision 97/747/EC lays down that the annual number of samples taken should be one per 15,000 tonnes of annual milk production, with a minimum of 300 samples. Overall, the minimum requirements for the number of samples to be taken, were fulfilled in 2019 (Table 24) and by the majority of countries. Denmark and France did not achieve this requirement.

The production volume and the number of samples analysed in each country are given in Table 25.

Table 24: Production of milk and number of targeted samples over 2007–2019

Year	Production (t)	Targeted samples	% Samples tested/ 15,000 t[a]	Minimum 96/23/EC
2007 (EU 27)	142,461,705	51,571	5.3	1/15,000 t
2008 (EU 27)	145,006,173	53,333	5.6	
2009 (EU 27)	141,669,974	54,063	5.6	
2010 (EU 27)	144,705,166	30,372	3.2	
2011 (EU 27)	143,022,677	29,592	3.1	
2012 (EU 27)	149,086,701	30,748	3.2	
2013 (EU 28)	146,446,811	29,788	3.0	
2014 (EU 28)	147,794,431	29,533	3.0	
2015 (EU 28)	150,637,679	26,705	2.7	
2016 (MS 27[b])	121,134,877	23,934	2.9	
2016 (EU 28)	*145,701,788*			
2017 (EU 28)	154,860,990	19,451	2.0[c]	
2018 (EU 28)	156,201,391	19,059	1.8	
2018 (EU 27[d], IS, NO)	*157,828,758*			
2019 (EU 27[d], IS, NO)	162,530,463	19,107	1.8	

IS: Iceland; NO: Norway
(a): in relation to the production of the previous year;
(b): Data from France were not available for inclusion in the 2016 results report.
(c): calculated based on 2016 production data from 28 Member States (MS);
(d): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 25: Production volume and number of targeted samples collected for milk

Country[a]	Production data (t)[b]	Number of samples 2019	Samples tested/15,000 t
Austria	143,404	354	37.03
Belgium	3,678,542	605	2.47
Bulgaria	685,551	294	6.43
Croatia	629,500	359	8.55
Cyprus	228,360	490	32.19
Czechia	3,043,650	327	1.61
Denmark	5,299,887	333	0.94
Estonia	787,826	419	7.98
Finland	2,285,135	312	2.05
France	24,667,906	968	0.59
Germany	31,331,268	2,103	1.01
Greece	1,844,909	597	4.85
Hungary	1,203,302	249	3.1
Iceland	152,409	312	30.71
Ireland	7,898,573	1,296	2.46
Italy	11,948,651	1,564	1.96
Latvia	1,000,000	591	8.87
Lithuania	1,627,679	293	2.7
Luxembourg	387,000	330	12.79
Netherlands	14,462,769	1,651	1.71
Norway	1,518,814	362	3.58
Poland	13,517,520	2,483	2.76
Portugal	1,959,422	202	1.55
Romania	953,645	399	6.28
Slovakia	1,113,078	520	7.01
Slovenia	525,238	350	10
Spain	7,021,565	534	1.14
Sweden	2,760,230	310	1.68
United Kingdom[c]	15,152,925	500	0.49
Total	**157,828,758**	**19,107**	**1.81**

(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2017, 2018 or 2019.
(c): For the United Kingdom, a further 566 samples should have been submitted (see Appendix F for details), resulting in the minimum sampling frequency requirement being met (samples tested/15,000 t = 1.06).

The distribution of samples analysed, non-compliant samples and non-compliant results in milk are presented in Table 26. Of the 19,107 milk samples analysed, 41 (0.21%) were non-compliant (43 non-compliant results). The non-compliant samples were reported by 14 countries.

Table 26: Number of targeted samples analysed, non-compliant samples and non-compliant results in milk

Substance group[(a)]	Samples analysed[(b)]	% Samples analysed	Non-compliant samples[(c)]	% Non-compliant samples	Non-compliant results[(d)]
A	6,933	36.3	3	0.04	3
A1	NA	NA	NA	NA	NA
A2	15	0.1	0	0	0
A3	45	0.2	0	0	0
A4	NA	NA	NA	NA	NA
A5	184	1	0	0	0
A6	6,744	35.3	3	0.04	3
B	17,417	91.2	38	0.22	40
B1	9,555	50	11	0.12	11
B2	8,961	46.9	24	0.27	24
B2a	5,985	31.3	5	0.08	5
B2b	1,646	8.6	0	0	0
B2c	394	2.1	0	0	0
B2d	77	0.4	0	0	0
B2e	5,335	27.9	19	0.36	19
B2f	926	4.8	0	0	0
B3	4,782	25	4	0.08	5
B3a	1,286	6.7	1	0.08	2
B3b	1,697	8.9	0	0	0
B3c	597	3.1	0	0	0
B3d	1,682	8.8	3	0.18	3
B3e	15	0.1	0	0	0
B3f	373	2	0	0	0
Total	**19,107**	**100**	**41**	**0.21**	**43**

NA: not applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

In group A, there were three non-compliant samples and non-compliant results reported in group A6 (chloramphenicol), by three countries.

For antibacterials (B1), seven countries reported a total of 11 non-compliant samples and results.

In the group B2, there were 5 non-compliant samples and results for anthelmintics (B2a) and 19 non-compliant samples and results for NSAIDs (B2e), reported by three and eight countries, respectively.

In the group B3, there were three non-compliant samples and results for mycotoxins (B3d), relating to Aflatoxin M1, reported by two countries. For organochlorine compounds, including PCBs (B3a) there was one non-compliant sample (2 non-compliant results) reported by one country.

More information on the specific substances identified and the number of non-compliant results reported by each country is given in Appendix A.

3.9. Eggs

The number of samples to be taken each year must be at least equal to one per 1,000 tonnes of annual egg production, with a minimum of 200 samples. Overall, the minimum requirements for the number of samples to be taken were fulfilled in 2019 (Table 27) and by the majority of countries. Portugal and Spain did not analyse at least one sample/1,000 tonnes (t) of production. The production volume and the number of samples analysed in each country are given in Table 28.

Table 27: Production of eggs and number of targeted samples over 2007–2019

Year	Production (t)	Targeted samples	% Samples tested/ 1,000 t[a]	Minimum 96/23/EC
2007 (EU 27)	6,114,369	13,685	2.3	
2008 (EU 27)	6,021,476	10,859	1.8	
2009 (EU 27)	6,137,732	13,031	2.2	
2010 (EU 27)	6,101,039	12,715	2.1	
2011 (EU 27)	6,136,691	12,248	2.0	
2012 (EU 27)	6,070,174	12,596	2.1	1/1,000 t
2013 (EU 28)	6,070,334	13,323	2.2	
2014 (EU 28)	6,271,679	13,391	2.2	
2015 (EU 28)	6,255,410	13,158	2.1	
2016 (MS 27[b])	5,424,380	12,700	2.4	
2016 (EU 28)	*6,312,403*			
2017 (EU 28)	6,416,551	9,944	1.6[c]	
2018 (EU 28)	6,609,833	10,924	1.7	
2018 (EU 27[d], IS, NO)	*6,680,277*			
2019 (EU 27[d], IS, NO)	6,733,188	11,444	1.71	

IS: Iceland; NO: Norway
(a): in relation to the production of the previous year;
(b): Data from France were not available for inclusion in the 2016 results report.
(c): calculated based on 2016 production data from 28 Member States (MS);
(d): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 28: Production volume and number of targeted samples collected for eggs

Country[a]	Production data (t)[b]	Number of samples 2019	Samples tested/1,000 t
Austria	114,000	224	1.96
Belgium	140,325	530	3.78
Bulgaria	58,920	205	3.48
Croatia	33,125	222	6.7
Cyprus	8,909	145	16.28
Czechia	81,954	230	2.81
Denmark	68,454	205	2.99
Estonia	13,041	200	15.34
Finland	74,880	199	2.66
France	881,706	1,201	1.36
Germany	826,200	957	1.16
Greece	121,157	144	1.19
Hungary	65,791	147	2.23
Iceland	5817	236	40.57
Ireland	49,448	287	5.8
Italy	793,800	1,187	1.5
Latvia	48,060	213	4.43
Lithuania	38,181	171	4.48
Luxembourg	2,000	115	57.5
Netherlands	643,532	703	1.09
Norway	69,792	190	2.72
Poland	558,282	791	1.42
Portugal	141,631	129	0.91
Romania	136,911	460	3.36
Slovakia	44,472	258	5.8
Slovenia	27,790	221	7.95
Spain	823,617	784	0.95
Sweden	122,790	213	1.73
United Kingdom	685,692	877	1.28
Total	**6,680,277**	**11,444**	**1.71**

(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2016, 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in eggs is presented in Table 29. Of the 11,444 egg samples analysed, 29 (0.25%) were non-compliant (35 non-compliant results). The non-compliant samples were reported by 11 countries.

Table 29: Number of targeted samples analysed, non-compliant samples and non-compliant results in eggs

Substance group[(a)]	Samples analysed[(b)]	% Samples analysed	Non-compliant samples[(c)]	% Non-compliant samples	Non-compliant results[(d)]
A	4,968	43.4	0	0	0
A1	NA	NA	NA	NA	NA
A2	NA	NA	NA	NA	NA
A3	NA	NA	NA	NA	NA
A4	NA	NA	NA	NA	NA
A5	15	0.1	0	0	0
A6	4,953	43.3	0	0	0
B	10,245	89.5	29	0.28	35
B1	5,426	47.4	9	0.17	10
B2	6,491	56.7	12	0.18	13
B2a	1,157	10.1	0	0	0
B2b	5,587	48.8	12	0.21	13
B2c	1,058	9.2	0	0	0
B2d	48	0.4	0	0	0
B2e	NA	NA	NA	NA	NA
B2f	1,070	9.3	0	0	0
B3	2,659	23.2	8	0.3	12
B3a	1,707	14.9	4	0.23	8
B3b	998	8.7	0	0	0
B3c	125	1.1	0	0	0
B3d	4	0	0	0	0
B3e	NA	NA	NA	NA	NA
B3f	1,198	10.5	4	0.33	4
Total	**11,444**	**100**	**29**	**0.25**	**35**

NA: not applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

Directive 96/23/EC, Annex II requires the monitoring in group A, of the residues of prohibited substances (A6) only. There were no non-compliant samples reported for A6 in 2019.

For antibacterials (B1), 9 non-compliant samples (10 non-compliant results) were reported by four countries.

In the group B2, 12 non-compliant samples (13 non-compliant results) were reported for anticoccidials (B2b), by six countries.

In the group B3, four non-compliant samples and eight non-compliant results, were reported for organochlorine compounds, including PCBs (B3a), by two countries. Four non-compliant samples and results were reported for the subgroup 'others' (B3f), in relation to fipronil, by two countries.

More details on the specific substances identified and the number of non-compliant results reported by each country are given in Appendix A.

3.10. Rabbit meat

The number of samples to be taken each year must be equal to 10 per 300 tonnes of annual production (dead weight) for the first 3,000 tonnes, plus one sample for each additional 300 tonnes. The rate between the total targeted samples reported and the minimum number of samples that should be collected for the reported production, as specified in Commission Decision 97/747/EC, was calculated.

Table 30: Production of rabbit meat and number of targeted samples over 2007–2019

Year	Production (t)	Targeted samples
2007 (EU 27)	189,932	4,480
2008 (EU 27)	187,389	3,625
2009 (EU 27)	199,655	3,691
2010 (EU 27)	172,353	3,885
2011 (EU 27)	176,315	3,737
2012 (EU 27)	173,626	3,471
2013 (EU 28)	164,664	2,796
2014 (EU 28)	156,204	2,762
2015 (EU 28)	162,216	2,509
2016 (MS 27[a])	117,239	1,772
2016 (EU 28)	*159,527*	
2017 (EU 28)	148,112	1,717
2018 (EU 28)	143,917	1,654
2018 (EU 27[b], IS, NO)	*143,844*	
2019 (EU 27[b], IS, NO)	134,904	1,552

IS: Iceland; NO: Norway
(a): Data from France were not available for inclusion in the 2016 results report.
(b): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

To calculate the total number of samples that should be collected, two different equations were applied depending on the production volume, as follows:

a) For countries with production above 3,000 t:

Total samples required = {(10/300 × 3,000) + [(Production reported in tonnes −3,000) × (1/300)]}

b) For countries with production below 3,000 t:

Total samples required = Production reported in t × (10/300)

Countries with a rate 'samples tested/required' equal to 1.0 or above completely fulfilled the requirements for sampling frequency. Countries with a value below 1.0 did not.

Production volume and number of targeted samples for each country are presented in Table 31. France, Greece, Poland and Portugal did not achieve the minimum sampling frequency requirement in 2019.

Table 31: Production volume and number of targeted samples collected for rabbit meat

Country[a]	Production data (t)[b]	Number of samples 2019	Samples tested/required
Austria	0	NA	NA
Belgium	3,740	109	1.06
Bulgaria	5	6	36.0
Croatia	4	11	82.5
Cyprus	137	43	9.42
Czechia	1,021	46	1.35
Denmark	4	8	60.0
Estonia	0	NA	NA
Finland	0	NA	NA
France	36,263	171	0.81
Germany	349	38	3.27
Greece	2,523	51	0.61
Hungary	10,560	137	1.09
Iceland	0	NA	NA
Ireland	0	NA	NA
Italy	28,675	303	1.63
Latvia	9	11	36.7
Lithuania	77	10	3.9
Luxembourg	8	9	33.8
Netherlands	29	3	3.1
Norway	0	NA	NA
Poland	6,206	110	0.99
Portugal	5,446	97	0.90
Romania	0	NA	NA
Slovakia	31	68	65.8
Slovenia	16	14	26.3
Spain	48,738	307	1.22
Sweden	3	NA	NA
United Kingdom	0	NA	NA
Total	**143,844**	**1,552**	**NA**

NA: not applicable.
(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2016, 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in rabbit meat are presented in Table 32. Of the 1,552 samples analysed for rabbits, two (0.13%) were non-compliant (three non-compliant results). The non-compliant samples were reported by two countries.

Table 32: Number of targeted samples analysed, non-compliant samples and non-compliant results in rabbit

Substance group[a]	Samples analysed[b]	% Samples analysed	Non-compliant samples[c]	% Non-compliant samples	Non-compliant results[d]
A	586	37.8	0	0	0
A1	34	2.2	0	0	0
A2	21	1.4	0	0	0
A3	54	3.5	0	0	0
A4	31	2	0	0	0
A5	66	4.3	0	0	0
A6	425	27.4	0	0	0
B	1,169	75.3	2	0.17	3
B1	560	36.1	1	0.18	1
B2	554	35.7	1	0.18	2
B2a	130	8.4	0	0	0
B2b	245	15.8	0	0	0
B2c	70	4.5	0	0	0
B2d	2	0.1	0	0	0
B2e	74	4.8	0	0	0
B2f	88	5.7	1	1.14	2
B3	163	10.5	0	0	0
B3a	70	4.5	0	0	0
B3b	37	2.4	0	0	0
B3c	70	4.5	0	0	0
B3d	15	1	0	0	0
B3e	NA	NA	NA	NA	NA
B3f	15	1	0	0	0
Total	**1,552**	**100**	**2**	**0.13**	**3**

NA: not applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

In group A, there were no non-compliant samples and results.

In group B, there was one non-compliant sample and result reported for antibacterials (B1) (Sulfadimethoxine). For group B2, one non-compliant sample and two results were reported for the subgroup 'other pharmacologically active substances' (B2f). There were no non-compliant samples reported for group B3.

More details on the specific substances identified and the number of non-compliant results reported by each country are given in Appendix A.

3.11. Farmed game

European Commission Decision 97/747/EC requires that the number of samples to be taken each year to be at least 100. The minimum number of samples was set as a provisional rule to be reviewed in light of the information provided by the reporting countries on their production figures. For farmed game, a total of 1,175 targeted samples were collected in 2019 (Tables 33 and 34).

Table 33: Production of farmed game and number of targeted samples over 2007–2019

Year	Production (t)	Targeted samples
2007 (EU 27)	40,895	2,286
2008 (EU 27)	18,485	1,959
2009 (EU 27)	84,482	1,975
2010 (EU 27)	25,449	2,157
2011 (EU 27)	24,991	2,575
2012 (EU 27)	25,348	2,334
2013 (EU 28)	26,356	2,072
2014 (EU 28)	24,379	1,918
2015 (EU 28)	22,044	1,785
2016 (MS 27[a])	12,976	1,607
2016 (EU 28)	*46,623*	
2017 (EU 28)	229,431	1,635
2018 (EU 28)	12,293	1,594
2018 (EU 27[b], IS, NO)	*14,370*	
2019 (EU 27[b], IS, NO)	17,984	1,175

IS: Iceland; NO: Norway.
(a): Data from France were not available for inclusion in the 2016 results report.
(b): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 34: Production volume and number of targeted samples collected for farmed game

Country[a]	Production data (t)[b]	Number of samples 2019
Austria	313	126
Belgium	91	66
Bulgaria	0	NA
Croatia	10	18
Cyprus	7	NA
Czechia	228	97
Denmark	22	22
Estonia	0	NA
Finland	1,549	84
France	77	31
Germany	2,601	104
Greece	43	17
Hungary	67	9
Iceland	0	NA
Ireland	21	5
Italy	2,263	24
Latvia	33	11
Lithuania	5	26
Luxembourg	0	NA
Netherlands	105	9
Norway	2,077	192
Poland	29	71
Portugal	0	NA
Romania	49	65
Slovakia	0	89
Slovenia	1	12
Spain	26	NA
Sweden	1,252	97
United Kingdom	3,501	NA
Total	**14,370**	**1,175**

NA: not applicable.
(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2016, 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in farmed game are presented in Table 35. Of the 1,175 samples analysed for farmed game, 55 (4.68%) were non-compliant (74 non-compliant results). The non-compliant samples were reported by five countries.

Table 35: Number of targeted samples analysed, non-compliant samples and non-compliant results in farmed game

Substance group[a]	Samples analysed[b]	% Samples analysed	Non-compliant samples[c]	% Non-compliant samples	Non-compliant results[d]
A	320	27.2	0	0	0
A1	34	2.9	0	0	0
A2	9	0.8	0	0	0
A3	39	3.3	0	0	0
A4	39	3.3	0	0	0
A5	60	5.1	0	0	0
A6	178	15.1	0	0	0
B	994	84.6	55	5.53	74
B1	209	17.8	0	0	0
B2	444	37.8	0	0	0
B2a	207	17.6	0	0	0
B2b	109	9.3	0	0	0
B2c	77	6.6	0	0	0
B2d	5	0.4	0	0	0
B2e	38	3.2	0	0	0
B2f	50	4.3	0	0	0
B3	443	37.7	55	12.42	74
B3a	135	11.5	3	2.22	3
B3b	57	4.9	0	0	0
B3c	316	26.9	52	16.46	71
B3d	21	1.8	0	0	0
B3e	NA	NA	NA	NA	NA
B3f	33	2.8	0	0	0
Total	**1,175**	**100**	**55**	**4.68**	**74**

NA: not applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

No non-compliant samples were reported in groups A, B1 and B2.

In the group B3, non-compliant samples were reported for organochlorine compounds (B3a) and chemical elements (B3c). For subgroup B3a, three non-compliant samples and results were reported by two countries, relating to Hexachlorobenzene. For subgroup B3c, 52 non-compliant samples and 71 non-compliant results were reported for heavy metals (cadmium, copper and lead), by four countries.

More details on the specific substances identified and the number of non-compliant results reported by each country are given in Appendix A.

3.12. Wild game

European Commission Decision 97/747/EC requires that the number of samples to be taken each year to be at least 100 samples. Samples must be taken to analyse residues of chemical elements. For wild game, a total of 2,443 targeted samples were collected in 2019 (Tables 36 and 37).

Table 36: Production of wild game and number of targeted samples over 2007–2019

Year	Production (t)	Targeted samples
2007 (EU 27)	270,704	2,360
2008 (EU 27)	316,541	2,443
2009 (EU 27)	252,328	2,488
2010 (EU 27)	147,097	2,395
2011 (EU 27)	263,860	2,674
2012 (EU 27)	209,607	2,600
2013 (EU 28)	204,013	2,694
2014 (EU 28)	180,307	2,601
2015 (EU 28)	201,794	2,480
2016 (MS 27[a])	172,090	2,468
2016 (EU 28)	*3,394,896*	
2017 (EU 28)	469,359	1,760
2018 (EU 28)	390,891	1,781
2018 (EU 27[b], IS, NO)	*397,393*	
2019 (EU 27[b], IS, NO)	6,407,975	2,443

IS: Iceland; NO: Norway.
(a): Data from France were not available for inclusion in the 2016 results report.
(b): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 37: Production volume and number of targeted samples collected for wild game

Country[a]	Production data (t)[b]	Number of samples 2019
Austria	10,151	199
Belgium	3,767	205
Bulgaria	416	92
Croatia	10	16
Cyprus	0	NA
Czechia	15,036	133
Denmark	483	3
Estonia	610	94
Finland	71	NA
France	115,000	1
Germany	108,347	75
Greece	2	39
Hungary	11,508	71
Iceland	0	8
Ireland	466	86
Italy	5,418	94
Latvia	193	103
Lithuania	54	1
Luxembourg	450	100
Netherlands	587	108
Norway	6,502	45
Poland	31,015	233
Portugal	133	60
Romania	195	135
Slovakia	8,904	128
Slovenia	2,944	99
Spain	72,836	118
Sweden	1,745	97

United Kingdom	550	100
Total	**397,393**	**2,443**

NA: not applicable.
(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2016, 2017, 2018 or 2019.

The distribution of samples analysed, non-compliant samples and non-compliant results in wild game are presented in Table 38. Of the 2,443 samples analysed for wild game, 127 (5.2%) were non-compliant (129 non-compliant results). The non-compliant samples were reported by 14 countries.

Table 38: Number of targeted samples analysed, non-compliant samples and non-compliant results in wild game

Substance group[(a)]	Samples analysed[(b)]	% Samples analysed	Non-compliant samples[(c)]	% Non-compliant samples	Non-compliant results[(d)]
A	24	1	0	0	0
A1	NA	NA	NA	NA	NA
A2	5	0.2	0	0	0
A3	NA	NA	NA	NA	NA
A4	4	0.2	0	0	0
A5	3	0.1	0	0	0
A6	20	0.8	0	0	0
B	2,438	99.8	127	5.21	129
B1	11	0.5	0	0	0
B2	186	7.6	0	0	0
B2a	149	6.1	0	0	0
B2b	19	0.8	0	0	0
B2c	26	1.1	0	0	0
B2d	NA	NA	NA	NA	NA
B2e	6	0.2	0	0	0
B2f	3	0.1	0	0	0
B3	2,273	93	127	5.59	129
B3a	155	6.3	11	7.1	12
B3b	17	0.7	0	0	0
B3c	2,183	89.4	116	5.31	117
B3d	4	0.2	0	0	0
B3e	NA	NA	NA	NA	NA
B3f	26	1.1	0	0	0
Total	**2,443**	**100**	**127**	**5.2**	**129**

NA: not applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

The vast majority of the non-compliant samples (n = 116) (and results n = 117) were reported for metals (B3c) (55 results for cadmium; 36 results for lead; 17 results for copper; nine results for mercury). The only other non-compliant samples, were for organochlorine compounds (B3a) (n = 12), reported by one country, for DDT, PCB-138, PCB-153.

3.13. Honey

The number of samples to be taken must be at least 10 per 300 tonnes of annual production for the first 3,000 tonnes, plus one sample for each additional 300 tonnes. In order to check the fulfilment of this requirement the same equations were applied as described in Section 3.10.

Where the rate between the total targeted samples reported and the number of samples to be collected for the reported production is equal to 1.0 or higher, the requirements for sampling frequency were completely fulfilled. Countries with a value below 1.0 did not.

In 2019, 3,926 targeted samples were collected for honey (Table 39). Production volume and number of targeted samples broken down by country are presented in Table 40. France, Latvia, the Netherlands, Norway, Portugal, Spain and Sweden did not achieve the minimum sampling frequency requirement in 2019.

Table 39: Production of honey and number of targeted samples over 2007–2019

Year	Production (t)	Targeted samples
2007 (EU 27)	188,945	5,850
2008 (EU 27)	158,694	5,257
2009 (EU 27)	162,213	4,826
2010 (EU 27)	191,501	4,720
2011 (EU 27)	215,141	4,684
2012 (EU 27)	215,101	4,820
2013 (EU 28)	205,466	4,612
2014 (EU 28)	200,808	4,294
2015 (EU 28)	193,347	4,203
2016 (MS 27[a])	222,048	3,545
2016 (EU 28)	*236,720*	
2017 (EU 28)	216,244	3,619
2018 (EU 28)	229,009	3,645
2018 (EU 27[b], IS, NO)	*230,194*	
2019 (EU 27[b], IS, NO)	273,240	3,926

IS: Iceland; NO: Norway.
(a): Data from France were not available for inclusion in the 2016 results report.
(b): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.

Table 40: Production volume and number of targeted samples collected for honey

Country[a]	Production data (t)[b]	Number of samples 2019	Samples tested/ required
Austria	5,500	189	1.7
Belgium	1,500	513	10.3
Bulgaria	5,633	111	1.0
Croatia	3,400	105	1.0
Cyprus	584	53	2.7
Czechia	7,663	140	1.2
Denmark	2,500	84	1.0
Estonia	1,165	39	1.0
Finland	1,700	55	1.0
France	19,788	107	0.7
Germany	28,605	207	1.1
Greece	20,862	211	1.3
Hungary	27,911	174	1.0
Iceland	0	NA	NA
Ireland	250	102	6.12
Italy	14,500	296	2.1
Latvia	1,639	48	0.9
Lithuania[c]	3,412	63	0.6
Luxembourg	150	25	5.0
Netherlands	2,200	66	0.9
Norway	1,200	35	0.9
Poland	17,277	455	3.1
Portugal	10,757	104	0.8
Romania	10,563	139	1.1
Slovakia	4,112	184	1.8
Slovenia	804	58	2.2
Spain	29,050	169	0.9
Sweden	2,805	88	0.9
United Kingdom	4,664	106	1.0
Total	**230,194**	**3,926**	**NA**

NA: not applicable.
(a): The 2019 results data from Malta were not available for inclusion in this report, see Section 2 for further details.
(b): The production data, taken from the 2019 Residue Control Plan, may pertain to the years 2017, 2018 or 2019.
(c): For Lithuania, a further 66 samples should have been submitted (see Appendix F for details), resulting in the minimum sampling frequency requirement being met (samples tested/required = 1.1).

The distribution of samples analysed, non-compliant samples and non-compliant results in honey are presented in Table 41. Of the 3,926 samples analysed for honey, 73 (1.86%) were non-compliant (91 non-compliant results). The non-compliant samples were reported by 14 countries.

Table 41: Number of targeted samples analysed, non-compliant samples and non-compliant results in honey

Substance group[(a)]	Samples analysed[(b)]	% Samples analysed	Non-compliant samples[(c)]	% Non-compliant samples	Non-compliant results[(d)]
A	1,172	29.9	2	0.17	2
A1	NA	NA	NA	NA	NA
A2	NA	NA	NA	NA	NA
A3	NA	NA	NA	NA	NA
A4	NA	NA	NA	NA	NA
A5	328	8.4	0	0	0
A6	844	21.5	2	0.24	2
B	3,661	93.3	71	1.94	89
B1	1,930	49.2	19	0.98	35
B2	1,330	33.9	0	0	0
B2a	384	9.8	0	0	0
B2b	153	3.9	0	0	0
B2c	1,077	27.4	0	0	0
B2d	2	0.1	0	0	0
B2e	NA	NA	NA	NA	NA
B2f	808	20.6	0	0	0
B3	1,751	44.6	52	2.97	54
B3a	1,020	26	1	0.1	1
B3b	973	24.8	2	0.21	2
B3c	460	11.7	47	10.22	49
B3d	3	0.1	0	0	0
B3e	NA	NA	NA	NA	NA
B3f	826	21	2	0.24	2
Total	**3,926**	**100**	**73**	**1.86**	**91**

NA: not applicable.
(a): as detailed in Appendix E;
(b): number of samples analysed for one or more substances of the respective group;
(c): number of non-compliant samples for one or more substances in the respective group;
(d): number of non-compliant results; one sample can be non-compliant for more substances therefore the number of non-compliant results can be higher than the number of non-compliant samples of the same group.

For antibacterials (B1), 19 non-compliant samples (35 non-compliant results) were reported. Other non-compliant results were reported for group A6[15], (metronidazole (n = 2)), organochlorine compounds, including PCBs (B3a) (n=1), chemical elements (B3c) (n = 49) (five for cadmium, three for lead and 41 for copper) and for the subgroup 'others' (B3f) (n = 2).

More details on the specific substances identified and the number of non-compliant results reported by each country are given in Appendix A.

3.14. Suspect, import and other samples

In addition to the targeted samples collected in conformity with the specification of the NRCP for 2019, results were reported on samples collected through sampling strategies other than targeted. According to Directive 96/23/EC in case of infringements of maximum residue limits when animals or animal products are placed on the market, intensified checks on the animals and products from the farm and/or establishment in question must be carried out by the competent authorities. Also, in the event of possession or presence of prohibited substances at any point during manufacture, storage, distribution or sale through the food and feed production chain, or suspicion or evidence of illegal treatment or non-compliance with the withdrawal period for an authorised medicinal veterinary product the competent authorities have to apply special measures including repeated sampling in the farm or establishment concerned. Thus, these samples are not representative for the assessment of the residue situation in

[15] For honey, sampling for Group A substances is not a requirement of Council Directive 96/23/EC and Commission Decision 97/474/EC.

the reporting countries and therefore they are reported separately in the residue database as 'suspect samples', as part of the follow-up measure taken in case of infringements.

In 2019, 5,016 suspect samples were reported of which 184 (3.67%) were non-compliant. It is to note that the number of non-compliant results reported from suspect sampling, does not accurately reflect the residue situation of a country. The suspect samples are taken as follow-up of non-compliance of targeted samples or evidence of possession and use of prohibited substances. In addition, the sampling procedure applied in case of suspicion might be different among countries. For example, in Belgium, at slaughterhouse each injection site must be sampled together with a sample of muscle which are then analysed by a multi-residue method. This approach results in a higher probability that a suspect sample is found non-compliant for more than one substance. An overview on the number of suspect samples analysed for the different animal species/product categories and the frequency of non-compliant samples is presented in Table 42. Further details on the substances identified and country which reported non-compliant results are given in Appendix B.

Apart from the data submitted in accordance to NRCPs, a certain amount of results on samples checked at import are reported (n = 2,342). As the control of samples at import is more linked to the third country monitoring than to residue monitoring in the EU, those results are reported to the EC using the TRACES and RASFF tools. Therefore, those data are of limited value and are not representative of the overall situation of residue control at import. An overview on the number of import samples analysed for the different animal species/product categories and the frequency of non-compliant samples is presented in Table 42. Further details on the substances identified and countries which reported non-compliant results are given in Appendix C.

In total, 295,690 samples were collected in the framework of other monitoring programmes developed under the national legislation. An overview on the number of 'other' samples analysed for the different animal species/product categories and the frequency of non-compliant samples is presented in Table 42. Further details on the substances identified and countries which reported non-compliant results are given in Appendix D.

Table 42: Number of suspect, import and other samples analysed and frequency of non-compliant samples and in all species and product categories

Group	Suspect samples total	Suspect samples non-compliant	Import samples total	Import samples non-compliant	Other samples total	Other samples non-compliant
Aquaculture	485	57	1,291	8	2,949	2
Bovines	3,580	56	276	0	21,386	31
Eggs	105	28	16	0	349	2
Farmed game	NA	NA	20	0	9	0
Honey	48	9	236	3	154	0
Horses	27	2	34	0	98	0
Milk	240	8	17	2	1,772	2
Pigs	227	1	35	0	264,381	47
Poultry	129	21	347	0	298	1
Rabbits	15	0	13	0	101	1
Sheep/goats	155	1	53	1	4,182	2
Wild game	5	1	4	0	11	0
Total	**5,016**	**184**	**2,342**	**14**	**295,690**	**88**
Percentage non-compliant samples		**3.67**		**0.60**		**0.03**

NA: not applicable.

4. Conclusions

- In 2019, 27 out of 28 European Union (EU) Member States, Iceland and Norway reported in the framework of the residue monitoring the results for 671,642 samples. A total of 368,594 targeted samples and 5,016 suspect samples were reported under Council Directive 96/23/EC. Additionally, 295,690 samples collected in the framework of other programmes developed under the national legislation and 2,342 samples checked at import, were reported.
- The majority of countries fulfilled the requirements for sampling frequency laid down in Council Directive 96/23/EC and in Commission Decision 97/747/EC.
- Overall, there were 1,191 or 0.32% of non-compliant samples out of the 368,594 targeted samples in 2019.
- No non-compliant samples were reported for stilbenes and derivatives (A1).
- For antithyroid agents (A2), there were 0.58% non-compliant samples, all for thiouracil, and possibly due to feeding diets rich in cruciferous plants.
- In the group of steroids (A3), non-compliant samples (all for anabolic steroids) were found in bovines (0.51%), pigs (0.45%), poultry (0.18%) and sheep and goats (5.23%).
- In the group of resorcylic acid lactones (A4), 0.11% of the samples were non-compliant for zearalanone and derivatives; the non-compliant samples were found in bovines (0.13%), pigs (0.09%), sheep and goats (0.25%), and horses (2.26%).
- For beta-agonists (A5), there were no non-compliant samples reported.
- Prohibited substances (A6) were found in 0.01% of samples. Substances identified were chloramphenicol (n = 8), nitroimidazoles (n = 7) and nitrofurans (n = 1).
- For antibacterials (B1), 0.14% of the samples analysed under the Directive 96/23/EC monitoring were non-compliant. The highest frequency of non-compliant samples for antibacterials was found in honey (0.98%).
- In group B2 (other veterinary drugs), the highest proportion of non-compliant samples was found for non-steroidal anti-inflammatory drugs (NSAIDs) (B2e) (0.19%). For NSAIDs, the non-compliant samples were reported across the different species as follows: bovines (0.27%), poultry (0.09%), horses (0.63%), pigs (0.04%), sheep and goats (0.05%) and milk (0.36%),
- Instances of non-compliance for anthelmintics (B2a) were reported in bovines (0.05%), sheep and goats (0.48%), pigs (0.09%), horses (0.8%), poultry (0.02%) and milk (0.08%).
- For anticoccidials (B2b), 0.05% of the samples analysed were non-compliant and were reported across the different species as follows: sheep and goats (0.09%), pigs (0.04%), poultry (0.03%) and eggs (0.21%).
- Since 2009, an important decrease has been observed in the frequency of non-compliant samples for anticoccidials (B2b) in poultry. This decrease is most likely the result of the awareness and the measures that followed the implementation of the Commission Directive 2009/8/EC setting up maximum levels of unavoidable carry-over of coccidiostats in non-target feed.
- No non-compliant samples were reported for pyrethroids (B2c) or sedatives (B2d).
- Non-compliant samples were reported for 'other pharmacologically active substances' (B2f), for bovines (0.11%), rabbits (1.14), poultry (0.03) and pigs (0.02).
- In the group B3 (other substances and environmental contaminants), the chemical elements (B3c) had the highest overall percentage of non-compliant samples (4.21%), with cadmium, lead, mercury and copper being most frequently identified.
- Instances of non-compliance for organochlorine compounds (B3a) and organophosphorus compounds (B3b) were 0.17% and 0.02%, respectively.

- For mycotoxins (B3d), there were non-compliant samples reported for bovines (0.13%), pigs (0.16%), horses (1.04%) and milk (0.18%); with those identified being zearalenone and aflatoxin M_1.
- For dyes (B3e), non-compliant samples were reported for aquaculture (1.09%). The substances found were leuco-malachite green, crystal violet, sum of crystal violet and leucocrystal violet and sum of malachite green and leuco-malachite green.
- For 'other substances' (B3f), non-compliant samples were reported for honey (0.24%), eggs (0.33%), bovines (0.42%) and poultry (0.1%). The substances identified were didecyldimethylammonium chloride, fipronil and clopyralid.
- Overall, the percentage of non-compliant samples in 2019 (0.30%) was comparable to the previous 11 years (0.25%-0.37%).
- Compared to the results from 2017 and 2018, in 2019 the frequency of non-compliant results was slightly increased for antithyroid agents (A2), steroids (A3).
- For chemical elements (including metals) (B3c), compared to 2018, the frequency of non-compliance in 2019 was higher, although lower compared to 2017.
- In 2019, slight decreases were noted for resorcylic acid lactones (A4), prohibited substances (A6), antibacterials (B1), anticoccidials (B2b), and dyes (B3e), compared to 2017 and 2018.

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Abbreviations

AMOZ	5-methylmorpholino-3-amino-2-oxazolidone
AOZ	3-amino-2-oxazolidone
DG SANTÉ	Directorate General for Health and Food Safety
EC	European Commission
EFSA	European Food Safety Authority
IS	Iceland
MRL	Maximum residue limit
MRPL	Minimum Required Performance Limit
NO	Norway
NRCPs	National Residue Control Plans
NSAIDs	Non-steroidal anti-inflammatory drugs
RASFF	Rapid Alert System for Food and Feed
SEM	Semicarbazide
TRACES	Trade Control and Expert System

Appendix A – List of non-compliant results: targeted sampling

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
Aquaculture	A6	Dimetridazole	Denmark	59	1	1.69
		Sub-total for A6	1	NA	1	NA
	B1	Sum of enrofloxacin and ciprofloxacin	Bulgaria	14	1	7.14
		Sum of florfenicol and its metabolites measured as florfenicol-amine	France	12	1	8.33
		Sub-total for B1	2	NA	2	NA
	B3e	Crystal Violet	Slovakia	87	1	1.15
		Leucomalachite Green	Czechia	74	2	2.7
		Sum of crystal violet and leucocrystal violet	Estonia	5	1	20
		Sum of crystal violet and leucocrystal violet	Poland	138	1	0.72
		Sum of malachite green and leucomalachite green	Belgium	34	1	2.94
		Sum of malachite green and leucomalachite green	Bulgaria	7	1	14.29
		Sum of malachite green and leucomalachite green	Czechia	1	1	100
		Sum of malachite green and leucomalachite green	Denmark	77	2	2.6
		Sum of malachite green and leucomalachite green	Estonia	5	1	20
		Sum of malachite green and leucomalachite green	Germany	89	1	1.12
		Sum of malachite green and leucomalachite green	Italy	5	3	60
		Sum of malachite green and leucomalachite green	Poland	128	2	1.56
		Sub-total for B3e	9	NA	17	NA
	NA	**Total for Aquaculture**	10	NA	20	NA
Bovines	A2	Thiouracil	Greece	67	1	1.49
		Thiouracil	Ireland	280	15	5.36
		Thiouracil	Lithuania	23	2	8.7
		Thiouracil	Netherlands	442	26	5.88
		Thiouracil	Norway	102	1	0.98
		Thiouracil	Spain	500	5	1
		Sub-total for A2	6	NA	50	NA
	A3	Boldenone	Austria	326	1	0.31
		Boldenone-Alpha	Ireland	15	6	40

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Boldenone-Alpha	Norway	122	3	2.46
		Boldenone-Alpha	Poland	153	1	0.65
		Boldenone-Alpha	United Kingdom	2,386	8	0.34
		Epinandrolone (19-Norepitestosterone)	Ireland	130	7	5.38
		Epinandrolone (19-Norepitestosterone)	Norway	122	8	6.56
		Epinandrolone (19-Norepitestosterone)	United Kingdom	2,202	14	0.64
		Estradiol-17-Alpha	Ireland	61	3	4.92
		Nandrolone	United Kingdom	2,202	7	0.32
		Norethandrolon	Latvia	23	1	4.35
		Progesterone	Ireland	186	57	30.65
		Progesterone	Lithuania	2	1	50
		Testosterone-17-Alpha	Ireland	25	8	32
		Testosterone-17-Alpha	Lithuania	4	4	100
		Testosterone-17-Beta	Austria	169	1	0.59
		Testosterone-17-Beta	Ireland	183	4	2.19
		Testosterone-17-Beta	Italy	88	1	1.14
		Testosterone-17-Beta	Latvia	10	3	30
		Testosterone-17-Beta	Lithuania	47	1	2.13
		Sub-total for A3	8	NA	139	NA
	A4	Alpha-Zearalanol (Zeranol)	Norway	186	1	0.54
		Alpha-Zearalanol (Zeranol)	United Kingdom	523	6	1.15
		Beta Zearalanol (Taleranol)	Norway	1	1	100
		Beta Zearalanol (Taleranol)	United Kingdom	922	10	1.08
		Zearalenol alpha	Romania	34	1	2.94
		Zearalenol beta	Romania	34	5	14.71
		Sub-total for A4	3	NA	24	NA
	A6	Chloramphenicol	Bulgaria	21	1	4.76
		Dimetridazole	Slovakia	14	1	7.14
		SEM (semicarbazide)	Ireland	340	1	0.29
		Sub-total for A6	3	NA	3	NA
	B1	Amoxycillin	Austria	968	1	0.1
		Benzylpenicillin (Penicillin G)	Croatia	151	1	0.66

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Benzylpenicillin (Penicillin G)	Poland	1,106	1	0.09
		Benzylpenicillin (Penicillin G)	Romania	87	1	1.15
		Dihydrostreptomycin	Austria	968	1	0.1
		Dihydrostreptomycin	Netherlands	1,995	1	0.05
		Dihydrostreptomycin	Norway	418	7	1.67
		Dihydrostreptomycin	Poland	1,325	4	0.3
		Dihydrostreptomycin	Romania	89	1	1.12
		Dihydrostreptomycin	United Kingdom	495	3	0.61
		Doxycycline	Belgium	721	1	0.14
		Doxycycline	Romania	3	1	33.33
		Gentamicin	Netherlands	1,995	1	0.05
		Gentamicin	Poland	814	2	0.25
		Gentamicin	Romania	89	2	2.25
		Marbofloxacin	Poland	814	1	0.12
		Oxytetracycline	France	1,828	9	0.49
		Oxytetracycline	Spain	969	1	0.1
		Streptomycin	Romania	89	1	1.12
		Sulfadiazine	United Kingdom	1,115	1	0.09
		Sulfadimethoxine	Italy	1,786	1	0.06
		Sulfadimidine	France	1,401	3	0.21
		Sulfadoxin	Germany	2,241	2	0.09
		Sulfonamides	Norway	418	1	0.24
		Sulfonamides	Poland	370	2	0.54
		Sum of florfenicol and its metabolites measured as florfenicol-amine	Austria	1	1	100
		Sum of florfenicol and its metabolites measured as florfenicol-amine	France	173	1	0.58
		Sum of oxytetracycline and its 4-epimer	Austria	968	1	0.1
		Sum of oxytetracycline and its 4-epimer	France	7	2	28.57
		Sum of oxytetracycline and its 4-epimer	Germany	2,428	1	0.04
		Sum of oxytetracycline and its 4-epimer	Romania	78	2	2.56
		Sum of spiramycin and neospiramycin	France	1	1	100

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Sum of tetracycline and its 4-epimer	Germany	2,428	2	0.08
		Sum of tetracycline and its 4-epimer	Poland	588	1	0.17
		Tildipirosin	France	1,401	1	0.07
		Trimethoprim	France	1,401	1	0.07
		Trimethoprim	Germany	2,301	1	0.04
		Trimethoprim	Poland	586	2	0.34
		Tulathromycin	France	1,400	2	0.14
		Tylon (Tylosin, Tylosin A)	Poland	814	1	0.12
		Sub-total for B1	12	NA	70	NA
	B2a	Avermectin B1a	Ireland	534	1	0.19
		Closantel	Ireland	534	1	0.19
		Closantel	United Kingdom	718	1	0.14
		Sub-total for B2a	2	NA	3	NA
	B2e	Acetaminophen (Paracetamol)	Netherlands	245	6	2.45
		Antipyrin-4-Methylamino	Austria	73	1	1.37
		Antipyrin-4-Methylamino	Germany	228	1	0.44
		Antipyrin-4-Methylamino	Romania	24	1	4.17
		Ketoprofen	Croatia	47	1	2.13
		Meloxicam	Austria	107	1	0.93
		Meloxicam	France	851	1	0.12
		Meloxicam	Germany	1,208	4	0.33
		Meloxicam	United Kingdom	414	1	0.24
		Phenylbutazone	Germany	2,193	1	0.05
		Sub-total for B2e	7	NA	18	NA
	B2f	Dexamethasone	France	433	2	0.46
		Dexamethasone	Germany	1,520	5	0.33
		Dexamethasone	Ireland	70	1	1.43
		Dexamethasone	Italy	2,704	2	0.07
		Dexamethasone	Netherlands	2,053	1	0.05
		Dexamethasone	Poland	120	1	0.83
		Dexamethasone	Spain	673	1	0.15
		Prednisolone	Spain	672	1	0.15
		Sub-total for B2f	7	NA	14	NA
	B3a	Hexachlorobenzene	Germany	315	1	0.32
		Sub-total for B3a	1	NA	1	NA

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
	B3c	Cadmium (Cd)	Germany	303	5	1.65
		Cadmium (Cd)	Latvia	9	1	11.11
		Cadmium (Cd)	Netherlands	199	18	9.05
		Cadmium (Cd)	Poland	195	4	2.05
		Cadmium (Cd)	Slovenia	8	1	12.5
		Cadmium (Cd)	Spain	213	5	2.35
		Cadmium (Cd)	United Kingdom	84	1	1.19
		Copper (Cu)	Cyprus	13	6	46.15
		Copper (Cu)	Germany	304	49	16.12
		Copper (Cu)	Norway	65	30	46.15
		Lead (Pb)	Austria	235	1	0.43
		Lead (Pb)	Germany	304	1	0.33
		Lead (Pb)	Netherlands	199	2	1.01
		Lead (Pb)	United Kingdom	84	2	2.38
		Total copper	Denmark	28	11	39.29
		Total mercury	Germany	304	5	1.64
		Total mercury	Netherlands	199	1	0.5
		Sub-total for B3c	11	NA	143	NA
	B3d	Zearalenone	Romania	34	5	14.71
		Sub-total for B3d	1	NA	5	NA
	B3f	Didecyldimethyl-ammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	Netherlands	107	3	2.8
		Sub-total for B3f	1	NA	3	NA
	NA	**Total for Bovines**	21	NA	473	NA
	B1	Doxycycline	Austria	72	1	1.39
		Sulfadiazine	Spain	340	4	1.18
		Sulfamethoxazole	Czechia	40	1	2.5
		Sum of enrofloxacin and ciprofloxacin	Croatia	3	3	100
		Trimethoprim	Spain	251	1	0.4
		Sub-total for B1	4	NA	10	NA
	B2b	Diclazuril	Croatia	178	1	0.56
		Lasalocid A	Croatia	178	1	0.56
Eggs		Narasin	Croatia	178	1	0.56

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Narasin	Estonia	38	1	2.63
		Narasin	Slovenia	178	1	0.56
		Narasin	Sweden	167	1	0.6
		Salinomycin	Latvia	152	1	0.66
		Salinomycin	Poland	230	2	0.87
		Toltrazurilsulfon	Latvia	152	3	1.97
		Toltrazurilsulfon	Poland	226	1	0.44
		Sub-total for B2b	6	NA	13	NA
	B3a	DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT)	Latvia	58	1	1.72
		Sum of 6 PCB indicators	Germany	135	2	1.48
		WHO-PCDD/F-PCB-TEQ	Germany	133	3	2.26
		WHO-PCDD/F-TEQ	Germany	133	2	1.5
		Sub-total for B3a	2	NA	8	NA
	B3f	Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)	Croatia	38	1	2.63
		Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)	Romania	125	3	2.4
		Sub-total for B3f	2	NA	4	NA
	NA	**Total for Eggs**	11	NA	35	NA
Farmed game	B3a	Hexachlorobenzene	Finland	12	2	16.67
		Hexachlorobenzene	Sweden	15	1	6.67
		Sub-total for B3a	2	NA	3	NA
	B3c	Cadmium (Cd)	Finland	25	8	32
		Cadmium (Cd)	Norway	111	22	19.82
		Copper (Cu)	Germany	35	1	2.86
		Copper (Cu)	Norway	111	37	33.33
		Lead (Pb)	Austria	20	1	5
		Lead (Pb)	Finland	25	1	4
		Lead (Pb)	Norway	111	1	0.9
		Sub-total for B3c	4	NA	71	NA
	NA	**Total for Farmed game**	5	NA	74	NA
Honey	A6	Metronidazole	Poland	34	2	5.88
		Sub-total for A6	1	NA	2	NA
	B1	Doxycycline	Cyprus	18	1	5.56

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Oxytetracycline	Greece	68	2	2.94
		Sulfacetamide	Poland	257	5	1.95
		Sulfadiazine	Cyprus	18	1	5.56
		Sulfamethazin (sulfadimidin)	Croatia	1	1	100
		Sulfamethazin (sulfadimidin)	Poland	261	10	3.83
		Sulfathiazole	Austria	106	1	0.94
		Sulfathiazole	Poland	261	10	3.83
		Sum of oxytetracycline and its 4-epimer	Romania	38	1	2.63
		Sum of tetracycline and its 4-epimer	France	1	1	100
		Sum of tetracycline and its 4-epimer	Romania	38	1	2.63
		Tylon (Tylosin, Tylosin A)	Slovakia	33	1	3.03
		Sub-total for B1	8	NA	35	NA
	B3a	Captan/Folpet (sum)	Belgium	46	1	2.17
		Sub-total for B3a	1	NA	1	NA
	B3b	Glyphosate	Belgium	20	1	5
		Omethoate	Italy	22	1	4.55
		Sub-total for B3b	2	NA	2	NA
	B3c	Cadmium (Cd)	Greece	37	3	8.11
		Cadmium (Cd)	Norway	13	1	7.69
		Cadmium (Cd)	Poland	33	1	3.03
		Copper (Cu)	Germany	30	14	46.67
		Copper (Cu)	Norway	13	13	100
		Lead (Pb)	Greece	37	1	2.7
		Lead (Pb)	Norway	13	1	7.69
		Lead (Pb)	United Kingdom	13	1	7.69
		Total copper	Denmark	14	14	100
		Sub-total for B3c	6	NA	49	NA
	B3f	Clopyralid	Belgium	2	1	50
		Thiacloprid	Germany	130	1	0.77
		Sub-total for B3f	2	NA	2	NA
	NA	**Total for Honey**	14	NA	91	NA
Horses	A4	Alpha-Zearalanol (Zeranol)	Italy	5	1	20
		Beta Zearalanol (Taleranol)	Italy	3	1	33.33

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Zearalanone	Italy	1	1	100
		Zearalenol alpha	Romania	32	1	3.13
		Zearalenol beta	Romania	32	1	3.13
		Sub-total for A4	2	NA	5	NA
	B2a	Closantel	Ireland	35	2	5.71
		Sub-total for B2a	1	NA	2	NA
	B2e	Diclofen (Diclofenac)	Ireland	153	2	1.31
		Phenylbutazone	Sweden	92	1	1.09
		Phenylbutazone	United Kingdom	44	1	2.27
		Sub-total for B2e	3	NA	4	NA
	B3a	Hexachlorocyclohexane (HCH), beta-isomer	Latvia	2	1	50
		TEQ dioxins and dioxin-like PCBs UB	Denmark	2	1	50
		Sub-total for B3a	2	NA	2	NA
	B3c	Cadmium (Cd)	Austria	8	1	12.5
		Cadmium (Cd)	Germany	3	1	33.33
		Cadmium (Cd)	Italy	239	2	0.84
		Cadmium (Cd)	Poland	129	1	0.78
		Cadmium (Cd)	Slovenia	6	4	66.67
		Cadmium (Cd)	Spain	25	3	12
		Cadmium (Cd)	United Kingdom	1	1	100
		Lead (Pb)	Spain	25	1	4
		Total mercury	Germany	3	1	33.33
		Sub-total for B3c	7	NA	15	NA
	B3d	Zearalenone	Romania	32	1	3.13
		Sub-total for B3d	1	NA	1	NA
	NA	**Total for Horses**	12	NA	29	NA
Milk	A6	Chloramphenicol	Italy	67	1	1.49
		Chloramphenicol	Latvia	258	1	0.39
		Chloramphenicol	Poland	286	1	0.35
		Sub-total for A6	3	NA	3	NA
	B1	Aminosidin (Paromycin, Paromomycin)	Cyprus	87	1	1.15
		Amoxycillin	Italy	348	1	0.29
		Ampicillin	Italy	422	1	0.24
		Benzylpenicillin (Penicillin G)	Finland	244	1	0.41

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Benzylpenicillin (Penicillin G)	Norway	246	1	0.41
		Benzylpenicillin (Penicillin G)	Romania	59	1	1.69
		Dihydrostreptomycin	Norway	254	1	0.39
		Doxycycline	Poland	1,717	1	0.06
		Rifaximin	Latvia	211	1	0.47
		Sum of all residues retaining the betalactam structure expressed as desfuroylceftiofur	Romania	58	1	1.72
		Sum of tetracycline and its 4-epimer	Poland	126	1	0.79
		Sub-total for B1	7	NA	11	NA
	B2a	Closantel	Czechia	20	1	5
		Ivermectin	Ireland	344	1	0.29
		Moxidectin	Germany	1,111	1	0.09
		Oxyclozanide	Germany	1,104	1	0.09
		Oxyclozanide	Ireland	344	1	0.29
		Sub-total for B2a	3	NA	5	NA
	B2e	Acetaminophen (Paracetamol)	Germany	200	2	1
		Antipyrin-4-Hydroxy	Croatia	133	1	0.75
		Diclofen (Diclofenac)	Austria	31	1	3.23
		Diclofen (Diclofenac)	Belgium	61	1	1.64
		Diclofen (Diclofenac)	Croatia	133	3	2.26
		Diclofen (Diclofenac)	Finland	127	1	0.79
		Diclofen (Diclofenac)	Germany	1,528	6	0.39
		Diclofen (Diclofenac)	Ireland	86	1	1.16
		Diclofen (Diclofenac)	Netherlands	678	1	0.15
		Diclofen (Diclofenac)	Poland	32	1	3.13
		Salicylic acid	Belgium	61	1	1.64
		Sub-total for B2e	8	NA	19	NA
	B3a	TEQ Dioxin-like PCBs LB	Italy	89	1	1.12
		TEQ Dioxin-like PCBs UB	Italy	85	1	1.18
		Sub-total for B3a	1	NA	2	NA
	B3d	Aflatoxin M1	Croatia	61	2	3.28
		Aflatoxin M1	Italy	457	1	0.22
		Sub-total for B3d	2	NA	3	NA
	NA	**Total for Milk**	14	NA	43	NA
Pigs	A2	Thiouracil	Austria	57	1	1.75

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Thiouracil	France	240	2	0.83
		Thiouracil	Ireland	40	1	2.5
		Thiouracil	Lithuania	12	1	8.33
		Sub-total for A2	4	NA	5	NA
	A3	Boldenone	Ireland	30	12	40
		Boldenone	Netherlands	12	1	8.33
		Boldenone-Alpha	Poland	73	3	4.11
		Nandrolone	Ireland	23	13	56.52
		Nandrolone	Netherlands	440	4	0.91
		Nandrolone	Poland	535	4	0.75
		Nandrolone	Spain	43	1	2.33
		Normethandrolone	France	227	4	1.76
		Testosterone-17-Beta	Ireland	21	7	33.33
		Sub-total for A3	5	NA	49	NA
	A4	Zearalenol alpha	Romania	48	4	8.33
		Zearalenol alpha	Spain	14	1	7.14
		Sub-total for A4	2	NA	5	NA
	A6	Chloramphenicol	Spain	1,825	1	0.05
		Hydroxymetronidazol (MNZOH)	Spain	479	1	0.21
		Metronidazole	France	464	1	0.22
		Metronidazole	Spain	596	1	0.17
		Sub-total for A6	2	NA	4	NA
	B1	Amoxycillin	Belgium	1,146	1	0.09
		Amoxycillin	Germany	8,099	1	0.01
		Amoxycillin	Poland	1,033	2	0.19
		Benzylpenicillin (Penicillin G)	Belgium	1,146	1	0.09
		Benzylpenicillin (Penicillin G)	Czechia	375	1	0.27
		Dihydrostreptomycin	Austria	1,058	1	0.09
		Dihydrostreptomycin	Belgium	1,137	1	0.09
		Dihydrostreptomycin	Czechia	160	2	1.25
		Dihydrostreptomycin	France	1,383	1	0.07
		Doxycycline	Germany	8,669	1	0.01
		Doxycycline	Italy	718	1	0.14
		Doxycycline	Poland	2,450	1	0.04
		Doxycycline	Spain	3,540	3	0.08
		Lincomycin	Spain	1,896	1	0.05

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Oxytetracycline	Hungary	352	1	0.28
		Sulfadiazine	Netherlands	2,750	1	0.04
		Sulfadimethoxine	France	1,449	1	0.07
		Sulfadimethoxine	Italy	1,250	5	0.4
		Sulfadimidine	Cyprus	73	3	4.11
		Sulfadimidine	France	1,449	1	0.07
		Sulfadimidine	Germany	7,301	1	0.01
		Sum of chlortetracyclin and its 4-epimer	Italy	369	1	0.27
		Sum of oxytetracycline and its 4-epimer	Netherlands	2,750	1	0.04
		Sum of oxytetracycline and its 4-epimer	Poland	793	1	0.13
		Tylon (Tylosin, Tylosin A)	Poland	1,033	1	0.1
		Sub-total for B1	11	NA	35	NA
	B2a	Eprinomectin B1a	Poland	532	3	0.56
		Levamisole	Belgium	162	1	0.62
		Levamisole	Italy	32	1	3.13
		Levamisole	Lithuania	90	1	1.11
		Moxidectin	Poland	532	2	0.38
		Sum of flubendazole and (2-amino 1H-benzimidazol-5-yl) (4fluorophenyl) methanone	Germany	372	1	0.27
		Sub-total for B2a	5	NA	9	NA
	B2b	Toltrazurilsulfon	Spain	847	4	0.47
		Sub-total for B2b	1	NA	4	NA
	B2e	Diclofen (Diclofenac)	Germany	470	2	0.43
		Ketoprofen	Croatia	35	1	2.86
		Sub-total for B2e	2	NA	3	NA
	B2f	17-Beta-Boldenone Glucuronide	Netherlands	7	1	14.29
		Prednisone	Ireland	55	1	1.82
		Sub-total for B2f	2	NA	2	NA
	B3a	Hexachlorobenzene	Spain	745	1	0.13
		Sub-total for B3a	1	NA	1	NA
	B3c	Cadmium (Cd)	Germany	1,330	10	0.75
		Cadmium (Cd)	Spain	665	4	0.6
		Copper (Cu)	Germany	1,330	81	6.09
		Copper (Cu)	Norway	23	1	4.35

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Total mercury	Germany	1,329	43	3.24
		Total mercury	Netherlands	292	1	0.34
		Sub-total for B3c	4	NA	140	NA
	B3d	Zearalenone	Romania	48	4	8.33
		Zearalenone	Spain	16	1	6.25
		Sub-total for B3d	2	NA	5	NA
	NA	**Total for Pigs**	16	NA	262	NA
Poultry	A3	Boldenone	France	425	2	0.47
		Estradiol-17-Beta	France	425	1	0.24
		Normethandrolone	France	424	8	1.89
		Sub-total for A3	1	NA	11	NA
	A6	Chloramphenicol	France	856	3	0.35
		Sub-total for A6	1	NA	3	NA
	B1	Benzylpenicillin (Penicillin G)	Croatia	86	1	1.16
		Doxycycline	Netherlands	1,595	2	0.13
		Doxycycline	Poland	2,275	1	0.04
		Sum of enrofloxacin and ciprofloxacin	Poland	1,269	1	0.08
		Tilmicosin	Poland	1,512	1	0.07
		Sub-total for B1	3	NA	6	NA
	B2a	Levamisole	Belgium	101	1	0.99
		Sub-total for B2a	1	NA	1	NA
	B2b	Halofuginone	Italy	357	1	0.28
		Lasalocid	France	740	1	0.14
		Monensin	United Kingdom	1,493	1	0.07
		Toltrazurilsulfon	Netherlands	299	1	0.33
		Sub-total for B2b	4	NA	4	NA
	B2e	Diclofen (Diclofenac)	Austria	24	1	4.17
		Diclofen (Diclofenac)	Germany	455	1	0.22
		Sub-total for B2e	2	NA	2	NA
	B2f	Nicotine	Germany	117	1	0.85
		Sub-total for B2f	1	NA	1	NA
	B3a	Hexachlorocyclohexane (HCH), alpha-isomer	Spain	347	1	0.29
		Sub-total for B3a	1	NA	1	NA
	B3c	Cadmium (Cd)	Netherlands	130	1	0.77
		Copper (Cu)	Germany	170	2	1.18

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Sub-total for B3c	2	NA	3	NA
	B3f	Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)	Romania	46	1	2.17
		Sub-total for B3f	1	NA	1	NA
	NA	**Total for Poultry**	11	NA	33	NA
	B1	Sulfadimethoxine	Italy	85	1	1.18
		Sub-total for B1	1	NA	1	NA
	B2f	Dexamethasone	Spain	4	1	25
		Prednisolone	Spain	4	1	25
		Sub-total for B2f	1	NA	2	NA
Rabbits	NA	Total for Rabbits	2	NA	3	NA
Sheep/goats	A2	Thiouracil	Ireland	17	2	11.76
		Sub-total for A2	1	NA	2	NA
	A3	Boldenone	United Kingdom	508	1	0.2
		Boldenone-Alpha	Ireland	1	1	100
		Boldenone-Alpha	Norway	20	10	50
		Boldenone-Alpha	United Kingdom	508	30	5.91
		Epinandrolone (19-Norepitestosterone)	France	76	6	7.89
		Epinandrolone (19-Norepitestosterone)	Norway	20	10	50
		Nandrolone	United Kingdom	508	3	0.59
		Normethandrolone	France	76	1	1.32
		Sub-total for A3	4	NA	62	NA
	A4	Alpha-Zearalanol (Zeranol)	United Kingdom	70	1	1.43
		Beta Zearalanol (Taleranol)	United Kingdom	70	1	1.43
		Sub-total for A4	1	NA	2	NA
	B1	Dihydrostreptomycin	France	35	1	2.86
		Dihydrostreptomycin	Greece	54	1	1.85
		Oxytetracycline	Cyprus	17	1	5.88
		Oxytetracycline	France	532	4	0.75
		Oxytetracycline	Spain	35	1	2.86
		Sulfadiazine	Cyprus	44	2	4.55
		Sulfadiazine	Spain	342	2	0.58
		Sulfadimethoxine	France	531	2	0.38

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Tulathromycin	France	498	1	0.2
		Sub-total for B1	4	NA	15	NA
	B2a	Closantel	Ireland	379	6	1.58
		Closantel	United Kingdom	1,536	5	0.33
		Doramectin	United Kingdom	475	1	0.21
		Ivermectin	United Kingdom	475	1	0.21
		Levamisole	Ireland	377	1	0.27
		Moxidectin	Spain	79	1	1.27
		Nitroxinil	Ireland	377	1	0.27
		Oxyclozanide	Ireland	377	1	0.27
		Rafoxanide	Ireland	377	2	0.53
		Sub-total for B2a	3	NA	19	NA
	B2b	Lasalocid-Sodium	Lithuania	1	1	100
		Sub-total for B2b	1	NA	1	NA
	B2e	Diclofen (Diclofenac)	Germany	100	1	1
		Sub-total for B2e	1	NA	1	NA
	B3a	WHO-PCDD/F-TEQ	Belgium	10	1	10
		Sub-total for B3a	1	NA	1	NA
	B3c	Cadmium (Cd)	Germany	22	1	4.55
		Cadmium (Cd)	Greece	33	2	6.06
		Cadmium (Cd)	Netherlands	8	1	12.5
		Cadmium (Cd)	Norway	56	1	1.79
		Cadmium (Cd)	Poland	19	1	5.26
		Copper (Cu)	Cyprus	2	1	50
		Copper (Cu)	Germany	22	9	40.91
		Copper (Cu)	Norway	56	21	37.5
		Lead (Pb)	United Kingdom	58	1	1.72
		Total copper	Denmark	6	1	16.67
		Total mercury	Cyprus	5	1	20
		Total mercury	Germany	22	1	4.55
		Sub-total for B3c	8	NA	41	NA
	NA	**Total for Sheep/goats**	13	NA	144	NA
Wild game	B3a	DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT)	Germany	60	9	15

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
		Hexachlorocyclohexane (HCH), alpha-isomer	Germany	68	1	1.47
		PCB-138	Germany	66	1	1.52
		PCB-153	Germany	66	1	1.52
		Sub-total for B3a	1	NA	12	NA
	B3c	Cadmium (Cd)	Latvia	103	44	42.72
		Cadmium (Cd)	Netherlands	103	2	1.94
		Cadmium (Cd)	Norway	45	1	2.22
		Cadmium (Cd)	Poland	189	5	2.65
		Cadmium (Cd)	Portugal	60	1	1.67
		Cadmium (Cd)	Spain	118	2	1.69
		Copper (Cu)	Norway	45	17	37.78
		Lead (Pb)	Austria	178	9	5.06
		Lead (Pb)	Croatia	16	1	6.25
		Lead (Pb)	Greece	39	4	10.26
		Lead (Pb)	Ireland	86	3	3.49
		Lead (Pb)	Latvia	103	5	4.85
		Lead (Pb)	Poland	190	9	4.74
		Lead (Pb)	Slovakia	109	1	0.92
		Lead (Pb)	Slovenia	99	3	3.03
		Lead (Pb)	Sweden	96	1	1.04
		Total mercury	Germany	70	6	8.57
		Total mercury	Netherlands	103	1	0.97
		Total mercury	Slovakia	109	2	1.83
		Sub-total for B3c	14	NA	117	NA
	NA	**Total for Wild game**	14	NA	129	NA

(a): The number of samples analysed for the individual substances is presented only if there was at least one non-compliant sample for the substance in question.

Appendix B – List of non-compliant results: suspect sampling

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
Aquaculture	B1	Sum of enrofloxacin and ciprofloxacin	Bulgaria	4	1	25
		Sum of enrofloxacin and ciprofloxacin	Germany	14	3	21.43
		Sub-total for B1	2	NA	4	NA
	B3e	Sum of crystal violet and leucocrystal violet	Estonia	6	1	16.67
		Sum of malachite green and leucomalachite green	Bulgaria	6	4	66.67
		Sum of malachite green and leucomalachite green	Denmark	20	3	15
		Sum of malachite green and leucomalachite green	Estonia	6	6	100
		Sum of malachite green and leucomalachite green	Germany	29	29	100
		Sum of malachite green and leucomalachite green	Italy	34	11	32.35
		Sub-total for B3e	5	NA	54	NA
	NA	**Total for Aquaculture**	5	NA	58	NA
Bovines	A3	Testosterone-17-Beta	Italy	26	1	3.85
		Sub-total for A3	1	NA	1	NA
	B1	Amoxycillin	Ireland	1,437	2	0.14
		Amoxycillin	Italy	523	2	0.38
		Ampicillin	Italy	526	2	0.38
		Benzylpenicillin (Penicillin G)	Ireland	6	1	16.67
		Benzylpenicillin (Penicillin G)	Italy	524	2	0.38
		Lincomycin	Italy	518	1	0.19
		Marbofloxacin	Ireland	1,434	1	0.07
		Marbofloxacin	Italy	532	8	1.5
		Sulfadiazine	Italy	526	1	0.19
		Sulfapyridin	Italy	306	1	0.33
		Sulfonamides	Italy	4	1	25
		Sum of chlortetracyclin and its 4-epimer	Italy	12	1	8.33
		Sum of enrofloxacin and ciprofloxacin	Italy	25	1	4
		Sum of oxytetracycline and its 4-epimer	Austria	441	1	0.23
		Sum of oxytetracycline and its 4-epimer	Ireland	5	4	80

Category	Group	Substance	Country	Number of samples analysed[a]	Non-compliant results	% non-compliant
		Sum of oxytetracycline and its 4-epimer	Italy	32	15	46.88
		Tilmicosin	Spain	16	1	6.25
		Sub-total for B1	4	NA	45	NA
	B2f	Dexamethasone	Italy	339	3	0.88
		Sub-total for B2f	1	NA	3	NA
	B3a	Hexachlorobenzene	Germany	1	1	100
		Sub-total for B3a	1	NA	1	NA
	B3c	Copper (Cu)	Cyprus	7	7	100
		Copper (Cu)	Germany	4	1	25
		Sub-total for B3c	2	NA	8	NA
	NA	**Total for Bovines**	6	NA	58	NA
Eggs	B2b	Narasin	Estonia	3	1	33.33
		Salinomycin	Austria	5	1	20
		Salinomycin	Latvia	4	2	50
		Sub-total for B2b	3	NA	4	NA
	B3a	Sum of 6 PCB indicators	Germany	2	1	50
		WHO-PCDD/F-PCB-TEQ	Germany	4	1	25
		WHO-PCDD/F-TEQ	Germany	4	1	25
		Sub-total for B3a	1	NA	3	NA
	B3f	Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)	Romania	37	22	59.46
		Sub-total for B3f	1	NA	22	NA
	NA	**Total for Eggs**	5	NA	29	NA
Honey	A6	Chloramphenicol	Poland	5	4	80
		Sub-total for A6	1	NA	4	NA
	B1	Oxytetracycline	Greece	3	1	33.33
		Streptomycin	Romania	1	1	100
		Sulfacetamide	Poland	8	1	12.5
		Sulfadiazine	Greece	2	1	50
		Sulfamethazin (sulfadimidin)	Poland	10	1	10
		Sulfathiazole	Poland	9	1	11.11
		Sub-total for B1	3	NA	6	NA
	B3c	Lead (Pb)	Greece	1	1	100
		Sub-total for B3c	1	NA	1	NA
	NA	**Total for Honey**	3	NA	11	NA

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
Horses	B3c	Cadmium (Cd)	Spain	4	2	50
		Lead (Pb)	Spain	4	1	25
		Sub-total for B3c	1	NA	3	NA
	NA	**Total for Horses**	1	NA	3	NA
Milk	B1	Amoxycillin	Italy	123	1	0.81
		Benzylpenicillin (Penicillin G)	Germany	3	1	33.33
		Sub-total for B1	2	NA	2	NA
	B2e	Diclofen (Diclofenac)	Germany	2	1	50
		Sub-total for B2e	1	NA	1	NA
	B3d	Aflatoxin M1	Italy	44	5	11.36
		Sub-total for B3d	1	NA	5	NA
	NA	**Total for Milk**	2	NA	8	NA
Pigs	B1	Tilmicosin	Cyprus	9	1	11.11
		Sub-total for B1	1	NA	1	NA
	NA	**Total for Pigs**	1	NA	1	NA
Poultry	A6	AOZ (3-amino-2-oxazolidone)	Romania	7	7	100
		Sub-total for A6	1	NA	7	NA
	B2b	Lasalocid A	Croatia	1	1	100
		Sub-total for B2b	1	NA	1	NA
	B3a	WHO-PCDD/F-PCB-TEQ	Germany	4	1	25
		WHO-PCDD/F-TEQ	Germany	4	1	25
		Sub-total for B3a	1	NA	2	NA
	B3f	Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)	Romania	12	12	100
		Sub-total for B3f	1	NA	12	NA
	NA	**Total for Poultry**	3	NA	22	NA
Sheep/goats	B3a	Non-dioxin-like PCBs UB	Italy	34	1	2.94
		Sub-total for B3a	1	NA	1	NA
	NA	**Total for Sheep/goats**	1	NA	1	NA
Wild game	B3c	Total mercury	Slovakia	3	1	33.33
		Sub-total for B3c	1	NA	1	NA
	NA	**Total for Wild game**	1	NA	1	NA

(a): The number of samples analysed for the individual substances is presented only if there was at least one non-compliant sample for the substance in question.

Appendix C – List of non-compliant results: import sampling

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
Aquaculture	B2a	Ivermectin	Germany	14	1	7.14
		Sub-total for B2a	1	NA	1	NA
	B3c	**Arsenic (As)**	Netherlands	54	2	3.7
		Cadmium (Cd)	Germany	135	3	2.22
		Total mercury	Germany	142	1	0.7
		Total mercury	Netherlands	54	1	1.85
		Sub-total for B3c	2	NA	7	NA
	NA	**Total for Aquaculture**	2	NA	8	NA
Honey	B1	Sulfadimidine	Germany	21	1	4.76
		Sum of oxytetracycline and its 4-epimer	Germany	23	1	4.35
		Sub-total for B1	1	NA	2	NA
	B2f	Cymiazole	Germany	43	1	2.33
		Sub-total for B2f	1	NA	1	NA
	NA	**Total for Honey**	1	NA	3	NA
Milk	B1	Cloxacillin	Ireland	1	1	100
		Sulfadimidine	Ireland	1	1	100
		Sub-total for B1	1	NA	2	NA
	NA	**Total for Milk**	1	NA	2	NA
Sheep/goats	A6	**Chloramphenicol**	Germany	8	1	12.5
		Sub-total for A6	1	NA	1	NA
	NA	**Total for Sheep/goats**	1	NA	1	NA

(a): The number of samples analysed for the individual substances is presented only if there was at least one non-compliant sample for the substance in question.

Appendix D – List of non-compliant results: other sampling

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
Aquaculture	B1	Oxytetracycline	France	48	2	4.17
		Sub-total for B1	1	NA	2	NA
	NA	**Total for Aquaculture**	1	NA	2	NA
Bovines	A4	Alpha-Zearalanol (Zeranol)	France	167	1	0.6
		Beta Zearalanol (Taleranol)	France	119	1	0.84
		Sub-total for A4	1	NA	2	NA
	B1	Amoxycillin	Germany	142	3	2.11
		Benzylpenicillin (Penicillin G)	Germany	20,278	9	0.04
		Dihydrostreptomycin	Germany	48	3	6.25
		Gentamicin	Germany	48	2	4.17
		Marbofloxacin	Germany	20,278	1	0
		Sulfonamides	Germany	9	4	44.44
		Sum of chlortetracyclin and its 4-epimer	Germany	20,196	2	0.01
		Sum of enrofloxacin and ciprofloxacin	Germany	20,192	1	0
		Sum of oxytetracycline and its 4-epimer	Germany	20,196	4	0.02
		Sum of tetracycline and its 4-epimer	Germany	20,196	4	0.02
		Tildipirosin	Germany	134	2	1.49
		Tulathromycin	Germany	20,277	2	0.01
		Sub-total for B1	1	NA	37	NA
	B2e	Meloxicam	Germany	103	6	5.83
		Sub-total for B2e	1	NA	6	NA
	B2f	Dexamethasone	Germany	101	7	6.93
		Sub-total for B2f	1	NA	7	NA
	NA	**Total for Bovines**	2	NA	52	NA
Eggs	B2b	Narasin	France	94	1	1.06
		Sub-total for B2b	1	NA	1	NA
	B3f	Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)	Italy	1	1	100
		Sub-total for B3f	1	NA	1	NA
	NA	**Total for Eggs**	2	NA	2	NA
Milk	B3d	Aflatoxin M1	Italy	1,279	2	0.16
		Sub-total for B3d	1	NA	2	NA
	NA	**Total for Milk**	1	NA	2	NA

Category	Group	Substance	Country	Number of samples analysed[(a)]	Non-compliant results	% non-compliant
Pigs	B1	Amoxycillin	Germany	886	2	0.23
		Benzylpenicillin (Penicillin G)	Germany	263,631	7	0
		Dihydrostreptomycin	Germany	243	2	0.82
		Doxycycline	Germany	263,635	21	0.01
		Spectinomycin	Germany	243	1	0.41
		Sulfadimethoxine	Germany	789	2	0.25
		Sulfadimethoxine	Italy	95	1	1.05
		Sulfonamides	Germany	110	6	5.45
		Sum of chlortetracyclin and its 4-epimer	Germany	263,045	10	0
		Sum of enrofloxacin and ciprofloxacin	Germany	263,042	8	0
		Sum of oxytetracycline and its 4-epimer	Germany	263,044	11	0
		Sum of tetracycline and its 4-epimer	Germany	263,044	2	0
		Trimethoprim	Germany	899	4	0.44
		Tulathromycin	Germany	263,627	1	0
		Sub-total for B1	2	NA	78	NA
	B2e	Antipyrin-4-Methylamino	Germany	77	2	2.6
		Sub-total for B2e	1	NA	2	NA
	B2f	Dexamethasone	Germany	138	1	0.72
		Sub-total for B2f	1	NA	1	NA
	NA	**Total for Pigs**	2	NA	81	NA
Poultry	A3	Normethandrolone	France	21	1	4.76
		Sub-total for A3	1	NA	1	NA
	NA	**Total for Poultry**	1	NA	1	NA
Rabbits	B1	Sulfadimethoxine	Italy	54	1	1.85
		Sub-total for B1	1	NA	1	NA
	NA	**Total for Rabbits**	1	NA	1	NA
Sheep/goats	A3	Epinandrolone (19-Norepitestosterone)	France	8	1	12.5
		Sub-total for A3	1	NA	1	NA
	B1	Sum of oxytetracycline and its 4-epimer	Germany	4,010	2	0.05
		Sub-total for B1	1	NA	2	NA
	NA	**Total for Sheep/goats**	2	NA	3	NA

(a): The number of samples analysed for the individual substances is presented only if there was at least one non-compliant sample for the substance in question.

Appendix E – Annex I to Directive 96/23/EC

GROUP A – Substances having anabolic effect and unauthorised substances

A.1. Stilbenes, stilbene derivatives, and their salts and esters

A.2. Antithyroid agents

A.3. Steroids

A.4. Resorcylic acid lactones, including zeranol

A.5. Beta-agonists

A.6. Compounds included in Annex IV to Council Regulation (EEC) N° 2377/90 of 26 June 1990[16]

GROUP B – Veterinary drugs and contaminants

B.1. Antibacterial substances, including sulphonamides, quinolones

B.2. Other veterinary drugs

- a) Anthelmintics
- b) Anticoccidials
- c) Carbamates and pyrethroids
- d) Sedatives
- e) Non-steroidal anti-inflammatory drugs (NSAIDs)
- f) Other pharmacologically active substances

B.3. Other substances and environmental contaminants

- a) Organochlorine compounds, including PCBs
- b) Organophosphorus compounds
- c) Chemical elements
- d) Mycotoxins
- e) Dyes
- f) Others

[16] Council Regulation (EEC) No 2377/90 of 26 June 1990 laying down a Community procedure for the establishment of maximum residue limits of veterinary medicinal products in foodstuffs of animal origin. OJ L 224, 18.8.1990, p. 1–8.

Appendix F – Report review comments

Country	Comments	EFSA response
Czechia	NC results for contaminants (e.g. cadmium in cows kidneys, lead in muscle of wild game) are missing in the Appendix A list. **Targeted sampling (Appendix A):** •**Wild game (mallard duck)**: 1 NC result for 'Sum of 6 PCB indicators' is missing •**Wild game (5 wild boar, 1 fallow deer)**: **B3c**: 6 NC results for 'Lead (Pb)' are missing •**Bovines B3c**:3 NC results for 'Cadmium (Cd)' are missing •**Honey B3c**: 1 NC result for 'Lead (Pb)' is missing •**Horses B3c**: 1 NC result for 'Cadmium (Cd)' is missing •**Pigs B3a**: 1 NC result for 'Total mercury' is missing •**Wild game (hare) B3c**: 1 NC result for 'Lead (Pb)' is missing •**Wild game (mouflon) B3c**: 1 NC result for 'Lead (Pb)' is missing	For EFSA to count a result as non-compliant, the data provider has to either indicate that it is 'above the level of concern' or that it is 'detected' specifying that the 'evalLimitType' is 'presence'. In this case the 'evalCode' was reported as 'J038A=non-compliant' but since this is not in accordance with what EFSA uses to count the non-compliances, the results were not accounted for as such.
France	Due to a mistake in the codification of ProgLegalRef, some samples collected in France in the framework of former directive 96/23 were not taken into account in the figures of the table. The number of additional targeted samples, are as follows: • **Bovine** - 1302 samples • **Pigs -** 1858 samples • **Sheep/Goats -** 521 samples • **Horses** - 153 samples • **Poultry** - 1182 samples • **Aquaculture** - 117 samples	Therefore, these data have not been reported under the VMPR domain. For the creation of the tables and appendices EFSA includes only data with the code 'N247A' explicitly reported in the 'progLegalRef' data element, alone or in combination with another legal framework.

Country	Comments	EFSA response
	• **Milk** - 396 samples • **Eggs** - 184 samples • **Rabbit meat** - 19 samples • **Farmed game** - 13 samples • **Wild game** - 50 samples • **Honey** - 10 samples For some non-compliant samples for group A3 in 'pigs', 'poultry' and 'small ruminants', the investigation concluded that there was no illegal treatment and the positive test result was due to the presence of the natural hormone. However, these samples are counted as 'non-compliant' in the Annual report. Targeted sampling (Appendix A): • **Poultry A3:** 8 results reported as NC for 'Normethandrolone' should be deleted • **Poultry A3:** 2 results reported as NC for 'Boldenone' should be deleted • **Sheep/goats A3:** 1 result reported as NC for 'Epinandrolone (19-Norepitestosterone)' should be deleted	This was due to improper reporting of the 'Result assessment' (evalInfo.resAsses) element that is used by EFSA to determine whether the result is counted as compliant or non-compliant. Therefore, the number of non-compliant samples present in the report reflects the data stored in the EFSA Datawarehouse and is in accordance to the French National report.
Germany	In relation to the number of targeted samples reported (Appendices A-D): • We highlighted a discrepancy in the number of samples in the Appendices, in comparison to the German National plan. We expected to see a total of the number of samples aggregated at the level of sum/residue definition. • Differences between the numbers of non-compliances were spotted in the Appendices between the first and second circulation for comments on the Annual report draft.	For the creation of the tables and appendices, EFSA includes only the number of samples for the PARAM code for which non-compliances have been reported. EFSA recreated the appendices to reflect the correct number of non-compliant results when these were reported for the different samples taken from the same sampEventId and in accordance to the Member states' National reports. However, caution should be used when reading the '% non-compliant' in the appendices. Although the numbers reported follow a harmonised approach throughout the report, as a

Country	Comments	EFSA response
		consequence of reporting multiple non-compliant results at single component level and not multicomponent or sum level, the '% non-compliant' can be an overestimate. In some cases, an overestimation is caused by the calculation method of '% non-compliant' (number of non-compliant results in relation to the total number of tested samples).
Lithuania	We have several remarks concerning number of samples collected and analysed by Lithuania. Especially regarding honey samples, as it is stated on page 49 of the Report, that Lithuania did not achieve the minimum sampling frequency requirement for honey in 2019. When in fact we did achieve this requirement and even took more samples as it is prescribed by legislation (129 instead of 102). Our NRL (National Food and Veterinary Risk Assessment Institute), which is responsible for data transmission to EFSA, have analysed the situation and explained us, that certain analyses of groups B2c, B3a, B3b and B3f substances (required by Directive 96/23) are transmitted to EFSA, however they were included in Pesticide Domain instead of Residues of Veterinary Medicines Domain: • **66 honey samples** (4 samples analysed for B2c substances, 4 samples analysed for B3a substances, 28 samples analysed for B3b substances and 30 samples analysed for B3f substances); • **13 wild game samples** (12 samples analysed for B3a substances and 1 sample analysed for B3b substances); • **11 pig samples (**6 samples analysed for B3a substances and 5 samples analysed for B3b substances); • **10 bovine samples (**5 samples analysed for B3a substances and 5 samples analysed for B3b substances); • **5 egg samples** (5 samples analysed for B3a substances); • **2 milk samples** (1 sample analysed for B3a substances and 1 sample analysed for B3b substances);	The text regarding fulfilment of minimum sampling frequency requirements for honey has been updated in the report.

Country	Comments	EFSA response
	• **1 sheep sample** (analysed for B3a substances); • **1 horse sample** (analysed for B3a substances). We hope, that the Report will be adjusted according information provided.	
The Netherlands	The data for NL are correct. I have added two small suggestion in track changes with regard to the text (singular verb change to plural verb and ',' to 'and' correction).	Edits made to the report, as suggested.
The United Kingdom	**Milk** (pg. 36-37, table 25) – it is stated that the "United Kingdom did not achieve this requirement". The UK Residues Surveillance Scheme for 2019 was fully met, although not fully represented within the UK report due to issues with the uploading of datasets. A total of 1066 milk samples were collected and analysed in the UK in 2019; with the number reported here being 566 samples short. **Aquaculture** (pg. 33-34, table 22) – it is stated that the "United Kingdom did not analyse at least one sample/100 tonnes (t) of production". The UK Residues Surveillance Scheme for 2019 was fully met, although not fully represented within the UK report due to issues with the uploading of datasets. A total of 1787 samples were collected and analysed in the UK in 2019, with the number reported here being 375 samples short. **Farmed Game** (pg. 45, table 34) - The UK Residues Surveillance Scheme for 2019 was fully met, although not fully represented within the UK report due to issues with the uploading of datasets. Farmed game data for the UK is reported as N/A, but a total of 129 samples were collected and analysed, with 110 samples being required. We addressed these issues with reporting in our overall UK comments at the time of submission, which read: *"The UK Residues Surveillance Scheme for 2019 was fully met, although not fully represented within the UK report due to issues with the uploading of datasets. Specifically, although farmed game data is not included in the report, 129 samples were collected and analysed in the UK, with 110 samples being required. Likewise, a total of 1066 milk samples were collected in the UK in 2019; with the number reported here being 566 samples short. Aquaculture not fully represented within the report, a total of 1787 samples collected in the UK in 2019; with the*	The text regarding fulfilment of minimum sampling frequency requirements for aquaculture and milk has been updated in the report.

Country	Comments	EFSA response
	number reported here being 375 short. Bovines in slaughter house again not fully represented and short by 107 samples". We would be grateful if the text which features in the report could be updated to reflect that the UK did in fact meet the plan in full but had issues in reporting, as described above.	