Australian
National Residue Survey

Guidelines
For
Contract Laboratories

12th Term
Issue No: 12T.4
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INTRODUCTION

The National Residue Survey (NRS) provides residue and contaminant testing that underpins export and domestic marketing initiatives of participating industries. NRS does not undertake the analyses; instead, this role is performed by contract laboratories. Industries participate in NRS residue monitoring projects to meet market access, export certification or national standards, or to assure customers of the quality of their product.

Contract laboratories will be required to act in accordance with The *Guidelines for Contract Laboratories* manual, as it sets out NRS requirements for the delivery of chemical residue and contaminant analytical services. It also provides detailed information as referred to in the Deed of Standing Offer agreements between NRS and contract laboratories.

Please direct any queries regarding contract laboratory services to the Director of the Residue Chemistry and Laboratory Performance Evaluation Program, or the appropriate contact person listed on page 3.

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REVISION TRACKING

This issue of *Guidelines for Contract Laboratories* for the 12th Term, issue no. 12T.4, completely replaces the previous issue, issue no. 12T.3.

Section	Issue	Rev No	Page	Revision Description	Date
Body of document	10T	.1	All	New full version	1/9/2011
MRL/ML Appendices	10T	.1	All	New full version	1/7/2011
Body of document	10T	.2	All	New full version	2/11/2012
MRL/ML Appendices	10T	.2	All	New full version	1/9/2011
Body of document	10T	.3	All	New full version	20/9/2013
MRL/ML Appendices	10T	.3	All	New full version	2/11/2012
Entire document	11T	.1	All	New full version	1/7/2014
Entire document	11T	.2	All	New full version	10/2/2017
Entire document	12T	.1	All	New full version	1/7/2019
Entire document	12T	.2	All	New full version	11/5/2020
Entire document	12T	.3	All	New full version	12/3/2021
Entire document	**12T**	**.4**	**All**	**New full version Introduction of EU Regulation 2021/808 requirements for confirmation of the identity of detected analytes in section 3**	**6/4/2023**

1 SAMPLE HANDLING

1.1 Sample Receipt

1.1.1 Meat, honey, egg and seafood program samples are sent by establishments to the Central Receival and Dispatch (CRAD) facility in Canberra, where they are processed, repackaged and hard frozen (except whole egg and honey samples) before dispatch to laboratories.

During processing of animal product samples for dispatch to laboratories at CRAD, by the CRAD officer, real-time data will be entered into the NRS Information Management System (IMS), including consignment note numbers, the number of boxes that the laboratory will receive and analysis program codes.

Grain program samples are sent by grain export terminals, container exporters, flourmills and other domestic establishments directly to the primary receival laboratory. This laboratory will distribute samples to secondary laboratories, where required, according to NRS instructions.

Samples for all other programs (i.e. horticulture, faeces and some liver samples for HGP testing) are sent directly to laboratories.

1.1.2 Samples sent from CRAD to laboratories are normally dispatched by overnight courier on a Monday afternoon to arrive at the laboratory on Tuesday. Some dispatches may arrive on Wednesdays or later. The laboratory should track the dispatch through the online courier tracking system.

If samples dispatched from CRAD or establishments directly do not arrive when expected, please email nrs@agriculture.gov.au; nrsplant@agriculture.gov.au or contact an NRS Project Officer.

1.1.3 Upon receipt of sample boxes or transit satchels at the laboratory, the NRS security tape seal on the sample boxes must be checked to ensure it is intact. Samples that have been packaged and sent by CRAD will be sealed with NRS yellow security tape and samples that have been packaged and sent by establishments directly to laboratories will be sealed with NRS green security tape.

If the tape has been compromised, please email nrs@agriculture.gov.au or contact an NRS Project Officer, and the box of samples should be held pending written advice from NRS.

1.1.4 Each sample box sent from CRAD to laboratories should contain an internal plastic liner bag holding all the samples. No puncture holes or rips in the liner bag should be visible.

If the liner bag is damaged, please email nrs@agriculture.gov.au or contact an NRS Project Officer, and the box of samples should be held pending written advice from NRS.

1.1.5 Each sample should be sealed in an intact NRS security satchel. Occasionally the security satchel may be sealed with NRS yellow security tape. This sealing has been done by the NRS CRAD Officer and the sample should not be rejected for this reason.

If the security satchel has been breached in any other way, please email nrs@agriculture.gov.au or contact an NRS Project Officer and the samples should be held pending written advice from NRS.

1.1.6 Each sample will have a yellow barcode label fixed on the NRS security satchel. This should match the barcode label on the internal sample bag within the security satchel. *If the security satchel barcode is different to the internal sample bag barcode, please email nrs@agriculture.gov.au or contact an NRS Project Officer and the samples should be held pending written advice from NRS.*

1.1.7 Laboratories must use the NRS Information Management System (IMS) to accept/reject samples for analysis and report the results of analysis (see Appendix 8 for more details).

1.1.8 Incoming samples received by the laboratory are to be examined and scanned using the barcode scanner provided by NRS in order to deem the incoming sample details as acceptable for analysis or otherwise. Once validated, sample details move from the 'Incoming Samples' to the 'Received Samples' window pane on the laboratory's IMS dashboard.

1.1.9 If the barcode sticker on the security satchel is unable to be scanned, please enter the barcode manually in the 'Incoming Samples' windowpane, e.g. 0000204528A.

1.1.10 If samples are deemed unsuitable for analysis upon receipt or insufficient sample is received for the required tests (including allowance for retention of unblended portion), please email nrs@agriculture.gov.au , nrsplant@agriculture.gov.au or contact an NRS Project Officer, advising why the samples are unsuitable and obtain written advice on action to take.

Where advised to cancel the sample, the laboratory should select 'No' to the pop up question 'Is the sample fit for analysis?' and then nominate the appropriate reason from the list below to complete the validation process.

Reason for cancelling the analysis request	**Description**
Inadequate sample size	Sample integrity breach due to insufficent sample matrix provided
Incorrect matrix or test	Sample integrity breach due to incorrect matrix provided, or test requested
Laboratory issue	Laboratory unable to perform analysis
Not Suitable for Analysis	Various sample condition issues (see table below)
Other	Unexpected non-conformance
Sample barcode problem	Sample integrity breach due to absence of barcode, barcode not able to be scanned
Sample incorrectly contained	Sample integrity breach due to sample not packaged in any sample container or provided in incorrect container.
Sample Security breach	Sample satchel or sample bag opened, damaged or unsealed

1.1.11 *If samples are deemed unsuitable for analysis subsequent to validation at sample receipt please email nrs@agriculture.gov.au , nrsplant@agriculture.gov.au or contact an NRS Project Officer, to obtain written advice on action to take.*

Individual Analysis Requests can be cancelled via the 'Requested Analysis' windowpane, select the relevant sample, scroll to the bottom of the page and select 'Cancel Analysis Request'. Record the relevant reason (see table above).

1.1.12 Samples may be deemed to be 'Not Suitable for Analysis' for various reasons. The minimum acceptable sample conditions are provided for guidance:

NRS Matrix	**Minimum acceptable sample condition on receipt at laboratory**
Liver, kidney, muscle	Frozen or cold to the touch, no evidence of spoilage
Urine, faeces	Frozen or cold to the touch, no evidence of abnormal appearance, smell, colour
Fat	Frozen or cold to the touch, no evidence of spoilage (e.g. rancidity)
Eggs	For whole eggs, there should be no evidence of abnormal appearance, smell or colour when broken. Cracked eggs are suitable. For eggs provided in jars, they should be frozen or cold to the touch, no evidence of spoilage
Seafood	Frozen or cold to the touch, no evidence of spoilage
Grain, flour, bran, pulses and oilseeds	Room temperature, no evidence of spoilage
Horticultural products	Room temperature, no evidence of spoilage
Juice	Room temperature, no evidence of spoilage
Honey	Room temperature, no evidence of spoilage

Where recorded properly in the NRS IMS, this will be automatically reported to NRS and an invoice generated for payment of the standard Handling fee ($33.00 including GST).

1.2 Sample forwarding

1.2.1 Where the different analytical programs for a particular plant commodity are awarded to different laboratories, the pesticide program contract laboratory will serve as an on-forwarding point for all minor program sample analyses for that commodity.

1.2.2 In this scenario the pesticide program contract laboratory will be required to sample for their analysis (and if necessary confirmation) and then forward the remainder of the sample to the laboratory contracted for subsequent sample analyses.

These samples are to be repackaged and forwarded, using NRS freight consignment notes, no later than 24 hours after sample receipt. The costs of repackaging samples is to be borne by the on-forwarding laboratory. NRS does not foresee the requirement for laboratories to be forwarding sample portions to other laboratories or laboratory branches at any other time. NRS does not generally approve of individual samples being analysed for multiple tests at different laboratory branch locations.

1.2.3 The laboratory conducting antimicrobial urine screening testing for the National Antibacterial Residue Minimisation (NARM) Program will be required to package and on-forward the related kidney and/or muscle samples that have shown a positive urine MIT results to the approved antimicrobial confirmatory testing laboratory using NRS pre-paid freight satchels within 24 hours of receipt of the sample. The urine screening testing laboratory will be required to work with the sample collector to enter all relevant sample data in the NRS IMS to support subsequent antimicrobial confirmatory laboratory testing and result reporting via the IMS.

1.3 Batching of samples

Laboratories may wish to delay commencement of the analysis of individual or small numbers of samples received in an attempt to process a batch of samples together. The on-forwarding process described above must not be delayed by this batching process nor should the holding of samples for batching result in any sample's results being reported outside the applicable turnaround time (TAT).

1.4 Compositing of samples

Compositing of samples for any of the national random monitoring programs is not allowed.

2 ANALYSIS

2.1 Analytical Methods

2.1.1 Innovation and method refinement by laboratories is encouraged, subject to certain controls. Unless otherwise agreed by NRS, the contracted laboratory will use the same analytical method as used in the NRS pre-tender Proficiency Testing (PT) / Interlaboratory check sample scheme (ILCSS) programs in the analysis of all routine samples and PT samples for the duration of the contract period.

2.1.2 The analytical method used must be identical (in all significant respects) to that detailed in the method summary lodged with the tender response and held on file by NRS. The laboratory is required to, at all times under contract, maintain NATA or international equivalent accreditation of the analytical method used to analyse NRS samples. NRS must be notified of any issues with accreditation of these methods following the relevant accreditation body's audits or surveillance.

2.1.3 While laboratories are encouraged to evaluate changes to methodology that may improve the performance of the method, details of any **proposed change** (including all relevant validation data) must be submitted to the NRS and the change is not to be implemented for the analysis of NRS samples without first receiving approval in writing from the NRS. Any changes to methodology must be provided in the format shown at Appendix 2.

2.1.4 In consultation with RC-LPE staff, the laboratory will be assigned a **new NRS IMS Reporting Method Code** for use in reporting test results using the revised method where significant changes to the methodology have occurred,
i.e.

change to the extraction / clean-up techniques, detection systems, use of an internal standard or changing to a more appropriate internal standard.

Changes to analyte LODs / LORs, fees, purchase order numbers, products, matrices and inclusion or removal of analytes do not require a new NRS IMS Reporting Method Code.

2.1.5 A **commencement date** for the method change is to be agreed between the NRS and the laboratory, in writing prior to implementation.

2.1.6 When asked, laboratories must provide technical advice to the NRS relating to details of the analytical procedures applied to NRS sample analyses under contract. This information may be sought at any stage during the contract term.

2.2 Analysis of meat fat samples

Where fat is the target tissue, the laboratory should test and report the analyte concentration of any results on an 'as received' basis, except for NRS Programs 8 and 28

results where the analyte concentrations should be tested on a 'rendered fat' basis. See Appendix 9 Sample preparation requirements on receipt of samples for further information.

2.3 Measurement uncertainty

All laboratories contracted by NRS and accredited by NATA (or international equivalent) for a particular test, are expected to have fully implemented procedures to determine the measurement uncertainty associated with their results and at what concentration the estimates of measurement uncertainty apply.

3 DATA INTERPRETATION AND REPORTING

3.1 Codes

Laboratories must use the NRS analyte codes for chemicals when reporting results to the NRS IMS. These analyte codes for the various NRS programs are available via the Department's website: https://www.agriculture.gov.au/ag-farm-food/food/nrs/databases

3.2 Numerical Issues

3.2.1 Results are to be reported to **two significant figures** (e.g. 1.1, 0.11, 0.011, 0.0011, 0.00011, etc.) and in the TAT outlined in Section 4.

3.2.2 Results should be **reported in mg/kg units (mg/L for urine) and should be corrected to a theoretical 100% recovery.** The calculations involved in the correction for recovery should be retained for inspection, if required.

3.2.3 Laboratories must be able to show evidence at inspections, if required, that analytical recoveries in the ranges stated in the method summary can be routinely achieved.

3.2.4 For any non-conformance relevant to the processing, analysis and/or reporting of results for NRS samples, and if any false negative (FN), false positive (FP), outlier result is reported in the relevant NRS PT program, laboratories are to implement corrective action immediately and the Corrective Action Report (CAR) detailing the nature and effectiveness of any action is to be provided to the Director, NRS RC-LPE Section on completion of the investigation, usually within 14 days of being initiated. If required, re-testing of NRS samples may need to be repeated for result verification.

3.2.5 A contracted laboratory **must** report to the NRS, quantitative results for all analytes detected at or above the **laboratory's method LOR** in NRS samples irrespective of the level of the LORs proposed by NRS, refer to 3.2.6 below for further information.
The laboratory conducting antimicrobial urine screening tests for the National Antibacterial Residue Minimisation (NARM) Program must report to the NRS and the sample collector from which the sample originated, the following details for samples returning a positive microbial inhibition test (MIT) result:
- sample identification and
- size estimate of microbial inhibition zone.

3.2.6 '**Traces**' are to be reported where found in the course of work under an NRS contract. A 'trace' refers to the detection of an analyte at a concentration between the laboratory's method LOD and LOR that can be identified via means consistent with Section 1.2.4 of 2021/808/EC requirements but which cannot be quantified with the same degree of certainty as detections at or above the laboratory's LOR. In certain circumstances, particularly in situations where laboratory LODs have been set at a conservative level, traces may also refer to analytes detected at values less than a laboratory's method LOD.

The laboratory should report a trace (-1) for detections lower than their method LOR for which they are **unwilling** to provide a quantitative value because the uncertainty associated with the result is too high.

However, if the laboratory is able to determine a quantitative result for an analyte detected below its method LOR and would record this value in its own record keeping system, the result should be reported to the NRS.

3.3 MRL

3.3.1 Any detections found in NRS samples must be compared to Australian MRLs or MLs.

Agricultural chemicals and veterinary medicine analytes
When comparing testing results of agricultural chemicals and veterinary medicines found in NRS samples to the relevant Australian MRLs, please refer to the **APVMA Agricultural and Veterinary Chemicals Code Instrument No. 4 (MRL Standard) only.**

The Australia New Zealand Food Standards Code – Schedule 20 – Maximum residue limits, should not be used. Import tolerances that may exist in the Food Standards Code do not apply to Australian product and as such, do not apply to NRS samples.
A link to the current APVMA MRL Standard series is:
https://www.legislation.gov.au/Series/F2019L01105
The currency of the version of the APVMA Standard should always be checked.
The APVMA Standard also provides advice on the:
- portion of the commodity to which the MRL applies (and which is analysed) in Table 2, and
- applicable Residue definitions in Table 3.

Contaminants and Natural Toxicants
When comparing test results for contaminants and toxicants found in NRS samples to the relevant Australian MLs, please refer to the **Australia New Zealand Food Standards Code - Schedule 19 – Maximum levels of Contaminants and Natural Toxicants only.**
A link to the current FSANZ Schedule series is:
https://www.legislation.gov.au/Series/F2015L00454
The currency of the version of the FSANZ Schedule should always be checked.
Decisions on the appropriate confirmation and reanalysis processes to follow as set out in this document will follow from the correct interpretation of the test result compared to the correct Australian MRL or ML.

3.3.2 See section 3.6 for special cases where further information is required when results are reported.

3.3.3 Pesticides in fat, macrocyclic lactones, spinosyns and other anthelmintics in fat, Benzoyl ureas in fat – Program 8, 12, 28

For regulatory purposes, when no MRL has been set in fat or meat (in the fat), the MRL in meat is used.

3.3.4 Grain programs

For regulatory purposes, when no MRL has been set in wheat flour or wheat bran, the MRL in wheat is used.

3.4 Residue definitions (Metabolites/Isomers)

3.4.1 Unless otherwise stated, where a residue definition for a particular compound involves metabolites/isomers, laboratories must record and report the individual analytes detected separately and not report the sum of the parent / metabolites / isomers. The NRS IMS will calculate the sum of the individual components based on the residue definition.

3.4.2 The laboratory must take into consideration the residue definition as specified in the Agricultural and Veterinary Chemicals Code Instrument No. 4 (MRL Standard) available via the link specified at 3.3.1. in relation to the MRL and then apply the appropriate confirmation/re-analysis and reporting procedures.

3.4.3 In the case of synthetic pyrethroids (SPs), individual isomers should be reported where possible and in a way that would reflect the composition of the likely isomer enriched commercial product. For example, if all relevant peaks are detected in a GC run in the retention time window of cypermethrin, then the result should be reported as cypermethrin (taken as the sum of isomers). However, if only a single major peak is detected in the same retention time window which is known to correspond to α-cypermethrin, then α-cypermethrin should be reported and NOT cypermethrin.

3.5 Confirmation of the identity of detected analytes

3.5.1 Sections 1.2.3 and 1.2.4 of EU Regulation 2021/808/EC on the *Performance of analytical methods for residues of pharmacologically active substances used in food-producing animals and on the interpretation of results as well as on the methods to be used for sampling and repealing Decisions 2002/657/EC and 98/179/EC* (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0808&from=EN) has particular relevance to NRS programs.

3.5.2 NRS requires confirmation of the identity of any detected analytes in NRS samples and corresponding PT samples, to be consistent with the requirements for the confirmation of analytes in animals and animal products as outlined in Section 1.2.4.2 of EU Regulation 2021/808/EC.
Confirmatory methods for Group A and where possible Group B analytes must be based on mass spectrometry.
While the EU Regulations relate to the confirmation of residues in animals and animal products, they also form the basis for the confirmation of all chemical residues detected in ALL NRS programs irrespective of the matrix.
Laboratories awarded NRS contracts should note that these requirements apply to the analysis of BOTH the routine and PT samples dispatched to laboratories during the contract period.

3.5.3 In addition to 3.5.2, laboratories are required to treat samples containing residues of some Group A analytes differently to Group B analytes, during the process of confirming the identity and concentration of the residue, as set out in section 3.6.
The chemicals specified in Annex 1 of EU Regulation 2022/1644/EC on *Specific requirements for the performance of official controls on the use of pharmacologically active substances authorised as veterinary medicinal products or as feed additives and of prohibited or unauthorised pharmacologically active substances and residues thereof* (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R1644&from=EN) as Group A and Group B are of relevance to NRS programs listed below.
Also listed in the Group B table below are the non-meat NRS programs for which the

2021/808/EC criteria will also apply.
Annex 1 of EU Regulation 2022/1644/EC also refers to EU Regulation 37/2010/EC for further detail on Group A and B compounds. (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010R0037&from=EN).

Group A[#] chemicals and relevant NRS programs

Chemicals	**EU Group**	**NRS Program number**
stilbenes, trenbolone*, zeranols*	A1(c), A1(d)	6, 306
androgenics	A1(c)	20, 306
beta-agonists*	A1(e)	7
chloramphenicol	A2(a)	3, 203, 3E
nitrofurans	A2(b)	4, 4I, 204
nitroimidazoles*: dimetridazole, metronidazole, ronidazole	A2(c)	5A
dyes	A3(a)	317
plant protection products defined in EU Regulation 1107/2009, biocides in EU Regulation 528/2012	A3(b)	8, 12, 28, 37
some antimicrobials / quinolones	A3(c)	1, 5B, 33, 201, 333
coccidiostats and other antiparasitic agents	A3(d)	27
some anti-inflammatory substances, sedatives and any other pharmacologically active substances	A3(f)	23, 36, 38
corticosteroids	A3(f)	35

[#] from Annex 1 of EU Regulation 2022/1644/EC, Group A - Prohibited or unauthorised pharmacologically active substances in food-producing animals and
Annex Table 2 of EU Regulation 37/2010/EC, Prohibited substances
* Note: some chemicals under these groups are registered in Australia for use on some species

Group B^ chemicals and relevant NRS programs

Chemicals	EU Group	NRS Program number
some antimicrobials / quinolones	B1(a)	1, 5A, 5B, 201, 33, 333
thiamphenicol, florfenicol (excluding chloramphenicol)	B1(a)	3, 203, 3E
pesticides, herbicides	Pesticides	8, 37, 42, 49, 49H, 49I, 169, 208
cyromazine, dicyclanil	B1(b)	10
benzimidazoles	B1(b)	11
macrocyclic lactones, spinosyns	B1(b)	12
closantel, imidazothiazoles, triclabendazole	B1(b)	11, 15
metals	Contaminant	16, 46, 156, 206, 316
NSAIDs	B1(d)	23
anticoccidials authorised for use:	B2	27
benzoyl ureas	B2(f)	28
corticosteroids	B1(d)	35
some anti-inflammatory substances, sedatives	B1(e)	23, 36, 38

^ from Annex 1 of in EU Regulation 2022/1644/EC, Group B - Pharmacologically active substances authorised for use in food-producing animals and
Annex Table 1 of EU Regulation 37/2010/EC - Allowed substances

3.6 Re-analysis to confirm the identity and concentration of results above critical decisions levels

3.6.1 EU Group A analytes - All positive detections of Group A analytes in EU Groups A1 and A2 must be confirmed in concentration and identification by re-analysis of a separate portion of the original sample and the confirmatory identification techniques must be consistent with the requirements outlined in Section 1.2.4 of 2021/808/EC.

Analytes in EU Group A3 should follow the guidance given in relation to Group B analytes below.

3.6.2 EU Group B analytes - detected (identified and quantified) at concentrations less than the analyte's critical decisions levels set out below do not require re-analysis to confirm the concentration and identification of the chemical and the original result should be reported to the NRS IMS.

Group B analytes – where result between > ½ and ≤ Australian MRL)

Grain and Horticulture Programs

The concentration and identification of the chemical must be confirmed either by analysis using the original sample extract or by re-analysis of a separate portion of the original sample and the confirmatory techniques must be consistent with the requirements outlined in Section 1.2.4 of 2021/808/EC.

Meat, Eggs, Honey and Seafood Programs

The concentration and identification of the chemical must be confirmed by re-analysis of a separate portion of the original sample and the confirmatory techniques must be consistent with the requirements outlined in Section 1.2.4 of 2021/808/EC.

3.6.3 Group B analytes where results > Australian MRL)

For all Programs – All detections > MRL must be confirmed in concentration and identification by re-analysis of a separate portion of the original sample and the identification must be consistent with the requirements outlined in Section 1.2.4 of 2021/808/EC.

3.6.4 During the re-analysis, if the identity has been confirmed, the two results (the original result and the separate sample portion result) must be averaged and the average reported to NRS. If the individual quantitative results differ by more than 20% of the average value, the average should still be reported to the NRS IMS and in addition the Director, NRS RC-LPE Section should be advised by email.

In the process of re-analysis, in instances where a laboratory chooses to re-analyse >1 separate sample portions, the average of the original result and all of the individual sample portion results must be made and the average reported to the NRS IMS, unless this is inappropriate, i.e. where individual sample portion analyses are performed via different instrumental techniques, each with different analytical method parameters.

e.g. original residue result = 0.076mg/kg
(greater than the residue's critical decision level)
separate sample portion residue result = 0.065mg/kg
average residue result = 0.0705mg/kg
20% of average residue result = 0.0141mg/kg
acceptable replicate residue result range = 0.0564 to 0.0846mg/kg

Both 0.076 and 0.065mg/kg results are within the acceptable replicate range so there is no requirement to notify NRS of an issue with variability of results.

The average residue result to be reported to the NRS IMS = 0.071mg/kg.

3.6.5 Androgenic substances in urine – Program 20

All samples containing boldenone (17 alpha- and/or 17 beta-) and/or 19-nortestosterone (17 alpha- and/or 17 beta-) are to be further tested for specific gravity and pH. These results are also to be reported to NRS on a Chemical Residue Notification Form (Animal Products, Appendix 4).

In addition, all samples containing boldenone (17 alpha- and/or 17 beta-) are to be further analysed to determine if the boldenone is present in the free and/or sulfo-conjugated form before the result is reported. This information is also to be reported to NRS on a Chemical Residue Notification Form (Animal Products, Appendix 4).

3.6.6 Zeranols and trenbolone in liver and faeces – Program 6A and 6C

For testing of faeces samples, where initial analysis detects resorcylic acid lactones >LOD, the laboratory must contact the Director, NRS RC-LPE Section who will conduct an assessment which may indicate if administration of zeranol is likely and then to determine if a repeat analysis on a separate portion of the original sample is required.

Specifically, for NONEUHGP liver samples, any detection of synthetic hormones and/or alpha-zearalanol (zeranol) or beta-zearalanol (taleranol) should be confirmed on a separate portion of sample and all zeranol metabolites detected should also be reported.
In the absence of alpha-zearalanol (zeranol) or beta-zearalanol (taleranol), it is not necessary to conduct a confirmatory analysis on a separate portion nor to report other zearalenone metabolites.

3.6.7 Anthelmintics in liver – Program 11

Fenbendazole sulfone residues can arise from use of a registered product (e.g. fenbendazole) however fenbendazole sulfone does not form part of the Australian residue definition for fenbendazole. Concentrations of fenbendazole sulfone should be reported to the IMS however, analysis of a separate portion is not required for confirmation, and a Chemical Residue Notification form does not need to be completed for any fenbendazole sulfone residue found in the presence of its related products' residues even though no Australian MRL exists specifically for fenbendazole sulfone.

3.6.8 Beta-agonists in liver – Program 7

For ractopamine detections in PIG samples only:

- For concentrations of ractopamine <0.02 mg/kg, when analysed WITH hydrolysis, no further analysis is required.
  Report result to the IMS.
- For concentrations of ractopamine >0.02 mg/kg but <0.04 mg/kg, when analysed WITH hydrolysis, please repeat the analysis WITH hydrolysis on a separate portion and report the averaged result to the IMS.
- For concentrations of ractopamine >0.04 mg/kg, when analysed WITH hydrolysis, please repeat analysis WITH hydrolysis on a separate portion and report averaged result to the IMS.
  In addition, please take two separate portions and analyse WITHOUT hydrolysis. Report averaged result to Director, NRS RC-LPE section.

For other species matrices (i.e. for those where no MRL is applicable), any detection of ractopamine WITH hydrolysis should be repeated WITH hydrolysis on a separate portion and the average result reported to the IMS.

3.6.9 Nitroimidazoles in muscle, eggs and seafood – Program 5A

HMMNI (2-hydroxymethyl-1-methyl-5-nitroimidazole) is a metabolite of dimetridazole and ronidazole. For advice on how to report HMMNI if determined in the absence of either parent compound, contact the Director, NRS RC-LPE Section.

3.6.10 Total arsenic and inorganic arsenic in seafood – Program 316

Total arsenic in seafood (finfish, crustacea and molluscs): There is no ML, so any low level of contaminant or natural toxicant in this product is acceptable.

Inorganic arsenic in seafood (fish, crustacea and molluscs): specific MLs do apply, as shown in the references whose links are provided at 3.3.1.

NRS requests that the contract laboratory for Program 316 submits results to the IMS for the metals prior to commencement of any inorganic arsenic testing. A summary of results should be sent to NRS Animals Program staff who will determine whether it is necessary to proceed to test for inorganic arsenic on a sample-by-sample basis.
If inorganic arsenic testing is not required, NRS will notify the laboratory requesting their cancellation of the associated inorganic arsenic tests on these samples. NRS will then request the laboratory analyse the remaining samples for inorganic arsenic and report to the IMS also.

3.7 Notification of MRL contraventions to NRS

*Samples confirmed to contain analytes in excess of the MRL are to be notified immediately to the NRS preferably by email using the pro-forma provided by the NRS (see Appendix 4 or 5). Note that **all** other residues found in the contravening sample should also be reported in the email notification.*

Animal products notifications should be emailed to (all): nrs@agriculture.gov.au , karina.budd@aff.gov.au

Plant notifications should be emailed to (all): nrs@agriculture.gov.au, karina.budd@aff.gov.au, nrsplant@agriculture.gov.au.

3.7.1 Where **no MRL has been set**, any detection (once confirmed in accordance with the requirements outlined above for samples containing analytes exceeding the MRL) is to be notified immediately to the NRS, by email using the pro-forma provided in Appendix 4 or 5.

3.8 Records of results to be retained

In keeping with Australia's international commitments on the monitoring of chemical residues, a copy of all analytical and internal quality-control results must be retained by the laboratory and made available for NATA (or international equivalent) and NRS inspection or auditing on request, for a period of seven years.

3.9 Publication/Use of results by Laboratories

*Individual sample details are confidential. **A laboratory may not release or publish the results of NRS work without the written permission of a Director of the National Residue Survey.** Any copyright or other intellectual property associated with the results is the exclusive property of the Commonwealth.*

3.10 Unidentified Analytical Responses (UAR) and Unidentified Biological Responses (UBR)

3.10.1 Monitoring

All analytical or biological responses of unknown origin detected are to be reported to the NRS as soon as they are deemed to be 'genuine' sample unknowns. This applies to UARs and UBRs identified during instrumental and/or bioassay analyses, found in routine or PT samples. Reporting of these responses should only occur once contamination within the laboratory or from normal background components of the sample have been ruled out.

3.10.2 Reporting

UARs should be reported to NRS using the appropriate proformas provided (see Appendices 7). UBRs detected in Program 1 are to be reported by email to the Director, NRS RC-LPE Section.

3.10.3 Identifying

The laboratory is expected to attempt to identify the compound, if possible, as long as the attempts to identify it do not impose a substantial increase in analytical costs to the laboratory, or potentially consume significant portions of the sample. However, regardless of whether the compound was identified, or uncertainty around identity remains, the laboratory should provide NRS with the information outlined in the appropriate format (e.g. chromatograms of samples, matrix blanks, standards etc.). The original sample plus any remaining extracts of the sample should be retained by

the laboratory until advised otherwise. The sample and/or extracts may be requested by NRS.

The NRS will assess the data provided by the laboratory and implement further action if required (e.g. confirmation of compound identity or initiation of procedures to identify the unknown).

3.10.4 Once the UAR or UBR has been identified, the NRS will disseminate the information to other NRS contract laboratories to heighten their awareness of the issue and improve their ability to monitor for the compound.

3.10.5 The NRS will also initiate appropriate procedures to trace the source of the analyte(s) and eliminate or minimise further occurrences of any contamination.

3.11 Electronic reporting requirements for individual NRS samples

3.11.1 Results for each sample are to be submitted through the NRS IMS using the .csv file format as per the instructions in Appendix 8, except for the laboratory conducting antimicrobial urine screening tests for the National Antibacterial Residue Minimisation (NARM) Program who returns MIT results to the NRS via email on a weekly basis.

3.11.2 Laboratories must provide the telephone number and email address of a primary **contact person** for handling NRS IMS result reporting queries. This person will be assigned Primary Contact status in the IMS and may request user accounts be set up for additional laboratory staff members where required. NRS will call for this nomination when required.

4 LABORATORY TIMING AND PRICE PAID FOR SERVICE

4.1 Turnaround times (TAT)

4.1.1 Laboratory processing, analysis and reporting of analytical results for the various NRS programs samples is to be completed within **ten** (10) business days of the sample reaching the laboratory with the following exceptions:

NRS Program Number	Turnaround time (TAT)
NARM antimicrobial urine screening test	24 hours
49, 49I	5 business days
TART antimicrobial confirmatory test	5 business days
49H	12 business days
6 (faeces only)	15 business days
316	20 business days
18	30 business days

NRS relates the rate paid for an analysis to the timeliness of its completion and reporting to the NRS. The TAT includes the time required for analyte confirmation and quantification in samples, which test initially at above relevant critical decision levels. The defined TAT also applies where batching of samples occurs at the laboratory's discretion.

The full contract price is payable if the sample results reach the NRS within the applicable TAT of the sample reaching the laboratory.

Failure to report results within the applicable TAT will result in nil payment, unless an extension has been approved.

In the event of an emergency (such as a genuine equipment failure) the NRS may approve an extension on a case-by-case basis. All requests for extension should be

entered into the IMS: Select the 'Request Extension' button on the 'Requested Analyses' windowpane for the relevant Analysis Request ID. Requests for extension should also be emailed to all of the following: karina.budd@aff.gov.au; nrs@agriculture.gov.au ; nrsplant@agriculture.gov.au, to ensure that the request is actioned in a timely manner.

4.1.2 When a sample has been accepted as a 'Received Sample' but then subsequently not analysed, the appropriate reason for this should be reported in the 'Reason for loss' field of the .csv result file against the appropriate Analysis Request ID record in the IMS.

Where a laboratory considers that the number of 'lost' or 'Unable to Conduct Analysis' samples are uncharacteristically high, the situation should be reported to the NRS without delay.

4.1.3 NRS will advise laboratories, in writing, of any changes to the flow of incoming samples over the Easter and the Christmas holiday period. Note that result reporting due dates **do not** include allowances for single day public holidays. Where the due date falls on a public holiday, laboratories should endeavour to report before the public holiday. If this is not possible, a request for extension should be sought **before** the due date.

5 PAYMENT

5.1 Recipient-Generated Tax Invoices (NRS preferred method)

5.1.1 On receipt of correctly submitted results that include a batch number, the NRS will generate an invoice, on behalf of the laboratory. This invoice will be in the approved ATO format (which includes the laboratory ABN and a calculated GST amount).

5.1.2 An electronic copy of each paid invoice will be forwarded to each laboratory operating under this mechanism on a regular basis.

5.1.3 The laboratory should nominate a contact person, email address and telephone number for any account enquiries. NRS will call for this nomination when required.

5.2 Laboratory-Generated Tax Invoices

Where non-routine analyses are performed by a laboratory and sample details are not delivered and tracked via the NRS IMS, the laboratory should generate an invoice. This invoice will need to be in the approved ATO format (which includes the laboratory ABN and a calculated GST amount).

5.3 Goods and Services Tax (GST) Payments

From 1 July 2000, GST has been payable on all services supplied by laboratories contracted to the NRS where the billing address is in Australia. In line with the tax laws, the NRS will pay the contracted amount (inclusive of 10% GST).

6 QUALITY ASSURANCE (QA)

6.1 QA Requirements

6.1.1 NRS requires that contracted laboratories maintain NATA or international equivalent accreditation of the analytical method used to analyse NRS samples and in-keeping with that, operate and document an in-house quality control system. Documentation should include information on the laboratories' arrangements and frequency with respect to monitoring analytical variance, the analysis of standards, matrix blanks, recoveries and duplicate samples, identify the extent to which internal standards, certified reference materials as well as intra- and inter-laboratory check samples are incorporated.

6.1.2 NRS contract laboratories are also required to have a fully operational intra-laboratory check sample program in place as part of their internal QA system (see Section 6.2 for an outline of intra-laboratory check sample requirements).

6.1.3 'Blind' submission to NRS contract laboratories of samples with an incurred or spiked residue(s) may be undertaken, from time to time, as a check on the day-to-day performance of laboratories.

6.1.4 A contracted laboratory must keep, and when required mak*e available* for examination, records documenting the acquisition, management and use of chemical analytical reference standards relevant to the NRS contract(s) which it holds.

6.1.5 A list of all Analysts involved in the analysis of NRS program samples and their relevant competency and training records, should be maintained by the laboratory and may be viewed by an NRS representative during an on-site audit.

6.1.6 Laboratories participating in NRS tests are expected to cooperate with NRS staff in maintaining the integrity of the system. This includes cooperation during laboratory visits, audits of staffing, infrastructure arrangements, and relevant records and, for accredited tests, exchange of information between the laboratory, the NRS and NATA (or other relevant accreditation body).

6.1.7 The contract laboratory must notify NRS of any changes that may adversely affect the function or performance of, or disrupt or decrease the efficiency of, the laboratory services provided to NRS, for example relocation of the laboratory facility. In this instance, NRS may suspend the flow of samples to the laboratory, pending re-establishment of satisfactory performance in PT samples.

6.1.8 All laboratories awarded NRS contracts are required to host laboratory visits/audits during the contract period. The aim will be for NRS staff to visit each laboratory at least once during a contract period. The number of visits may be more than once/contract term and involve either NRS staff alone or NRS staff in conjunction with officials from other appropriate organisations and/or trading partners. Analytical method summaries may be provided to these officials and other government officers if required.

6.2 Intra-laboratory Check Samples

6.2.1 NRS contract laboratories are required to have a fully operational intra-laboratory check sample program in place as part of their internal QA system.

6.2.2 Each contract laboratory must prepare their own intra-laboratory check samples, appropriate to their contracted program(s). The Analyst(s) involved in quantifying and reporting results for the intra-laboratory check samples should not have knowledge of any analyte(s) present and their concentration in the intra-laboratory check sample. In practice, this may mean that the Originator of the intra-laboratory check sample should be different to the Analyst(s) responsible for quantifying and reporting the results of the intra-laboratory check sample.

6.2.3 The **frequency** of intra-laboratory check sample analysis should be **monthly** for each individual NRS random monitoring program, except for the following special case:

> For programs where sample numbers are <5 samples/month/program (e.g. seasonal horticulture, seafood, eggs, honey, pilot programs), the contract laboratory is exempt from the requirement to perform an intra-laboratory check sample for that month. This exemption can be confirmed with NRS on a case-by-

case basis.

Essential Elements of Monthly Intra-Laboratory Check Samples

6.2.4 At least one sample applicable to each contracted program is to be analysed (according to the normal working arrangements in the laboratory) in each calendar month in which sufficient (≥5/month) NRS samples are analysed.

6.2.5 The relevant NRS RC-LPE Project Officer is to be notified via email: *rajeewa.malluwawadu@aff.gov.au* on the completion of each monthly intra-laboratory check sample round (using the template provided at Appendix 10 or similar) that the check samples for relevant program(s) have been completed and that the results were either 'in-control' or 'out-of-control'.

Where results are found to be 'out-of-control', contract laboratories are to implement corrective action immediately and the corrective action report (CAR) detailing the nature and effectiveness of the action is to be provided to the Director, NRS RC-LPE Section on completion, usually within 14 days of the intra-lab sample result being reported within the laboratory.

The NRS RC-LPE Project Officer should also be notified of the cause of the out-of-control result(s) and if the problem may have compromised results for any NRS routine samples analysed in the same or previous batches. In such cases, the entire batch or batches affected may need to be re-analysed once the problem is corrected. The contract laboratory should provide the NRS RC-LPE Project Officer with regular updates on progress of the corrective action to completion where investigations take longer than a few weeks.

6.2.6 Details of all aspects relating to the preparation and analysis of intra-laboratory check samples should be recorded by contract laboratories. Recording of intra-laboratory analysis is to be in keeping with normal documentation practice. Results for intra-laboratory samples analysed should be conveyed to the sample Originator within the laboratory, as they would be to any client. The records should be appropriately cross-referenced to other documentation (e.g. non-conformances, CARs) and a full record of all intra-laboratory check samples for the duration of work under the NRS contract should be maintained by the laboratory.

6.2.7 Laboratories should be aware that NRS may audit each contract laboratory's intra-laboratory program during the contract period by calling for all relevant data to be submitted and assessing laboratory performance against the following criteria: frequency, analyte coverage, spiking levels, matrix coverage, TAT and in-control performance.

6.2.8 Laboratories may record intra-laboratory check sample details either electronically or manually, but these records should ensure that all appropriate information is noted to enable an assessment of the laboratory's performance against NRS expectations in this area to be made. The NRS proforma in Appendix 10 is an example of how this information could be recorded. Revisions to such records should be documented in line with all other laboratory quality documents, and the secure storage of the documents (either electronic or hardcopy) should be maintained.

Records should include:

- criteria for 'in-control' or 'out-of-control' results for the particular type of test, consistent with the laboratory Quality System;

- the identity of the laboratory Originator (signature should be included in addition to name where manual rather than electronic records are used);
- sample preparation and submission dates (where these differ) and result reporting date (to enable a calculation of TAT);
- matrix of intra-lab check sample;
- intra-lab check sample identification numbers;
- name of analytes spiked and expected concentrations;
- the identity of the laboratory Analyst(s) involved (signature should be included in addition to name where manual records are used);
- reported analyte concentration (corrected for 100% theoretical batch recovery);
- % Reported/Spiked for the analyte involved
- statement of whether result is deemed to be 'in-control' or 'out-of-control';
- any CAR identification number raised, where appropriate, in relation to the analysis.

6.2.9 Details regarding the reference standards used in the intra-laboratory check sample program should be held by the laboratory and may be viewed by an NRS representative during an on-site audit.

6.2.10 The requirements for inclusion of analytes in an intra-laboratory check sample program are:

- All analytes specified for each individual NRS program are expected to be covered in a 12 month period, or
- In the case of programs that involve a large number of analytes (e.g. >30), a representative selection is expected to be covered in 12 months.
- In the case of programs involving separate screening and confirmatory techniques, the majority of all analyte groups should be tested by the screening method and/or confirmatory technique in a 12 month period.

6.2.11 Intra-laboratory check samples are to be spiked to focus on the lower end of the method linear range (i.e. around the laboratory method LOR); but also include higher levels up to the top of the linear range or up to the MRL where possible. Laboratories are expected to include in a 12 month period, at least one sample from every major matrix species (e.g. beef, sheep, pig) specified for each individual NRS random monitoring contract they hold.

6.2.12 Intra-laboratory samples are to be analysed within the same time-frame as routine program samples.

6.3 Inter-laboratory Check Samples (ILCSS) and PT Samples

6.3.1 The organisation and operation of NRS PT programs is explained in the current version of the Proficiency Tests Handbook.

6.3.2 All laboratories awarded NRS contract are required to continue participation in the relevant NRS inter-laboratory PT for the duration of the contract term, always maintaining the satisfactory threshold level of performance. A Proficiency Test Schedule will be provided to all contract laboratories from time to time during the contract term.

6.3.3 NRS encourages laboratories to participate in relevant non-NRS PT schemes where appropriate. The NRS may subsidise the cost for NRS contract laboratories to participate. Contact the Director, NRS RC-LPE Section for further details or to apply.

6.3.4 ILCSS and PT samples are prepared by NRS staff in Canberra, and dispatched to the participating laboratories on a regular basis. All ILCSS and PT samples should be examined upon receipt and assessed for suitability for analysis in line with the process described in section 1. The details of any ILCSS and PT samples deemed unsuitable for analysis should be recorded on the Sample Condition sheet included in the sample dispatch and returned to the PT Co-ordinator.

6.3.5 The PT samples for the Major Programs and the ILCSS for Specialist Meat Programs will generally comprise approximately 4 to 10 and 2 to 6 samples per program respectively. Arrangements for the provision of inter-laboratory samples are at the expense of the NRS but the laboratory costs in analysing and reporting results for the samples are to be borne by the laboratory.

6.3.6 A small number of additional ILCSS samples may be sent to contract laboratories on an *ad hoc* basis, generally to follow up on performance on occasions where problems have been identified during the normal performance evaluation process or to investigate aspects of sample preparation techniques.

6.3.7 ILCSS and PT samples will generally be received by the laboratory on the day following the dispatch. The ILCSS and PT samples are to be analysed according to the normal working arrangements in the laboratory (i.e. treated as routine samples) and results emailed to the relevant PT Co-ordinator using the electronic forms supplied, before the result reporting date advised.

6.3.8 Contract laboratories are to implement corrective action if any false negative (FN), false positive (FP) or outlier results are reported in the NRS PT program relevant to their contracted program(s). Corrective action is to be implemented immediately and the CAR detailing the nature and effectiveness of the action is to be provided to the Director, NRS RC-LPE Section on completion usually within 14 days of being initiated.

6.3.9 Records pertaining to NRS ILCSS and PT samples should be appropriately cross-referenced to other documentation (e.g. non-conformances, corrective actions) and a full record of participation for the duration of work under the NRS contract should be maintained by the laboratory.

7 RETENTION OF ORIGINAL SAMPLES AND SUBSEQUENT ACTION

7.1 Requirements

7.1.1 All original samples are to be retained for a minimum of **30 days** from the date of reporting so that, if requested, a complete re-test may be undertaken.

7.1.2 All samples found to contain residues in excess of the Australian MRL must be retained for a minimum of **three months**. Written approval must be obtained from NRS before such samples are destroyed or sent for disposal.

7.1.3 All samples should be stored in an appropriate manner (in a freezer in most cases, except honey and whole egg samples) and in a way that ensures its identity is retained and to minimise the possibility of cross-contamination. i.e. each sample should be stored with its original barcode label and wrapped in a bag that is intact, and preferably the NRS security satchel used to dispatch the sample to the laboratory.

7.1.4 All samples should be stored securely. In the case of NRS meat programs, **samples must be stored in a locked freezer with access to the freezers restricted and temperature monitored.**
For all other programs, access to stored NRS samples should be restricted and temperature monitored.

7.1.5 If samples are stored in a freezer or refrigerator, the freezer or refrigerator should contain a temperature monitoring device (e.g. max/min thermometer, electronic temperature logger) which should be checked on a regular basis to ensure that the correct temperatures are maintained.

7.1.6 This provision serves several purposes:

- It allows for further investigation of a particular sample or samples in the event that the analytical results raise a matter of particular concern.
- It retains, in suitably secure and well documented form, the sample material that could, in extreme circumstances, become a matter of legal action.
- Where residues are found to be present, it facilitates the capture of incurred sample material for various purposes. In the case where an unknown residue has been detected, it enables the NRS to implement any additional action deemed necessary to identify the compound and its source and eliminate or minimise further occurrences of the contamination.

7.1.7 Depending on the particular nature of the residue and the matrix, and the current prevalence of detections in the NRS random samples, the relevant NRS Program Director may come to a standing arrangement with the laboratory for follow-up action on some samples. This may, for example, include:

- The provision of the chromatogram, as well as the quantitative report, where a particular residue is found at a stipulated concentration range.
- Re-analysis of any sample via a different technique or instrument.
- Continued retention of the original sample (possibly also the extract), beyond the basic 30 days, either in the hands of the contract laboratory or returned to the NRS CRAD facility.

APPENDICES

APPENDIX 1: GLOSSARY

Term	Definition
ABN	Australian Business Number. Used in relation to the Goods and Services Tax (GST).
Analysis Program	Name of NRS Analysis Program in the NRS IMS.
Analysis Request ID	Unique identifier generated by NRS IMS, identifies specific analysis required on NRS sample.
CRAD	NRS Central Receival and Dispatch facility.
Establishment	The establishment (abattoir, grain terminal, processing point, etc.) from which the sample is taken.
GST	Goods and Services Tax. The 10% tax applied to all eligible goods and services by the Australian Commonwealth Government.
ILCSS	Inter-Laboratory Check Sample Scheme.
Invoice	The invoice generated by NRS on receipt of correctly submitted electronic results, or the paper invoice submitted by the laboratory with correctly submitted results, against which payment is made. An invoice has a unique number and there can be many results on one invoice.
Lab Reference Number	Reference number assigned to the analysis by the Laboratory Information Management System (LIMS).
For laboratory purposes Limit of detection (LOD)	Lowest concentration of an analyte at which positive identification can be achieved with reasonable and/or previously determined confidence in a defined matrix using a specific analytical method.
For NRS purposes Limit of detection (LOD)	Values, if specified by NRS in public documents for analyte/matrix combinations, should be taken as maximum values and are provided by NRS to define the upper limit with respect to detection acceptable to NRS. Laboratory method LODs would generally be expected to be equal to, or less than, NRS specified values.

Term	Definition
For laboratory purposes Limit of reporting (LOR)	The limit of reporting (LOR) is the lowest concentration of an analyte at which positive identification and quantification can be achieved with reasonable and/or previously determined confidence in a defined matrix using a specific method.
For NRS purposes Limit of reporting (LOR)	The limit of reporting specified in public NRS documents is a limit set by NRS above which NRS will publish quantitative results of residues detected in a particular commodity, or above which NRS contract laboratories are expected to reliably quantify and report analytical results. Laboratory method LOD and LOR as defined above are generally expected to be less than or equal to the NRS specified values.
Method or Test Method	A laboratory analytical method used to perform the test relevant to the sample.
MRL	Maximum Residue Limit (mg/kg) is the food standard applicable in Australia, as set in the Agricultural and Veterinary Chemicals Code Instrument No. 4 (MRL Standard). MRL is defined as the maximum concentration of a residue that is legally permitted or recognised as acceptable in or on a food, agricultural commodity, or animal feed. It results from the officially authorised safe use of an agricultural or veterinary (agvet) chemical. Where no MRL is set for a particular commodity/analyte combination, any concentration detected constitutes a contravention.
NATA	National Association of Testing Authorities, Australia.
Product	All products, which are tested by the National Residue Survey. e.g. beef, ovine, eggs, wheat, almonds, honey.
Property ID	Tail tag, pig tattoo/brand, grower's name etc.
PT	Proficiency Test/ing.
RC-LPE	Residue Chemistry and Laboratory Performance Evaluation section of the NRS.
Receipt Date	The date on which the sample is received by the laboratory.

Term	Definition
Report Date	The date on which the analyst completes the test, signs off the result and submits the results to NRS via the IMS.
Sample Date	The date on which the sample was collected at the abattoir or establishment.
Sample Number	The unique sample number applied to a sample by the NRS.
Sub-Product	Sub type of a product. e.g. cow (sub-type of beef), Bartlett (sub-type of pear).
Tissue	The tissue/substrate on which the test is to be carried out.
Trace	A 'trace' refers to the detection of an analyte at a concentration below the laboratory's method LOR, i.e. the identity can be confirmed but it cannot be quantified with the same degree of certainty as detections at or above the LOR. However, if the laboratory is able to quantify the result and would record it's concentration in its own record keeping system, the quantified result should also be reported to NRS. The laboratory should not convert this result to a trace (-1) as the NRS IMS will do this automatically once the result has been received. The laboratory should only report a trace (-1) for detections of analytes between their method LOD and LOR for which they are unwilling to attach a number because the uncertainty of quantifying the result is too high. *NOTE: For detections of an analyte at a concentration above the laboratory's method LOR the actual amount should be reported irrespective of the level at which the specified NRS LORs are set.*
TAT	Turnaround time – the time between 'Date Received' and 'Analysis Due Date'.

Term	Definition
UAR	An unidentified analytical response (UAR) is an instrumental detector response of unknown origin observed during either screening or confirmatory analyses in either routine or proficiency test samples.
UBR	An unidentified biological response (UBR) is an unknown response observed during the testing of a sample using bioassay techniques e.g. microbial inhibition test (MIT), ELISA or similar.

APPENDIX 2: ANALYTICAL METHOD SUMMARY TEMPLATE

Please provide information pertaining to your analytical method under the following headings. For multi-part methods (e.g. GC-ECD screening and GC-MS/MS confirmation of positives) provide descriptions for each part separately. Separate analytical method summaries should be prepared for each NRS program covered by method.

a) NRS Program:
(NRS Program number and name)

b) Laboratory:
(Laboratory name and site location if more than one laboratory site)

c) Laboratory Method Name:
(Laboratory method name)

d) Laboratory Method Number:
(Laboratory method number)

e) NRS IMS Reporting Method Code:
(Method code the laboratory proposes to report to the NRS database; may have to be modified to be accommodated in NRS database)

f) Date Current Version Last Revised:
(Date that laboratory last revised the method; method code should be revised on significant revision such as changes to LOD/LOR, extraction process, equipment, ions monitored)

g) NATA (or international equivalent) accreditation of method:
(Is this method accredited by NATA or international equivalent? If some components of the method are accredited, please state details)

h) Matrix:
(Sample organ(s) or commodities covered by this method)

i) Method Scope and General Description:
(Meaningful description of method, to include appropriate applications, limitations, matrices etc.)

j) Analytes Covered, Method LOD and LOR, Method Linearity Range and estimate of Measurement Uncertainty for each analyte
(Should include details for screening and confirming methods where applicable; concentration at which MU has been estimated and method of determination of MU; LOD and LOR should be consistent with information provided under Section n) on how LOD and LOR have been determined)

Analyte	LOD (mg/kg)	LOR (mg/kg)	Relative retention time or Indicative retention time (min)	Linearity Range (mg/kg)	Measurement Uncertainty at the 95% confidence level and concentration at which MU was established
Extend as required					

k) Sample Preparation / Extraction / Digestion / Clean-up / Derivatisation:

(Comprehensive description of steps involved in sample preparation process. Include minimum sample amount required for a single analysis; techniques to liberate bound analytes (if relevant) that identify the essential elements of the process (e.g. 5M HCl hydrolysis at 80°C for 4 hours; overnight enzyme hydrolysis using glucuronidase); reagents/solvents for extraction; method of extraction; type of cleanup (e.g. GPC, SPE–C18); derivatising reagent and conditions, etc.)

l) Analyte Detection and Quantification:

(Detailed description of analytical technique. Include instrument, columns and detectors used; relevant wavelengths; MS mode and ions, highlighting quantifying ion(s); use of surrogates, external, internal, fortified or labelled standards; if two analytical techniques are used, clearly identify analytes detected, ions monitored and quantifying ion under each technique)

m) Analyte Confirmation:

(Detailed description of confirmatory technique, including:
- ions and transitions monitored
- indicative ion ratios and acceptance limits
(Note: The information included here should be sufficient to verify that the method meets the confirmation criteria outlined in the European Commission Decision 2021/808/EC i.e. where MS is used, laboratories need to include information on ion ratios.)

n) Performance Criteria / Method Validation

(Note: Raw validation data, particularly at the laboratories stated method LOD and LOR may be requested by NRS if the laboratory is awarded the contract; preferable to include data on matrix specified in NRS program and all analytes/metabolites required by NRS)

Within assay variation

(i.e. replicate analysis of spiked samples within a run by the same operator on the same instrument; preferably at concentration near LOR and above, within linear range)

Analyte	Matrix	Spike conc. (mg/kg)	No. of replicates	Mean % Recovery	Acceptance criteria	% CV
Extend as required						

Between assay variation

(i.e. analysis of spiked samples by different operators on different days; preferably near LOR and at a higher concentration within linear range)

Analyte	Matrix	Spike conc. (mg/kg)	No. of analyses	Mean % Recovery	% CV
Extend as required					

o) Method to determine LOD & LOR

(Describe basis of LOD/LOR determination; should be consistent with LOD/LOR listed under Section i)

p) Other Comments:

(e.g. Other analytes routinely covered by the method, analytical difficulties, technical issues etc.)

APPENDIX 3: ANALYSIS PROGRAM CODES

NRS Program Number	NRS Program Name	IMS Analysis Program Code
MEAT, EGG & RELATED PROGRAMS		
PROGRAM 1	ANTIMICROBIALS in KIDNEY, POULTRY LIVERS, EGGS and SEAFOOD	Kidney: 1K/14 Liver: 1P/14 Eggs: 1E/14 Seafood: 1S/14 and see combinations below
MIT	MICROBIAL INHIBITION TEST (MIT) SCREEN for ANTIBACTERIALS in BOVINE URINE	N/A
NARM	NATIONAL ANTIBACTERIAL RESIDUE MINIMISATION (NARM) CONFIRMATORY TESTING	NARM/14
TART	TARGETTED ANTIMICROBIAL RESIDUE PROGRAM CONFIRMATORY TESTING	TART/14
PROGRAM 3	PHENICOLS in MUSCLE and SEAFOOD	Muscle: 3/14 and see combinations below Seafood: 3S/14
PROGRAM 3E	PHENICOLS in EGGS	3E/19 and see combinations below
PROGRAM 4	NITROFURAN METABOLITES in EGGS and SEAFOOD	Eggs: 4/19 and see combinations below Seafood: 4S/14
PROGRAM 4I	NITROFURAN METABOLITES in RETINA	Beef: 4I/14 Sheep/pig: 4ISP/14
PROGRAM 5A	NITROIMIDAZOLES in MUSCLE, EGGS and SEAFOOD	Muscle: 5A/14 and see combinations below Eggs: 5AE/14 Seafood: 5AS/14
PROGRAM 5B	OLAQUINDOX, CARBADOX in LIVER	See combinations below
PROGRAM 6A	STILBENES, ZERANOLS and TRENBOLONE in LIVER	6A/14 and see combinations below
PROGRAM 6C	STILBENES, ZERANOLS and TRENBOLONE in FAECES	6C/14
HGPNONEU/16	SYNTHETIC HGPs IN LIVER OF CATTLE DECLARED HGP-FREE	HGPNONEU/16
PROGRAM 7	BETA AGONISTS in LIVER	7/14 and see combinations below
PROGRAM 8	PESTICIDES in FAT and EGGS	Fat: 8/14 and see combinations below Eggs: 8E/14
PROGRAM 10	CYROMAZINE, MELAMINE and DICYCLANIL in KIDNEY	See combinations below
PROGRAM 11	ANTHELMINTICS in LIVER	11/19
PROGRAM 12	MACROCYCLIC LACTONES, SPINOSYNS and OTHER ANTHELMINTICS in FAT and SEAFOOD	Fat: 12/14 and see combinations below Seafood: 12S/14
PROGRAM 15	TRICLABENDAZOLE in LIVER	15/14 and see combinations below

NRS Program Number	**NRS Program Name**	**IMS Analysis Program Code**
PROGRAM 16	METALS in LIVER and EGGS	Liver: 16/14 and see combinations below Horse: 16HORSE/14 Eggs: 16E/16
PROGRAM 18	DIOXINS in FAT	18/14
PROGRAM 20	ANDROGENIC SUBSTANCES in URINE	20/14
PROGRAM 23	NON STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS) in KIDNEY	See combinations below
PROGRAM 27	ANTICOCCIDIALS in LIVER and EGGS	Liver: 27/14 and see combinations below Eggs: 27E/14
PROGRAM 28	BENZOYL UREAS in FAT	See combinations below
PROGRAM 31	ACRYLONITRILE and VINYL CHLORIDE in EGGS	See combinations below
PROGRAM 32	INDICATOR PCBs in EGGS	32/16
PROGRAM 33	QUINOLONES and FLUOROQUINOLONES in KIDNEY	33/16
PROGRAM 35	CORTICOSTEROIDS in LIVER	35/16
PROGRAM 36	SEDATIVES in LIVER	36/16
PROGRAM 37	HERBICIDES in KIDNEY	37/19
PROGRAM 38	ANAESTHETICS IN FAT	38/21
PROGRAM 39	IMIDOCARB IN KIDNEY	39/21
COMBINATION PROGRAMS:		
PROGRAMS 1, 10, 23	ANTIMICROBIALS, NON STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS), CYROMAZINE, MELAMINE and DICYCLANIL in KIDNEY	1.10.23/14
PROGRAMS 1, 23	ANTIMICROBIALS and NON STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS) in KIDNEY	1.23/14
PROGRAMS 3, 5A	PHENICOLS and NITROIMIDAZOLES in MUSCLE	3.5A/14
PROGRAMS 3E, 4, 31	PHENICOLS, NITROFURAN METABOLITES, ACRYLONITRILE and VINYL CHLORIDE in EGGS	3E.4.31/19
PROGRAMS 5B, 6A, 7, 16, 27	OLAQUINDOX, CARBADOX, STILBENES, ZERANOLS, TRENBOLONE, BETA AGONISTS, METALS and ANTICOCCIDIALS in LIVER	5B.6A.7.16.27/14
PROGRAMS 6A, 7, 15, 16, 27	STILBENES, ZERANOLS, TRENBOLONE, BETA AGONISTS, TRICLABENDAZOLE, METALS and ANTICOCCIDIALS in LIVER	6A.7.15.16.27/14
PROGRAMS 8, 12, 28	PESTICIDES, MACROCYCLIC LACTONES, SPINOSYNS and OTHER ANTHELMINTICS and BENZOYL UREAS in FAT	8.12.28/14
PROGRAMS 8, 12	PESTICIDES, MACROCYCLIC LACTONES, SPINOSYNS and OTHER ANTHELMINTICS in FAT	8.12/17
GRAIN PROGRAMS		
PROGRAM 42	PHOSPHINE in CEREAL GRAINS, FLOUR, BRAN, PULSES and OILSEEDS	42/14
PROGRAM 46	METALS in CEREAL GRAINS, FLOUR, BRAN, PULSES and OILSEEDS	46/14

NRS Program Number	**NRS Program Name**	**IMS Analysis Program Code**
PROGRAM 49	MULTI-RESIDUE PESTICIDE SCREEN in CEREAL GRAINS, FLOUR, BRAN, PULSES and OILSEEDS	49/14
PROGRAM 49H	HERBICIDES in CEREAL GRAINS, FLOUR, BRAN, PULSES and OILSEEDS, MACADAMIA NUTS and ALMONDS	Grain: 49H/14 Hort: 49HH/14
PROGRAM 49I	IMIDAZOLINONE HERBICIDES in CEREAL GRAINS, PULSES and OILSEEDS	49I/20
HORTICULTURE PROGRAMS		
PROGRAM 142	PHOSPHINE in ALMONDS	142/19
PROGRAM 156	METALS in MACADAMIA NUTS, ALMONDS, APPLES and PEARS	156/16
PROGRAM 157	MICROBIOLOGY in APPLES and PEARS	See combinations below
PROGRAM 169	MULTI RESIDUE PESTICIDE SCREEN including DITHIOCARBAMATES in MACADAMIA NUTS, ALMONDS, APPLES and PEARS	169/14 and see combinations below
PROGRAM 179	PATULIN in APPLE and PEAR JUICE	179/19
COMBINATION PROGRAMS:		
PROGRAMS 169, 157	MULTI RESIDUE PESTICIDE SCREEN including DITHIOCARBAMATES and MICROBIOLOGY in MACADAMIA NUTS, ALMONDS, APPLES and PEARS	169+157/17 Pome: 169+157POME/18
HONEY PROGRAMS		
PROGRAM 201	ANTIMICROBIALS in HONEY	See combinations below
PROGRAM 203	PHENICOLS in HONEY	203/19
PROGRAM 204	NITROFURAN METABOLITES in HONEY	204/19
PROGRAM 206	METALS in HONEY	206/14
PROGRAM 208	PESTICIDES in HONEY	208/19
PROGRAM 209	PARADICHLOROBENZENE in HONEY	209/14
COMBINATION PROGRAMS:		
PROGRAMS 201, 209	ANTIMICROBIALS and PARADICHLOROBENZENE in HONEY	201.209/19
SEAFOOD PROGRAMS		
PROGRAM 306	STEROIDS in SEAFOOD	306/14
PROGRAM 308	PESTICIDES in SEAFOOD	308/14
PROGRAM 316	METALS in SEAFOOD	Aquaculture: 316/14 Wildcaught: 316W/14
PROGRAM 316I	INORGANIC ARSENIC in SEAFOOD	Aquaculture: 316I/14 Wildcaught: 316IW/14
PROGRAM 317	DYES in SEAFOOD	317/14
PROGRAM 333	QUINOLONES and FLUOROQUINOLONES in SEAFOOD	333/16

APPENDIX 4: CHEMICAL RESIDUE NOTIFICATION FORM (ANIMAL PRODUCTS)

FOR LAB USE ONLY

TO: Animal Programs Director, National Residue Survey

FROM: _____ *(laboratory)* _____ *(analyst)*
(print name)

The following sample of **ANIMAL PRODUCTS** contained residue levels in excess of the specified MRL for the commodity and chemical tested, or contained a residue where no MRL has been set.

SAMPLE DETAILS *[PLEASE REPORT ONLY 1 SAMPLE PER PAGE]*

			NRS USE ONLY (NRS to complete)
Lab Sample No. E.g.; LIMS		**Product**	
Lab Rec'd date		**Sub product**	
NRS Sample No.		**Tissue**	
Sample date			
Analysis Program Code			

CHEMICAL DETAILS *(List contravening residue AND all other residues found)*

	1	**2**	**3**
Chemical Residue			
Level Detected (mg/kg)			
MRL (mg/kg)			

Comments:
The re -analysis of a separate portion of the sample, has confirmed this result and the result reported here is the average of the two analyses

Signed: _____ *(analyst)* **Date:** _____

NRS USE ONLY			
Residue Action Level			

ACTION: ☐ For traceback and report to NRS
☐ For information

Signed: _____ Date: _____

STATE USE ONLY			
	Date	**NRS Use Only**	**Date**
Traceback initiated		Traceback received	
Traceback completed		Traceback recorded	
Traceback reported to NRS			

APPENDIX 5: CHEMICAL RESIDUE NOTIFICATION FORM (PLANT PRODUCTS)

FOR LAB USE ONLY

TO: **Plant Programs Director, National Residue Survey**

FROM: _____*(laboratory)* _____ *(analyst)*
(print name)

The following sample of **PLANT PRODUCTS** contained residue levels in excess of the specified MRL for the commodity and chemical tested, or contained a residue where no MRL has been set.

SAMPLE DETAILS *[PLEASE REPORT ONLY 1 SAMPLE PER PAGE]*

			NRS USE ONLY (NRS to complete)
Lab Sample No. E.g.; LIMS		**Product**	
Lab Rec'd date		**Sub product**	
NRS Sample No.		**Tissue**	
Sample date			
Analysis Program Code			

CHEMICAL DETAILS *(List contravening residue AND all other residues found)*

	1	**2**	**3**
Chemical Residue			
Level Detected (mg/kg)			
MRL (mg/kg)			

Comments:
The re -analysis of a separate portion of the sample, has confirmed this result and the result reported here is the average of the two analyses

Signed: _____ *(analyst)* **Date:** _____

NRS USE ONLY

Residue Action Level			

ACTION: ☐ For traceback and report to NRS
☐ For information

Signed: _____ Date: _____

STATE USE ONLY

	Date	**NRS Use Only**	**Date**
Traceback initiated		Traceback received	
Traceback completed		Traceback recorded	
Traceback reported to NRS			

APPENDIX 6: UAR NOTIFICATION REPORT

FOR LAB USE ONLY

TO: RC-LPE Director, National Residue Survey

FROM: _____ *(laboratory)* _____ *(analyst)*
(print name)

The following sample contained an 'Unidentified Analytical Response' (UAR)

SAMPLE DETAILS

		NRS USE ONLY (NRS to complete)	
Lab Sample No. e.g.; LIMS		**Product**	
Lab Rec'd date		**Sub product**	
NRS Sample No.		**Tissue**	
Sample date			
Analysis Prog Code			

NATURE OF UAR *(if insufficient space or other additional information is available, please provide on a separate sheet)*

UAR *(identify as UAR1, UAR2 etc.)*	Extraction etc. *(brief description including method code if NRS contract lab)*- if applicable (if not enter N/A)	Detection *(e.g. GC, GCMS, HPLC, antimicrobial screening)*	Detector *(e.g. NPD, ECD, UV, type of microbial plate or ELISA)*	Column (s) *(e.g. DB5, DB17 etc.)*	RT of UAR for each column	RT & name of ISTD or relevant std(s) near UAR peak for each column

(extend table as necessary)

Sample extracts available	*Yes / No*
Original sample available	*Yes / No* *Amount* _____ *(g)*
Original sample stored	*Freezer / Fridge / Room Temp* *(strike out as appropriate)*
Copies of initial data (* chromatograms etc) sent to NRS	*Yes / No* *Date:* _____

** Identify UAR peaks on chromatograms as UAR1 etc.*

Comments *(e.g. copies of chromatograms mailed)*

Signed: _____ ***Date:*** _____

APPENDIX 7: UBR NOTIFICATION REPORT

								SCX Extraction (Aminoglycoside)	C-18 Extraction (Tetracycline)	Solvent Extraction. (B-lactams / macrolides / lincosamides etc)					
Lab No	**Program RMP = R NARM = N TART = T**	**NRS No.**	**Sample date**	**Lab receipt date**	**Product**	**Subproduct**	**UBR Reported**	**Plate Used record zone size (mm)**	**Plate Used (record zone size-mm)**	**Plate Used record zone size(mm)**	**Plate Used record zone size (mm)**	**Plate Used record zone size (mm)**	**Plate Used record zone size (mm)**	**Instrumental confirmatory tests run & results**	**Other comments eg. possible cause**
Spikes															
Control disc(mm)								*XX*	*XX*	*XX*	*XX*	*XX*	*XX*		

control disk size = XX mm (please replace XX with disc size)

KEY

nz = no zone on plate

pen = penase

NP=Not Plated

APPENDIX 8: NRS INFORMATION MANAGEMENT SYSTEM (IMS)

Receipt of samples

1. Log onto NRS IMS at https://nrs.agriculture.gov.au/login.aspx Input user name and password. Should you require assistance contact the relevant NRS staff member.

2. Connect scanner. Select 'Incoming Samples' windowpane. Select the 'Received Samples' button. Scan barcode on security satchel. A Lab Reference Number for each Analysis Request relating to the sample can be nominated. Select 'Validate' if sample is suitable to accept. Select 'Yes' to the pop up question 'Is the sample fit for analysis?' Select "OK."

3. If sample is unsuitable to accept, obtain written advice from nrs@agriculture.gov.au. If advised to cancel the sample, select "No" to the pop up question 'Is the sample fit for analysis" and nominate a reason (see box 4). Select "OK."

4. If the sample is unsuitable for analysis, select reason from:
Inadequate sample size
Incorrect matrix or test
Laboratory issue
Not suitable for analysis
Other (unexpected non-conformance)
Sample barcode problem
Sample incorrectly contained
Sample security breach

5. Repeat the process to accept receipt of all samples. Multiple samples may be scanned consecutively and all scanned samples accepted by selecting 'Validate' only once after the final sample is scanned.

6. If after accepting a sample it cannot be analysed, obtain written advice from nrs@agriculture.gov.au. If advised to cancel the sample, in the 'Received Samples' windowpane, tick the box beside the relevant line entry. Select the 'Unable to Conduct Analysis' button and nominate a reason (see box 4). Select "Submit"

7. If samples are to be forwarded for further testing, sample information will appear in 'Samples Ready For Dispatch' windowpane.

8. From this windowpane select the 'Dispatch Sample(s)' button. Scan new con note to be used, barcode from original security satchel and new security satchel containing sample to be forwarded. Select 'Validate & Add to List' button.

9. Tick the box beside the sample details for the sample to be forwarded. Select the 'Dispatch All Samples in List' button. Enter the date for dispatch and select 'OK'.

10. An extension to TAT date can be requested from the 'Requested Analysis' windowpane. Tick the box beside the particular Sample No. - Analysis Program line. Select the 'Request Extension' button. Enter a number of days for the extension requested, reason and press 'Submit'.

11. Individual Analysis Requests on a sample can be cancelled from the 'Requested Analysis' windowpane. Tick the box beside the particular Sample No. - Analysis Program line(s). Select the 'Cancel Analysis Request' button.

12. For analysis, sample info can be exported to a CSV file. On the 'Requested Analysis' windowpane, tick the box beside the particular Sample No. - Analysis Program line(s) you wish to analyse. Select the 'Export to CSV' button, open and save the file for use with your LIMS.

Analysis and reporting results

13. Results should be imported into a CSV file provided exactly in terms of column order, headings and format as the example provided on screen.

14. If no residues are detected, 'Analyte' and 'Result' fields should be blank. If analysis is performed the 'Reason Lost' field should be left blank. Correction factor is used for vol to mass conversion in urine samples. The lab should leave this field blank and record the urine specific gravity and pH on the chemical notification form when reporting violative residues. All other fields need to be completed.

15. When reporting results, one analyte is to be reported per row against the relevant Analysis Request ID. At minimum, a single row for each Analysis Request ID must be completed.

16. If more than one residue is detected, copy the 'Analysis Request ID', Lab Reference Number', 'Batch Number', 'Correction Factor' and 'Test Method' fields into an inserted row below, as many times as required for individual analytes to be reported.

17. Enter 'Analyte' and 'Result' fields as required for each Analysis Request ID.

18. After analysis has been completed, to upload the CSV file, from the 'Requested Analyses' windowpane, select the 'Enter Results (upload)' button. Select 'Browse' button to find your CSV file. Select 'Upload' button.

19. If there are no problems with the CSV file results will move to 'Saved Analyses' window panel.

20. In 'Saved Analyses' windowpane, tick the box beside the particular Analysis Request ID lines you wish to report and select 'Print Analysis Results' button. Select 'Open', press print icon and have results checked by a person other than the Analyst.

21. If correct, checker should sign hardcopy and file for laboratory records. If incorrect, update CSV file and repeat upload and checking process.

22. In the 'Saved Analyses' windowpane tick the box beside the particular Analysis Request ID lines you wish to report and select 'Submit Analysis Results' button.

23. Select OK to confirm submission at pop up verification window. Sample results will now appear in 'Submitted Analyses' windowpane.

APPENDIX 9: SAMPLE PREPARATION REQUIREMENTS

Samples sent to NRS contract laboratories will generally require a degree of processing prior to analysis. The following information is provided as a guide to the types of samples that may be received and the preparation processes required.

Please note for muscle, liver, kidney, fat and aquatic products:

- **Before initial processing, ensure that sufficient unblended sample is retained for repeat analysis.**
  Subsequent to initial testing, NRS may request that surface versus internal tissue sub-samples are tested to determine whether handling may have resulted in surface contamination of the sample.
- **Do not allow the entire sample to completely thaw when removing portions for analysis.**
- **Retain any remaining processed and unprocessed material (excluding whole eggs and honey) in frozen/appropriate storage for reanalysis, if required.**

Matrix	Nature of sample received	Min. size of each laboratory sample required	Sample processing required
Meat Products			
Urine	Single or multiple tubes or containers	~ 50mL	Using the container sample, sub-sample for initial analysis. Retain the remaining portion in frozen storage for reanalysis if required.
Animal fat	Solid fat – kidney-abdominal- or subcutaneous-fat cut from one animal Poultry: Solid fat – abdominal-fat from at least 3 birds	500g 500g (poultry)	Programs 8, 28: Render a sufficient amount of fat for analysis (not more than half of the total sample received) and sub-sample the rendered fat (i.e. lipid portion) for analysis. In cases of animal species from which large amounts of fat cannot be obtained (e.g. kangaroo, bobby calves), the sample may arrive with other tissue (kidney etc.) attached to the fat. Under those circumstances, the laboratory should remove and render as much fat as possible prior to analysis. If insufficient rendered fat can be obtained for at least duplicate analyses, the sample should be deemed inappropriate for analysis and NRS contacted. Program 12: A portion of the fat as received should be processed and analysed and the result reported accordingly.
Liver	Mammals: whole or part liver Poultry: from at least 6 birds or cross section of container	500g ~ 200g (poultry)	Take a sufficient portion (not more than half of the total sample received) to blend for initial analysis. If multiple livers received, take the same sized portion from each liver and blend.
Kidney	Single kidney (large animals), or Two kidneys (small animals e.g. sheep)	~ 200g	Program 1: Samples may be screened based on the analysis of cortex only. However, positive samples must be confirmed based on taking a sufficient portion (≥20g) of cortex and medulla from the kidney and thoroughly blending it prior to analysis. In cases where multiple kidneys are received, take approximately the same portion of cortex and medulla from each kidney and blend for analysis. All other NRS Programs: Take a sufficient portion (not more than half of the total sample received) to blend for initial analysis.

Matrix	Nature of sample received	Min. size of each laboratory sample required	Sample processing required
Muscle	Skeletal muscle (no heart or diaphragm muscle) Poultry: thighs, legs and other dark meat excluding skin and bone	~ 500g	Take a sufficient portion (not more than half of the total sample received) to blend for initial analysis.
Retina	Two eyeballs	Two eyeballs	Test one whole eyeball. Keep second in reserve if required for repeat analysis on a separate portion.
Faeces	Faeces from large intestine	~ 250g	Take a sufficient portion (not more than half of the total sample received) to blend for initial analysis.
Eggs	If received in cartons - 24 separate whole eggs If received in jars – 12 shelled eggs	12 eggs	If received in cartons – Remove the shells from 12 intact, whole eggs and blend the yolks and whites prior to taking a representative sub-sample for analysis. Retain the rest of the blended eggs in frozen storage for reanalysis, if required. Retain the remainder of the whole eggs in the refrigerator for analysis, if required. Initial retests should be conducted on the blended material. The remainder of the whole eggs should be retested only if requested by NRS. If received in jars – Blend entire contents of jar. Subsample as required for testing. Retests should be conducted on the original blended material.

Matrix	Nature of sample received	Min. size of each laboratory sample required	Sample processing required
Aquatic products			
Finfish (Barramundi, Kingfish, Salmon, Eel, Cod, Mullet, Blue Grenadier, Orange Roughy, Patagonian Toothfish, Whiting, Snapper, Mackerel, Groper, Trout, Cobia and Mulloway)	Fillets, or whole fish (gilled and gutted)	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Where more than one individual fish is received, take a portion from each individual unit for initial sampling. Discard fish scales. Blend fillet with attached skin and muscle in natural proportions.
Predatory fish (Marlin, Shark, Swordfish and Tuna)	Fillets	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Discard fish skin. Blend fillet.
Scallops	One or more whole scallops with shell	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Discard shell and viscera including vein. Retain flesh and roe for testing. Rinse briefly with deionised water or equivalent (do not soak). Drain prior to blending for analysis.
Abalone	One or more whole abalone with or without shell	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Discard shell and viscera. Rinse briefly with deionised water or equivalent (do not soak).Drain prior to blending for analysis.
Oysters (including pear oysters)	One or more whole oysters in shell	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Discard shell and viscera. Rinse briefly with deionised water or equivalent (do not soak). Drain prior to blending for analysis.

Matrix	Nature of sample received	Min. size of each laboratory sample required	Sample processing required
Prawns	One or more whole prawns with or without shell	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Discard, shell, head, tail fin, legs, digestive tract and vein. For testing of nitrofuran metabolites, attempt to sample flesh that is not in contact with shell. Rinse edible flesh briefly with deionised water or equivalent (do not soak). Drain prior to blending for analysis.
Crayfish (Marron, Redclaw and Yabbies)	Tail fillets with or without shell or one or more whole crayfish with shell	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Discard shell, digestive tract and vein from tail fillet. For testing of nitrofuran metabolites, attempt to sample flesh that is not in contact with shell. Rinse edible flesh briefly with deionised water or equivalent (do not soak). Drain prior to blending for analysis.
Lobster	One or more lobster tail fillets with or without shell or whole lobsters	Enough to give 200g edible flesh	Take sufficient edible tail muscle (no head or shell) for initial sampling. Where more than one individual lobster is received, take a portion from each individual unit. Rinse edible flesh briefly with deionised water or equivalent (do not soak). Drain prior to blending for analysis.
Crab	One or more crabs with shell on or edible flesh	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Where more than one individual crab is received, take a portion from each individual unit for initial sampling. Discard shell and viscera. Remove edible flesh from body and claws. Rinse edible flesh briefly with deionised water or equivalent (do not soak). Drain prior to blending for analysis.
Sea cucumber	One or more whole sea cucumbers	Enough to give 200g edible flesh	Take a sufficient portion of whole product. Rinse briefly with deionised water (or equivalent) to remove sand (do not soak). Drain prior to blending for analysis.
Squid	One or more whole squid or squid tubes	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Discard viscera including eyes, beak, tentacles and ink sac. Peel outer spotted skin from tube and discard. Rinse white tube briefly with deionised water or equivalent (do not soak). Drain prior to blending for analysis.

Matrix	**Nature of sample received**	**Min. size of each laboratory sample required**	**Sample processing required**
Octopus	One or more whole octopus	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Where more than one individual octopus is received, take a portion from each individual unit for initial sampling. Discard viscera including head, eyes, beak and ink sac so that you are only left with the tentacles. Peel outer skin layer from tentacles and discard. Rinse tentacles with deionised water or equivalent (do not soak). Drain prior to blending for analysis.
Crocodile	One or more skinless fillets	Enough to give 200g edible flesh	Take a sufficient portion of product for initial analysis. Where more than one individual fillets is received, take a portion from each individual unit for initial sampling. Rinse briefly with deionised water or equivalent (do not soak). Drain prior to blending for analysis.

Matrix	Nature of sample received	Min. size of each laboratory sample required	Sample processing required
Plant Products			
Grain	Grain in NRS plastic bags	*600-1000g 10kg (mycotoxins)	Mix the sample within the bag in order to take a representative sample for analysis and retain the rest in frozen storage for reanalysis, if required. *Bran and flour maybe lighter in weight than whole grains. Split the 10kg sample using a sample divider into ~10 even lots, each ~1kg. Select one ~1kg lot at random and grind the lot to a ~2-3mm particle size. Mix the ground lot and sub-sample ~200g and centrifuge mill to ~0.5mm particle size. Sub-sample for analysis.
Macadamia nuts / almonds	Security satchels of nuts without shells	~ 1kg 100g (metals)	Take a sufficient portion (not more than half of the total sample received) of the shelled nuts and sample for initial analysis. Retain any remaining processed and unprocessed material in frozen storage for reanalysis, if required.
Apples / pears	Individual apples or pears in a bag	~ 1.5 – 2.5kg apples or pears	Remove the stems from a minimum of 1kg (at least 10 units) of apples or pears. Cut each apple or pear in half, mix and separate the halves into two distinct lots. Process one lot for analysis and retain any remaining processed and the unprocessed material lot for reanalysis, if required.
Apple / pear juice	Processed juice in sealed container within plastic liner bag	~ 2L juice	Mix the sample within the container in order to take a representative sample for analysis and retain the rest in frozen storage for reanalysis, if required.
Citrus fruit	Individual citrus fruits in a bag	~ 3kg	Select a minimum of 1kg (at least 10 units) of citrus fruit. Cut each citrus fruit in half, mix and separate the halves into two distinct lots. Process one lot for analysis and retain any remaining processed and the unprocessed material lot for reanalysis, if required.
Stone fruit (including cherries)	Individual stonefruit in a bag	~ 3kg	Divide the entire sample received into four approximately equal quarter lots, select two of the quarter lots and combine. Process this lot for analysis and retain the other two quarters for reanalysis, if required. To process the lot for analysis, remove the stems, cut each fruit in half and remove the stone, weigh the stones and fruit. Process with dry ice. Results should be expressed on a whole commodity basis (including stones and stems).

Matrix	**Nature of sample received**	**Min. size of each laboratory sample required**	**Sample processing required**
Avocados	Individual avocados in a bag	~ 10 avocados	Divide the entire sample received into four approximately equal quarter lots, select two of the quarter lots and combine. Process this lot for analysis and retain the other two quarters for reanalysis and forwarding to another laboratory, if required. To process the lot for analysis, cut each fruit in half and remove the stone, weigh the stones and fruit with skin. Process the fruit with skin with dry ice. Results should be expressed on a whole commodity basis (including stones and skin).

Apiary Products			
Matrix	**Nature of sample received**	**Min. size of each laboratory sample required**	**Sample processing required**
Honey	Honey in jars	~ 50g	Take a representative sample for analysis and retain the rest in appropriate storage (e.g. room temperature in the dark, refrigerator, freezer) for later analysis, if required.

APPENDIX 10: INTRA-LABORATORY RECORD TEMPLATE

Laboratory name:

NRS Program	Originator name	Analyst name	Intra-lab sample Submission Date	Date Intra-lab Result Reported	Lab Sample ID No.	Analyte Spiked	Matrix	Conc. of spike (mg/kg)	Batch Recovery (%)	Result reported to Originator (Corrected for Batch Recovery) (mg/kg)	% Result reported (corrected) / Spiked Conc.	Acceptance Criteria	Is Result in Control?	CAR No. if applicable