



## Laboratory performance evaluation and proficiency testing

National Residue Survey 2006–2007

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## Description

The National Residue Survey (NRS) procures analytical services by contracting public and private sector laboratories to analyse samples for chemical residues. Laboratories are selected by competitive tender based on suitable proficiency, accreditation to an international standard and value for money.

Since July 2005, NRS has been accredited by the National Association of Testing Authorities (NATA) as a proficiency test provider according to the criteria set out in the International Laboratory Accreditation Cooperation (ILAC) G: 13 document *Guidelines for the Requirements for the Competence of Providers of Proficiency Testing Schemes*.

Accreditation is important because it ensures that NRS proficiency testing (PT) is recognised within the laboratory community in terms of meeting internationally accepted standards in both technical competence and the ability to establish the proficiency of participating laboratories.

NRS also provides fee-for-service PT for external clients (see pages 35–38). Accreditation is essential because clients require PT providers to be accredited to international standards.

The NRS Eighth Term contracts with participating analytical laboratories commenced on 1 July 2006 and continue for two years to 30 June 2008. Laboratory PT takes place according to the schedules outlined in the *National Residue Survey Proficiency Tests Handbook* (Ninth edition, September 2005) at six-, four- or three-monthly intervals.

## Outputs

This programme underpins the efficiency and credibility of NRS residue testing projects by providing sustainable access to technically competent and cost-effective laboratories for the analysis of samples.

Advice was provided on all aspects of residue chemistry to other areas of the Department as well as to other Australian, state and territory government authorities.

## Highlights

NRS maintained accreditation as a proficiency test scheme provider following a reassessment against the relevant international standard by NATA.

NRS published the tenth edition of the *National Residue Survey Proficiency Test Handbook* which outlines the proficiency test requirements relating to the Ninth Term laboratory contract period (2008–2011).

A new PT scheme was developed and implemented for paradichlorobenzene in honey, involving both Australian and international laboratories.

The NRS laboratory proficiency programme met all AQIS oversight requirements.

Laboratory services were procured for a number of *ad hoc* testing projects.

## Performance

For laboratory performance evaluation (LPE) and PT programmes run on behalf of participating industries, NRS performance is measured by:

- procurement of laboratory services in compliance with Australian Government procurement guidelines
- confirmation of the technical integrity of NRS analytical results by the conduct of proficiency testing to assess and monitor the performance of laboratories, thus ensuring the international acceptance of NRS data
- validation that laboratory assessments in proficiency tests and in contracted work accord with agreed scientific standards
- acceptance by domestic and overseas stakeholders of the NRS residue testing programme that includes outsourced analytical laboratory services supported by NRS-managed PT and monitoring of laboratory performance
- effective and timely responses to emerging needs.

### PERFORMANCE INDICATOR ONE

Confirmation of the scientific integrity of NRS analytical results by performance testing to assess and monitor the proficiency of laboratories, thus ensuring international acceptance of NRS residue data.

#### Achievements

<i>Intra-laboratory check sample data</i>	NRS contract laboratories are required to implement a comprehensive intra-laboratory check sample regime in addition to their normal laboratory quality assurance measures. The requirement to notify NRS of intra-laboratory check sample performance continued during 2006–2007. NRS completed a review of results from of the final period of the Eighth Term contract in June 2007.
<i>NATA accreditation of contract laboratories</i>	All NRS-contracted laboratories must achieve and maintain NATA (or equivalent) accreditation, unless they are exempt due to exceptional circumstances, and they must operate within a comprehensive quality assurance/quality control system. NRS regularly checks quality assurance during the period of the laboratory contracts.
<i>Performance monitoring using proficiency testing</i>	Contracted laboratories analysed standard sets of samples that were either residue-free or had been spiked with a known amount of residue or residues. All PT samples were prepared by NRS staff at the TGA or ANU laboratory facilities in Canberra. Laboratories were assessed on their ability to detect, identify and quantify any residues present in the samples and appropriately report these results.

## Laboratory performance evaluation and proficiency testing

### Achievements *continued ...*

<i>Effective assessment of laboratory performance</i>	Either NRS or the NRS LPE Committee assess all PT results. The LPE Committee is chaired by the manager of the NRS Residue Chemistry and Laboratory Performance Evaluation (RC-LPE) team and includes representatives from Proficiency Testing Australia, the National Measurement Institute, the TGA and an independent chemical consultative organisation, with support from officers employed by NRS.
<i>Required standards of analysis maintained</i>	During 2006–2007, PT, laboratory visits and data reviews were successfully used to ensure that the required standard of analytical performance expected of an NRS contract laboratory was maintained for all laboratories delivering analytical services to NRS.

### PERFORMANCE INDICATOR TWO

Procurement of laboratory services that provide the best value for money and meet corporate governance requirements.

#### Achievements

<i>NRS Eighth Term contracts</i>	All Eighth Term contract laboratories continue to deliver value-for-money analytical services at the required quality level.
<i>Selection of laboratories for ad hoc contracts</i>	Laboratory services for a number of small NRS testing projects were procured on the basis of evaluating expressions of interest against NRS technical and value-for-money requirements. Contracts awarded on this basis included: chloramphenicol in pigs, and national antimicrobial residue minimisation project testing of urine from animals destined for the domestic market. In addition, the testing specifications for antimicrobials in honey were extended to include additional analytes.
<i>Contract laboratory visits</i>	RC-LPE staff members visited a number of Eighth Term contract laboratories (on some occasions accompanied by an AQIS officer) in this contract period to: <ul style="list-style-type: none"> <li>• ensure laboratories delivered analytical services at the required performance level</li> <li>• ensure that laboratory services are delivered to the satisfaction of AQIS oversight requirements</li> <li>• answer any queries regarding the operational requirements of the contract.</li> </ul>
<i>Updated guidelines for contract laboratories</i>	The updated Laboratory Guidelines (July 2006) contain all specifications and requirements for laboratory analyses and reporting to be undertaken by the contract laboratories. Each contracted laboratory was sent a copy before the commencement of the new contracts. The guidelines are controlled documents and NRS verifies that updates sent to each contract laboratory are appropriately included.
<i>Preparation for Ninth Term laboratory selection</i>	Planning for the pre-tender PT rounds required to assess laboratory capability for the Ninth Term contracts started in May 2007. Preparation of the PT samples will commence in the second half of 2007.

### PERFORMANCE INDICATOR THREE

Validation that laboratory assessments in proficiency tests and in contracted work accord with agreed scientific standards.

#### Achievements

<i>NATA proficiency testing accreditation</i>	The NRS system of residue chemistry and laboratory performance evaluation was reassessed in April 2007 by NATA against the relevant international standard (ILAC G: 13 2000) and was granted a continuation of accreditation as a proficiency testing scheme provider. Accreditation has been maintained since July 2005.
<i>Acceptance of NRS data</i>	The validity of NRS data continued to be accepted by overseas clients as well as international organisations such as the Codex Alimentarius Commission.

### PERFORMANCE INDICATOR FOUR

Approval by domestic and overseas clients of the NRS system of using outsourced laboratory services based on public tender, proficiency testing and ongoing monitoring of performance.

#### Achievements

<i>USDA Food Safety Inspection Service equivalence</i>	The United States Department of Agriculture (USDA) continues to formally recognise the technical equivalence of methods used by, and results generated by, NRS contract laboratories in residue testing programmes.
<i>EU and other trading partners (e.g. Japan, Korea)</i>	The European Union (EU) and other trading partners continue to recognise that results generated by NRS contract laboratories are of equal technical validity to results generated by their own laboratories.

**PERFORMANCE INDICATOR FIVE**

Responsiveness to emerging needs in a timely and effective manner.

**Achievements**

*Preparation for Ninth Term laboratory contracts (2008–2011)*

The process for selection of the Ninth Term contracts will be complete in early 2008: new contracts begin on 1 July 2008 and run until 30 June 2011.

The process of laboratory selection involves the following:

- determination of the residue testing requirements for animal and plant products by NRS project managers in consultation with industry
- publication of the *Proficiency Test Handbook* (10<sup>th</sup> edition) advising laboratories of the specifications of the analytical programmes that will be on offer for the Ninth Term contract period
- seeking expressions of interest (EOI) via the AusTender website<sup>14</sup> according to Australian Government purchasing requirements, and subsequent provision of the Request-for-Tender to all laboratories submitting an EOI.
- involvement of those laboratories considering tendering for NRS contracts in the relevant pre-tender PT rounds administered by NRS. Pre-tender PT for the Ninth Term contract period runs from August to October 2007, requiring the preparation of several thousand PT samples, as well as the collation and evaluation of the corresponding results
- assessment of laboratory PT results and ranking of laboratory performance by the NRS LPE Committee
- submission of tenders by laboratories
- evaluation of tenders by the NRS Tender Panel: evaluation of submissions against criteria specified in the request for tender, including laboratory performance in the pre-tender proficiency rounds, laboratory management, staffing, equipment and facilities, quality control systems, accreditation status, appropriateness of analytical methods and pricing
- notification to the successful tendering laboratories of the outcome of the tender evaluation process
- contracts sent to successful laboratories in time for sign-off by 30 June 2008, for three years to 30 June 2011.

*Expansion of grains programme*

Implementation of the expanded grains programme involves the development of sampling regimes and analytical protocols for the 13 new commodities that commence in 2007–2008. Arrangements are being made to accommodate this expansion.

<sup>14</sup> <http://www.tenders.gov.au>

## Outlook

### *Laboratory contracts*

During the fourth quarter of 2007 and early 2008, work will continue in preparation for the Ninth Term contracts that commence on 1 July 2008 and finish on 30 June 2011.

### *Expansion of the grains programme*

As outlined, the expansion of the grains project involving the sampling and analysis of 13 new commodities will proceed according to agreed arrangements with industry.

### *Targeted monitoring*

Revised arrangements in the national organochlorine residue management project, the national antibacterial residue minimisation (NARM) project and targeted antibacterial residue testing project, as endorsed by SAFEMEAT, commenced on 1 July 2006. The future management of these projects will be adjusted accordingly. A new domestic NARM project has been implemented and appropriate laboratory services procured.

Testing programmes for herbicides in animal fat, herbicides in grains, paradichlorobenzene in honey, dioxins in wildcaught fish, and metals in animal tissue will be implemented in 2007–2008.



## Externally-funded laboratory performance evaluation

National Residue Survey 2006–2007

## Externally-funded laboratory performance evaluation

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## Description

Laboratory performance (and therefore evaluation) underpins the validity of NRS residue testing programmes. NRS conducts proficiency testing (PT) and laboratory performance evaluations in the course of contracting laboratories to undertake analysis of samples from the animal and plant programmes. Laboratory performance is important for the efficiency and acceptability of industry-operated monitoring projects and quality assurance systems. These require cost-effective selection of analytical laboratories and confidence in the validity of analytical results.

On the basis of meeting the requirements set out in the International Laboratory Accreditation Cooperation (ILAC) G: 13 document *Guidelines for the Requirements for the Competence of Providers of Proficiency Testing Schemes*, the National Association of Testing Authorities (NATA) accredited NRS as a PT Scheme Provider. Due to its accreditation to this international standard, NRS offers laboratory evaluations for industry clients under contract on a fee-for-service basis, at full cost-recovery.

## Outputs

Externally-funded laboratory performance evaluation provides:

- increasing national and international confidence in, and acceptance of, industry-operated monitoring systems and quality assurance schemes
- support of NATA's accreditation activities relating to analytical testing laboratories
- maximisation of national benefits resulting from NRS 'in-house' expertise and experience.

### *Dairy project*

During 2006–2007, NRS continued contractual laboratory performance evaluations (LPEs) for the dairy industry. The primary purpose of the dairy project is to verify the standard of performance of laboratories contracted for the Australian Milk Residue Analysis (AMRA) survey. Dairy Food Safety Victoria (DFS), which coordinates the AMRA survey on behalf of the Australian Dairy Authorities Standards Committee, has agreed to the details of a proposed laboratory performance evaluation arrangement for 2007–2008.

### *Wool project*

During 2004–2005, Australian Wool Innovation Limited (AWI) recontracted NRS to provide a PT service for three years, involving both national and international laboratories that test raw wool for residues of pesticides and insect growth regulators. This project will be completed in October 2007.

Satisfactory performance in on-going PT will also become mandatory for any laboratory wishing to be licensed by the International Wool Textile Organisation (IWTO) for the purpose of testing raw wool for chemical residues. The wool testing program is seen by

both AWI and IWTO as central to all efforts to identify and market low-residue wools and 'ecowools' globally, and to ensure that the wool trade can rely on testing from all parts of the global supply chain.

Australia, as a supplier of clean wool to the world, has a significant interest in providing assurance to customers that the claimed residue status of its wool is correct. It is equally important that chemical analyses from laboratories in other wool-growing countries can also be demonstrated to be technically valid.

## Performance

### PERFORMANCE INDICATOR ONE

Compliance with contracts with individual industries

### PERFORMANCE INDICATOR TWO

Satisfaction by clients with the services provided.

### Achievements

#### *Milk laboratory performance evaluation*

NRS completed two milk LPE rounds for laboratories contracted by DFSV in August 2006 and May 2007, respectively. Reports for each round were provided to DFSV within the scheduled timeframe and DFSV were satisfied with the service provided to them. 'Blind' samples were also used by NRS to evaluate laboratory performance in testing programmes for which formal PT was not available.

#### *Wool laboratory proficiency testing*

NRS completed two Wool PT rounds for laboratories in 2006–2007 and submitted reports to AWI. All scheduled milestones were met and AWI approved the reports.

## Outlook

### *Milk laboratory performance evaluation*

DFSV have again contracted NRS to provide a milk LPE program involving two rounds in 2007–2008.

### *Wool laboratory proficiency testing*

The fifth and final PT round will take place during 2007–2008.