NATIONAL ASSOCIATION OF TESTING AUTHORITIES, AUSTRALIA

WORKING WITH ACCREDITED ASBESTOS FACILITIES FOR IMPORT/EXPORT

INDUSTRY USER GUIDE NO.7.1

NATA

CONTENTS

WHAT'S IN THIS GUIDE?

All Australian governments share the objective of keeping the population from harm that could result from exposure to asbestos. To this end, asbestos is no longer permitted to be used in the manufacture of any product. Similarly, asbestos is a prohibited import under the Customs (Prohibited Imports) Regulations 1956 and a prohibited export under the Customs (Prohibited Exports) Regulations 1958. The regulations do have very limited exemptions but even where an exemption may be relevant, nothing should be assumed. It is important to know exactly what these are.

Where material containing asbestos was used prior to the prohibition, there are strategies in place to minimise the likelihood of exposure and to remove as much as possible.

The reality is that despite prohibitions and measures being taken to remove asbestos from our lives, we still have a long way to go. There is a legacy of contaminated sites and manufactured product. In other parts of the world, asbestos is still used in some products. Some of Australia's trading partners have their definition of asbestos containing material (ACM) as "x% or more", the x often being equal to 1% or higher.

As such, competently performed inspections and/or tests are necessary to ensure that decisions about people's safety are made using only the best available information. This is where this document and NATA come into focus. The practical considerations and steps involved in having a sample of material or product tested are not always as self-evident as they might seem.

This Industry User Guide has been developed to assist:

- Importers having to meet the Customs (Prohibited Imports) Regulations 1956;
- Exporters to Australia needing evidence of compliance with the Customs (Prohibited Imports) Regulations 1956; and
- Exporters from Australia needing to ensure that their products will meet their export market requirements.

For more specific information about asbestos and asbestos related regulations, a listing of useful links may be found at the end of this guide.

WHAT ASBESTOS RELATED ACTIVITIES ARE ACCREDITED?

NATA accredits facilities in both its ISO/IEC 17025 based laboratory program and ISO/IEC 17020 based inspection body program. The ranges of activities that can be accredited include:

Laboratory

- Air monitoring and analysis
- Analysis of raw materials and manufactured products
- Soil testing

Inspection

- Contaminated sites
- Clearance inspections
- Sampling and sampling plans

What is the difference between laboratory and inspection accreditation?

In terms of accreditation process, the difference is very little. Both rely on a peer assessment of the competence and capability of the facility to produce reliable data.

The skill sets applicable to testing and inspection activities are, however, quite different.

A laboratory will have:

- a set of processes to safely handle samples,
- procedures to prepare them for analysis,
- validated test methods in order to undertake the analysis; and
- reporting practices that will indicate whether or not asbestos is detected in the sample(s) being analysed.

It is these processes and the personnel's scientific/technical knowledge, experience and understanding of how they are validated and used that constitutes a major part of the NATA assessment.

Inspection bodies that deal with asbestos are primarily involved in on-site activities such as surveying a site and assessing the presence and condition of contaminated materials. Inspection body personnel need to have a sound knowledge of how asbestos has been used in the past in order to identify where it is likely to be found, in what form and what it will actually look like in situ.

Inspection outcomes can include a survey or clearance report and recommendations relating to the management of asbestos.

NATA assessments under the inspection program have a greater focus on the personnel's accumulated experience and how this is applied to a particular location or construction. For example, expertise in asbestos used in the construction industry does not translate to expertise in maritime applications and vice versa.

WHAT IS NATA ACCREDITATION AND WHY USE AN ACCREDITED LABORATORY OR INSPECTION BODY?

NATA is recognised by the Commonwealth of Australia as the national authority for the accreditation of laboratories and a peak authority for the accreditation of inspection bodies. It is a not-for-profit private company with the mission of facilitating a reliable testing and inspection infrastructure in the national interest and for the public good.

Accreditation is about being able to have confidence in the data and information necessary for you to make informed decisions.

Accreditation covers the activities that produce this technical/scientific data and information; testing, measurement, examinations and inspections.

In NATA's vocabulary, accreditation has a very specific meaning.

A procedure by which an authoritative body gives formal recognition that a body is competent to carry out specific tasks.

Hence, accreditation is a high level and technically focussed process of recognising collective, specific and demonstrated competencies. The core of accreditation is the third party, objective, peer assessment process at a scientific and technical level that provides assurance of a facility's capability to produce reliable data from particular analyses or inspections. The NATA Accreditation Criteria include the international standards

- ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories:

  and

- ISO/IEC 17020 Requirements for the operation of various types of bodies performing inspection.

Both of these standards are used globally for accreditation.

In additiong to confidence, NATA Accreditation provides you with:

- an ability to outsource to an independent, objective authority the monitoring of laboratory and inspection body performance;
- international arrangements providing for the mutual recognition of data produced by laboratories and inspection bodies accredited by NATA and equivalent accreditation bodies globally;
- a resource to resolve dispute relating to accredited services.

WHAT IF I WANT TO USE A LABORATORY OR INSPECTION BODY IN ANOTHER COUNTRY?

There are NATA-like accreditation bodies in most economies and a significant number of these are signatories to Mutual Recognition Arrangements (MRA). For information on where these accreditation bodies are located and their MRA status, the International Laboratory Accreditation Cooperation (ILAC) maintains this information on their website at **www.ilac.org**. In the Asia Pacific region, you can also access information from the Asia Pacific Laboratory Accreditation Cooperation (APLAC) at **www.aplac.org**. Also refer to the section below for further information.

Signatory status to the MRAs is achieved through a process of peer evaluation to determine compliance with the international standard for accreditation bodies and that the processes employed to assess laboratories and inspection bodies yield equivalent outcomes.

Accreditation bodies maintain information on accredited facilities. In many – but not all cases – this information is available in English. If, however, you can't find information on accredited asbestos testing facilities via the accreditation body's website, the best option is to contact them directly. The same questions you'd be asking for a NATA accredited facility and their scope of accreditation need to be asked of one accredited by the MRA partner. This is addressed later in this guide.

The MRAs to which NATA is a signatory – ILAC and APLAC – are generally well recognised by Australian government agencies. It is still advisable, however, to check with the relevant agency about your intentions and their level of recognition.

WHAT DOES MUTUAL RECOGNITION MEAN – RECOGNITION OF WHAT?

Mutual recognition is a phrase encountered in trade or trade related agreements. While the concept is relatively straightforward "I accept yours and you accept mine", the subject of what exactly is being recognised does vary and can be misunderstood.

World Trade Organisation

The World Trade Organisation has addressed non-tariff trade barriers to trade – blocks that arise such as economies having standards that differ from everyone else's and/or their refusal to accept testing/certification performed in another economy – through the Agreement on Technical Barriers to Trade (TBT Agreement). Within the TBT Agreement, the phrase 'mutual recognition' refers to the situation where parties can agree to accept goods that meet the other party's technical requirements despite any differences that might exist.

It should be noted though that this is a provision within, not an obligation of, the TBT agreement. Hence, it may not find its way into practice, even under a free trade agreement.

Accreditation Body Mutual Recognition Arrangements

Internationally, many accreditation bodies including NATA have entered into Mutual Recognition Arrangements (MRA).

NATA is a signatory to the Asia Pacific Laboratory Accreditation Cooperation MRA, a regional arrangement with participation by upwards of 20 economies including all of Australia's major trading partners in the Asia Pacific region. NATA is also a signatory to the International Laboratory Accreditation Cooperation MRA, a global arrangement covering all regions.

Mutual recognition in the accreditation community refers to the accreditation bodies and their respective accreditation processes rather than technical requirements. These MRA do facilitate the acceptance of test, measurement and inspection data across borders by providing confidence that, wherever a laboratory or inspection body is located, it has been peer assessed for competence and capability to perform specific conformity assessment activities against the applicable requirements by an accreditation body that is a signatory to an MRA.

Accreditation body arrangements are sometimes recognised under Free Trade Agreements (FTA). The rules about what technical requirements are recognised in any particular economy are, however, solely the domain of the regulators and/or industry in that economy. Accreditation bodies link these technical requirements – whatever they might be – with appropriate and demonstrated competence of accredited facilities.

So in the case of Australia's zero tolerance for asbestos content in imports, it is important to be cautious around "mutual recognition". Australian authorities may well accept that a test or inspection report produced by a NATA MRA partner accredited facility is recognised as being equivalent to a NATA-endorsed report but it must provide evidence that the Australian requirements have been met, not those of the exporting economy.

HOW DO I KNOW IF A FACILITY IS ACCREDITED FOR WHAT I NEED?

The tests and inspections for which a facility has successfully demonstrated practical competence and capability at an assessment are detailed within its Scope of Accreditation. The Scope of Accreditation contains important information such as techniques and applicable standards and codes.

To start with, scopes of accreditation for laboratories and inspection bodies are publicly available documents and the primary source of information for anyone wanting to have testing and/or inspections performed. Scopes for NATA accredited facilities are accessible from the website at **www.nata.com.au**.

If you are not sure about your needs or do not understand some aspect of the scope of accreditation, contact the facility.

A facility's accreditation may or may not cover every service that it provides so it is important to ask the correct question when seeking to have your samples tested or a site inspected.

"Do you hold accreditation for [the specified analysis/inspection] of [the specific type of material or location]?"

NATA Accredited facilities are able to add the NATA endorsement to reports covering accredited activities. Similar arrangements are used by many of NATA's MRA partners too. The endorsement (or use of the accreditation body logo in some cases) is not allowed to be applied to unaccredited tests or inspections. As such, a more concise specification is to state that

"I require all results reported to be covered by the accreditation".

Once you have ascertained that the laboratory or inspection body is appropriately accredited, the next step is to talk to the facility to ensure clarity around your needs.

Accredited laboratories and inspection bodies will happily assist you with defining your needs but they do need some specific information first.

The following aspects of the work you are seeking to have done should be discussed and made clear before committing to any activity. Specific information gives the accredited facility clarity for determining its ability and availability to undertake the work and, of course, work out the cost.

WHAT QUESTIONS DO I NEED TO ASK

Firstly, why are the services required? If it is for export to/from Australia, it is vital that the destination's legal requirements are known so that the appropriate tests and/or inspection can be conducted. This will help inform and clarify other details of the work to be performed:

- The standard, code or specification.
- The analyses or inspections being performed.
- Information on sampling/sub-sampling.

What about test methods?

Australian Standard AS 4964 Method for the qualitative identification of asbestos in bulk samples is generally the default test method by Australian laboratories (indeed, at time of publication of this guide, all of the NATA accredited laboratories use AS 4964).

In principle though, accreditation is available for other validated methods including those developed in-house and those prescribed in other economies.

Polarised light microscopy (PLM) with dispersion staining is required by AS 4964 as the principal method. It involves the identification of asbestos fibres by examining prepared samples using a conventional microscope but under polarised light. This method is the standardised reference method in most countries.

PLM with dispersion staining can be used to identify the three common (commercial) asbestos types (Chrysotile, Crocidolite and Amosite). The method does have limitations in identifying the other types of asbestos and if suspected of being present, requires them to be reported as "Mineral fibres of unknown type".

What does make AS 4964 different is that as well as conventional PLM examination, it also invokes an additional process entitled "trace analysis" which is conducted by placing a small sub-sample on a slide with a refractive index liquid and observing it under high power to detect any discrete fibres or fibre bundles.

AS 4964 allows for a limit of reporting in the range 0.01-0.1%, depending on whether the asbestos fibres are uniformly spread through the sample or not.

In instances where the results of an analysis are the

identification of “mineral fibres of unknown type”, AS 4964 recommends further investigation using another technique.

Scanning electron microscopy with energy dispersive X-ray (SEM-EDX) is typically the technique sought. Table 1 offers a comparison of features of the two techniques.

Clearly SEM-EDX has the major advantage of being able to detect all six types of asbestos and smaller fibres not able to be identified under PLM.

So if SEM can identify more types of asbestos, why not use it as the default test method?

SEM has the disadvantage of being costly and slow. Apart from the capital cost of acquiring an SEM unit, the fact that it uses much higher magnifications and can achieve better resolution than PLM is also a contributor to the cost. The area of a sample that can be observed at any one time using SEM is a fraction of that which can be seen using PLM. This means that it takes multiple views using SEM to “see” the same area of sample as you can in a single view using PLM.

From NATA’s accreditation perspective, the other concerns are the lack of a standardised methodology and an absence of proficiency testing (formal inter-laboratory comparison programs) for SEM. This makes it more difficult to achieve confidence in the inter-laboratory consistency of results.

At the time this guide was prepared, there were no NATA accredited laboratories for asbestos identification using SEM. This is not to say that NATA won’t accredit laboratories from using SEM but any laboratory seeking accreditation would need to demonstrate that their results are comparable with those of other similar laboratories. It’s simply that NATA accreditation for any test is driven by a combination of customer need for a particular service to be accredited vs the cost of having the required processes in place to achieve accreditation. If this need reaches a threshold, accreditation for SEM analysis will happen.

Other techniques which include Transmission Electron Microscopy (TEM), X-ray diffraction and infrared absorption are used in some applications but all have inherent limitations in terms of expense, application and/or limits of detection.

Can I rely on test methods used and the testing performed in other countries?

Remembering that there are accreditation systems similar to NATA in most of Australia’s trading partners, these systems can give some assurance over the competence of those providing the services you need.

What you do need to check on is the method(s) for which the laboratory is accredited, especially with regard to limits of detection and limits of reporting. The methods used by a laboratory in any particular location will usually reflect the expectations of the local market.

For example, if you look at the information available on the US Occupational Safety and Health Administration (OSHA) website (**www.osha.gov**), the definition of asbestos-containing material (ACM) is “any material containing more than 1% asbestos”. By inference, materials containing 1% or less asbestos are considered acceptable in an occupational context.

If you wish to have a product or material for import to Australia tested for asbestos, it will be necessary to ensure that the laboratory knows of Australia’s zero tolerance and that they need to employ a method with the best limit of detection and limit of reporting available. Having the product tested and deemed to comply with, for example, the OSHA requirements may not help you to import to Australia.

Table 1 – Comparison of PLM vs SEM

PLM with dispersive staining and trace analysis	SEM with EDX
Can be used for the three common asbestos types (other types reported as mineral fibre of unknown type)	Can be used for all six asbestos types
Standardised method used worldwide	Not a standardised method
Rapid – Analysis takes between 15 minutes and 1-hour	Can be time consuming – especially for non-homogeneous samples with very low concentration of asbestos fibres
Inexpensive	Expensive
Can resolve fibres down to 0.5µm	Can resolve fibres down to 0.05µm
LOD between 0.01 and 0.1% (AS 4964)	LOD <1% – may be higher than PLM as only small portions of the sample can be observed under high magnification.
Can be subject to interferences (many eliminated by pre-treatment)	Can be subject to interferences and errors in interpretation e.g. due to non-standard elemental ratios.

WHAT SAMPLING ISSUES ARE IMPORTANT TO IDENTIFYING ASBESTOS?

Sampling is a core scientific/technical activity that is as important as any laboratory analyses. Samples supplied to a laboratory for analysis must be representative of the material, product, construction or soil being sampled. Failure to provide truly representative samples will waste everyone's time and your money.

Obtaining samples

There are many safety concerns to consider as well as making sure that the samples collected are representative of the material, product or site. It is also critical that the integrity of samples is maintained. If you are not in the business of dealing with asbestos, NATA strongly advises that you have samples collected by either licenced asbestos clearance personnel or by an accredited laboratory or inspection body.

If there is some compelling reason why an untrained person needs to collect samples, professional advice on how to collect samples safety needs to be sought out.

Remember too that it is not just about the samples but also where they are taken from. For example, it is important to secure the sample site – which is now damaged by taking the sample – from future release of fibres.

It is also important to ensure decontamination of sampling devices after each use and sampling in a manner that ensures non-release of fibres during the sampling activity.

Sample integrity

Some simple pointers:

- Samples should be in sealed containers or plastic bags and clearly labelled with identification of the sampler, from precisely where the samples were obtained and any other information useful to a laboratory.
- Samples have to be fully labelled with something that won't wash/fall off.
- The label should be on the body of the container, not just the lid/cap.
- Care must be taken to avoid any possibility of cross-contamination.

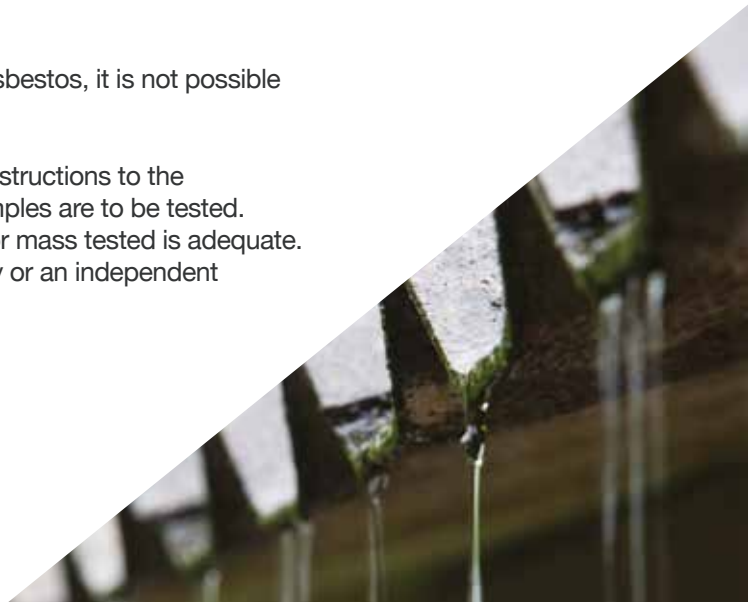
Compositing of samples

Compositing of samples (mixing them together) is sometimes allowed for by standards, codes or specifications.

The obvious benefit of compositing is that multiple samples may be tested together which may reduce the cost of the test.

The downside is that if the analysis identifies the presence of asbestos, it is not possible to identify in which specific sample or samples it was present.

If compositing is agreed upon, it is important to provide clear instructions to the laboratory whether sub-sampling is permitted and how the samples are to be tested. Particular care should be paid to ensuring the sample volume or mass tested is adequate. If you are in doubt, this should be discussed with the laboratory or an independent technical expert.



WHAT SHOULD I LOOK FOR IN A REPORT? – INSPECTION

ISO/IEC 17020 describes the general requirements for inspection reports but does not give any asbestos specific detail. Overall though, you should check any report received to ensure that:

- it matches your request;
- it contains all of the information you need;
- the results are reported clearly and unambiguously; and
- the results are reported in the manner prescribed by the applicable standard, code or specification.

Because of the nature of inspection activities being site-specific and outcome-driven, detail beyond the general principles mentioned above is not practical. Establishing at the very beginning of discussion the nature of the work and what information is required is the best means of obtaining reporting useful to your risk management.

WHAT SHOULD I LOOK FOR IN A REPORT? – TESTING

ISO/IEC 17025 details a generic list of what needs to be included in a test report but like ISO/IEC 17020 does not give any asbestos specific detail. Some asbestos specific standards, test methods and codes of practice have tailored reporting requirements.

Again though, you should check any report received to ensure that:

- it matches your request;
- it contains all of the information you need;
- the results are reported clearly and unambiguously; and
- the results are reported in the manner prescribed by the applicable standard, code or specification.

For identification of asbestos in raw materials and manufactured products, AS 4964 has a section on reporting which requires an explicit statement that the analytical method used is PLM with dispersion staining. There is also a list of non-mandatory items around the sample description, sampling procedures/sample preparation and the sample's history. While not being mandatory, the inclusion of this information represents good laboratory reporting practice. It is also consistent with the reporting requirements of ISO/IEC 17025.

Additionally, AS 4964 has a range of statements to be used in the conclusion of the report if there are inconclusive results.

One important thing to remember is that the PLM method described in AS 4964 is a qualitative method, not quantitative. That is, it's a method to determine if asbestos is present, not how much is present.

This means that you will see the results reported as "detected" or "not detected" (the latter may be qualified) rather than a statement of "the tested sample contains x% of" some type of asbestos.

Unless the laboratory performing the tests has been involved in the sampling, the report may include a statement to the effect that "samples were tested as received". This indicates that the customer has been responsible for providing the samples to the laboratory in an appropriate manner.

If the sampling has been performed by another accredited laboratory or an accredited inspection body, details of the sampling should have also been provided in a NATA-endorsed report.

"Samples tested as received"

This statement is usually applied to test reports when the laboratory has not been responsible for the collection of samples. Use of this statement does not, however, remove the laboratory's responsibility to only test samples that are in a satisfactory condition. Laboratories are required to have procedures covering the acceptance of samples for testing.

If a laboratory receives a sample that does not meet acceptance criteria, the laboratory must contact the customer and ascertain what action to take. The best option is to provide another sample but this is not always possible. In such cases the testing may be undertaken but the test report must include comments regarding the nature of the problem(s) with the sample(s) and, where applicable, that caution is required when interpreting the result(s).

NATA-ENDORSEMENT – WHAT'S THE SIGNIFICANCE?

The NATA endorsement consists of the NATA logo, the facility's accreditation number and text presented similar to the following.

Accredited for compliance with ISO/IEC 17025 or
Accredited for compliance with ISO/IEC 17020
Accreditation number xxxxx

In addition, the following statements may be added for those who need international recognition of the reported results:

NATA is a signatory to the ILAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports

NATA endorsed vs unendorsed reports – What's the cost/benefit?

NATA requires that all activities described in the scope of accreditation are performed using exactly the same processes and to the same level of confidence whether reported on an endorsed report or not.

Same accredited facilities do, however, apply a surcharge to issue an endorsed report for commercial or marketing reasons.

For you as the customer, the NATA-endorsement is there to provide prima facie evidence that the results within the report have been issued under the laboratory's NATA Accreditation. Hence, you can have the confidence that the tests and/or inspections have been undertaken by competent staff using sound science/engineering as verified by NATA's peer assessment processes.

Similarity for businesses, your own customers may share this confidence.

COMMUNICATION IS THE KEY

The key to successfully gaining reliable testing and/or inspection data is effective communication between the laboratory/inspection body and the client.

Mutual understanding doesn't just happen, it must be pursued. Two particular points to remember:

- Initial clarity surrounding the purpose of the testing or inspection services will aid all subsequent discussions and greatly improve the likelihood of obtaining the appropriate services;
- Communication shouldn't be a once-off event - if you have questions received the test/inspection report and something seems odd or doesn't make sense, ask.

OTHER INFORMATION RESOURCES

Asbestos Safety and Eradication Agency

ASEA produce a wide range of factsheets, leaflets, FAQs, research, statistics and guidelines. They also provide links to State and Territory regulatory authorities

www.asbestossafety.gov.au/publications

Two other publications of particular note are:

- ✓ *Managing the Importation of Goods or Materials Containing Asbestos into Australia*
- ✓ *Imported Materials with Asbestos Working Group – Rapid Response Protocol*

www.asbestossafety.gov.au/managing-importation-asbestos-australia

Australian Maritime Safety Authority

AMSA have information about asbestos in relation to occupational safety on marine vessels.

www.amsa.gov.au/vessels/ship-safety/ohs-inspectorate/

ComLaw

The Customs regulations can be downloaded from the ComLaw site

www.legislation.gov.au/

Department of Immigration and Border Protection

Prohibited Imports – Asbestos page:

www.border.gov.au/Busi/Impo/Proh/Asbestos

Safe Work Australia

The Safe Work Australia website contains information on model legislation, regulations and codes of practice that include the management of asbestos in the work-place. There are also links to the regulatory authorities in each state and territory.

www.safeworkaustralia.gov.au

SAI Global

Australian Standard *AS 4964: 2004 – Method for the qualitative identification of asbestos in bulk samples* and the ISO/IEC Standards referenced are available for purchase at SAI Global

www.saiglobal.com/online

HELP IS AVAILABLE

NATA recognises that despite best intentions and a robust accreditation system, things may go wrong. If you are experiencing difficulties with any NATA accredited laboratory and have not been able to resolve them through direct discussions, it is recommended that you contact NATA to discuss the general nature of any concerns. You should then follow this up with a written account of the issues. NATA has a comprehensive complaints handling process and treats any issues raised very seriously.

For testing, please direct inquiries to:

The Sector Manager, Life Sciences
Level 1, 2-6 Railway Parade
Camberwell VIC 3214
Ph (03) 9274 8200
Email neil.shepherd@nata.com.au

For inspection, please direct inquiries to:

The Sector Manager, Inspection
7 Leeds Street
Rhodes NSW 2138
Ph (02) 9736 8222
Email julian.wilson@nata.com.au

SUMMARY

Why use a NATA accredited or MRA partner accredited facility?	• 3rd party verification of capability and competence • Compliance with international standard for laboratories/ inspection bodies • International recognition of results
Is the facility accredited for the services I need ?	• Ask the right question regarding NATA or MRA partner accreditation • Check the Scope of Accreditation
What do I need to specify?	• **All results to be NATA-endorsed/MRA partner endorsed** • The purpose of the test or inspection • Methods and/or limits of detection • Applicable standard/specification • When you need the results
What is important with samples to be tested?	• Collection – who, sample plan, amount and number • Samples are representative of the material being sampled • Identification, traceability and labelling • Maintaining integrity
What should I do with my reports?	• Check that report is clear and complete • Make sure report is NATA/MRA partner endorsed • Take note of any comments

NATA