Senate Economics Legislation Committee
ANSWERS TO QUESTIONS ON NOTICE
Industry, Tourism and Resources Portfolio
Budget Estimates 2004-2005, 31 May 2004 to 2 June 2004

AGENCY/DEPARTMENT: DEPARTMENT OF INDUSTRY, TOURISM AND RESOURCES
OUTCOME/OUTPUT: Outcome 1, Output 1.3
TOPIC: AUSTRALIAN SPORTS DRUG TESTING LABORATORY
REFERENCE: HANSARD 1/6/04, PAGES E13-25

QUESTION No.27
(Hansard 1/6/04, pp.13-14)

Senator Lundy asked about:

Can you provide an itemisation of revenue sources for the Australian Sports Drug Testing Laboratory from 2001-02 through to 2003-04, plus projections for 2004-05?

ANSWER

A list of major sources of drugs in sport revenue was tabled during the Estimates hearing on 1 June 2004. The table below lists all major revenue sources (>$10,000) attributed to work undertaken within the Australian Sports Drug Testing Laboratory in 2001-02 to 2003-04. This includes non-drugs in sport revenue sources such as the Department of Agriculture, Fisheries and Forestry. Also listed is revenue for research, funded by WADA, undertaken by the National Analytical Reference Laboratory.

In 2004-05 we anticipate non-research revenue to be similar to 2003-04, although discussions with clients on sample numbers is continuing.

Year	Agency	Amount	Comments
2001-02	ASDA	$1,838,000	
	NZSDA	$346,000	
	Dept of Agriculture, Fisheries and Forestry	$157,000	Not drugs-in-sport testing
	World Anti-Doping Agency	$64,000	
	Managed Athletic Testing Services	$43,000	
	Drug Free Sports Consortium	$11,000	
	DCITA	$785,000	
2002-03	ASDA	$1,949,000	
	NZSDA	$351,000	
	Dept of Agriculture, Fisheries and Forestry	$151,000	Not drugs-in-sport testing
	Drug Free Sports Consortium	$82,000	
	International Doping Tests and Management	$56,000	
	WADA Research* (ASDTL)	$179,000	
	WADA Research* (NARL)	$137,000	
2003-04	ASDA	$1,668,000	As at May 2004
	NZSDA	$294,000	As at May 2004
	Dept of Agriculture, Fisheries and Forestry	$133,500	As at May 2004; Not drugs-in-sport testing
	Oceania National Olympic Committee	$19,000	As at May 2004
	WADA	$83,000	As at May 2004
	WADA Research* (ASDTL)	$265,000	As at May 2004
	WADA Research* (NARL)	$256,000	As at May 2004
	DCITA*	$410,000	As at May 2004

Note

* Grants in Advance
Under accrual accounting, AGAL receives grants but may not recognise the total grant received in that financial year as revenue. Revenue is recognised as the services are carried out.

QUESTION No.28
(Hansard 1/6/04, p.E15)

Senator Lundy asked about:

What data is collected on blood samples upon arrival at the Australian Sports Drug Testing Laboratory?

ANSWER

The data collected is the same as that collected for urine samples: kit number, date and time of collection, sport, sex of athlete, and list of medications taken recently. This is the data contained on the ASDA sample collection form. A record is also kept of the time the sample arrived in the laboratory.

QUESTION No.29
(Hansard 1/6/04, p.E15)

Senator Lundy asked about:

How are blood samples stored and in what time frame are they analysed?

ANSWER

Whole blood samples are analysed as soon as practicable after arrival in the laboratory and normally within 48 hours of collection. The whole blood and serum tube samples are refrigerated (approximately 4°C). The serum tube is centrifuged and the separated serum frozen for storage after the aliquots for analysis are taken. Blood testing is not currently used for athlete sanction. There is currently no B-sample collected for blood testing.

QUESTION No.30
(Hansard 1/6/04, p.E16)

Senator Lundy asked about:

Is there a published procedure or policy that you could provide to the committee that outlines what happens once you get the samples to that point of notification and storage? … Could you provide those to the committee?

ANSWER

The procedures followed in AGAL are in accordance with the WADA International Standard for Laboratories, section 5.2.2.5 and 5.2.2.6:

5.2.2.5 The Laboratory shall retain the A and B Sample(s) for a minimum of two (2) weeks after the Testing Authority receives a negative report. The Samples shall be retained under appropriate conditions.

Samples with irregularities shall be held for a minimum of two (2) weeks following the report to the Testing Authority.

5.2.2.6 The Laboratory shall retain the Sample(s) with an adverse Analytical Finding for a minimum of three months after the Testing Authority receives the final analytical (A or B Sample) report. The Sample shall be stored under appropriate conditions during the long-term storage.

In AGAL, negative samples are reported to the client, normally an Anti-Doping Organisation (ADO), and the samples stored frozen for one month before disposal (from August 2004 samples will be frozen for three months in accordance with changes to the WADA International Standard for Laboratories). For positive samples the B sample is transferred to a separate freezer. Positive B samples are kept for 12 months after the A sample analysis has been completed.

A copy of the WADA International Standard for Laboratories has been provided to the Senate Economics Legislation Committee secretariat.

QUESTION No.31
(Hansard 1/6/04, p.E17)

Senator Lundy asked about:

What is the policy regarding notification of results to the client (e.g. ASDA)? Could you provide the committee with a copy of the specific clause in the contract which stipulates that that information is to go only to them?

ANSWER

Negative results are reported to the client (testing Authority or Anti-Doping Organisation). Positive results are reported to the client and to WADA. For Olympic Sports positive results are also sent to the appropriate international sporting body (e.g. IAAF, FINA). The WADA International Standard for Laboratories also specifies that all reporting shall be in accordance with the confidentiality requirements of the WADA code (Article 14).

Reporting of any positive results to the client is by facsimile. For some clients a telephone call is made to advise that results are about to be transmitted, to ensure that the receiving facsimile machine is secure and/or attended. No details of the analytical findings are transmitted by telephone.

These procedures meet the requirements of the WADA International Standard for Laboratories, specifically sections 5.2.6.10 to 5.2.6.13:

5.2.6.10 In addition to reporting to the Testing Authority, the Laboratory shall simultaneously report any Adverse Analytical Findings to WADA and the responsible International Federation. In the case where the sport of Event is not associated with an International Federation (e.g. college sports) or the Athletes are not members of an International Federation, the Laboratory is required to report Adverse Analytical Findings only to WADA. All reporting shall be in accord with the confidentiality requirements of the code.

5.2.6.11 The Laboratory shall report quarterly to WADA, in a format specified by WADA, a summary of the results of all tests performed. No information that could link an Athlete with an individual result will be included. The report will include a summary of any samples rejected for testing and the reason for the rejection.

When the clearinghouse is in place, the Laboratory shall simultaneously report to WADA all information reported to the Testing Authority, according to the requirements listed in Section 5.2.6.6, in lieu of the paragraph above. The information will be used to generate summary reports.

5.2.6.12 Laboratory Documentation Packages shall contain material specified in the WADA Technical Document on Laboratory Documentation Packages.

5.2.6.13 Athlete confidentiality is a key concern for all Laboratories engaged in Doping Control cases. Confidentiality requires extra safeguards given the sensitive nature of these tests.

5.2.6.13.1 Testing Authority requests for information must be made in writing to the Laboratories.

5.2.6.13.2 Adverse Analytical Findings shall not be provided by telephone.

5.2.6.13.3 Information sent by facsimile is acceptable if the security of the receiving facsimile machine has been verified and procedures are in place to ensure that the facsimile has been transmitted to the correct facsimile number.

5.2.6.13.4 Unencrypted email is not authorized for any reporting or discussion of Adverse Analytical Findings if the Athlete can be identified or if any information regarding the identity of the Athlete is included. The Laboratory shall also provide any information requested by WADA in conjunction with the Monitoring Program, as set forth in Article 4.5 of the Code.

The Memorandum of Agreement between AGAL and ASDA states in Appendix 1, Clause 6.1:

6.1 ASDTL will report sample analysis results to ASDA by methods agreed between the Director ASDTL and the General Manager, Operations, ASDA.

Copies of the WADA Code and the WADA International Standard for Laboratories have been provided to the Senate Economics Legislation Committee secretariat.

QUESTION No.32
(Hansard 1/6/04, p.E17)

Senator Lundy asked about:

When the samples are first opened and the B Sample is stored, what are the checks and balances that the laboratory has in place to ensure that the system is completely tamper proof? Do you video that procedure and keep it on record? Do you have more than one person in the room? What are your procedures to guarantee the process?

ANSWER

The sports drug testing laboratory is locked with access restricted to those who are authorised to enter the area. The area where the samples are opened and stored is a locked area within the sports drug testing laboratory. The bottles used for collection are such that any tampering before opening is evident. The sample openings are not recorded on video. Normally only the officer designated with the responsibility of sample handling and storage is present for the opening of the A sample.

The B sample is kept untouched and is only opened in the event of a positive finding in the A sample and then only if a repeat confirmatory analysis is requested by the athlete. The B sample is photographed before opening to confirm its integrity. At least three people are present at the opening of any B sample. The athlete or their representative has the right to be present at both the opening and analysis of the B sample, and a different analyst from that who analysed the A sample is required to analyse the B sample.

The chain of custody procedures used within the laboratory are described in WADA Technical Document TD2003LCOC "Laboratory internal chain of custody".

A copy of WADA Technical Document TD2003LCOC "Laboratory internal chain of custody" has been provided to the Senate Economics Legislation Committee secretariat.

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QUESTION No.33
(Hansard 1/6/04, p.E18)

Senator Lundy asked about:

Under what circumstances have you ever or would you be required to notify the Australian Sports Commission of any results of tests you have conducted?

ANSWER

AGAL is unaware of ever having to inform the ASC of the results of any urine test. The laboratory's role is to report its findings to the appropriate Anti-Doping Organisation such as the IOC, WADA, National Anti-Doping Organisations (e.g. ASDA and NZSDA), International Federations or major event organisations. These organisations are responsible for results management (Article 7 of WADA World Anti-Doping Code). As all samples that arrive in the laboratory are anonymous there is no way that the laboratory would know whether the ASC has any interest in the results of any test. Samples arriving at the laboratory do not only come from Australian athletes and the laboratory does not know which samples relate to which athlete.

QUESTION No.34
(Hansard 1/6/04, p.E18)

Senator Lundy asked about:

Have the ASC, the Australian Sports Commission, ever been a client of yours?

ANSWER

The Australian Sports Commission has only been a client in one instance, in December 2003, for the analysis of several vials containing unknown material. AGAL has not undertaken urine or blood analyses for the ASC.

QUESTION No.35
(Hansard 1/6/04, p.E19)

Senator Lundy asked about:

Once you have notified a positive result for a test, what happens then, from your perspective? Do you have to then wait for a request to test that B sample? What is the process regarding retesting of B samples (e.g. request from client)?

ANSWER

The Anti-Doping Organisation (ADO), usually ASDA, is informed in writing of the positive finding. The ADO would normally contact the athlete concerned and inform them of the result. The athlete can accept the result or request that the B sample be analysed. If the B sample analysis is requested, the athlete or their representative has the right to be present at the opening and analysis of the B sample. The laboratory and the ADO would establish a mutually convenient time for the B sample opening and analysis to occur. The athlete can choose to watch only the opening of his/her sample or remain for the entire analytical procedure which takes a minimum of several hours. The B sample is kept untouched and is only opened in the event of a positive finding in the A sample and then only if a repeat confirmatory analysis is requested by the athlete. The B sample is photographed before opening to confirm its integrity. At least three people are present at the opening of any B sample. A different analyst from that who analysed the A sample is required to analyse the B sample. For most drugs the results would be available the next day. A written report is then sent to the ADO.

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QUESTION No.36
(Hansard 1/6/04, pp.E19-20)

Senator Lundy asked about:

What is the process for notification of test results for samples taken from international athletes? Is the only organisation you have any contact with regarding those results the sporting organisation or your client?

ANSWER

Samples from international athletes are not specifically identified as such unless we have made some arrangement with an overseas-based Anti-Doping Organisation (ADO). In that case negative results would be reported to the ADO that sent the samples. Positive results would also be reported to the ADO with a copy to WADA and, in the case of Olympic sports, a copy to the relevant international federation. If the samples have not been collected by ASDA then ASDA would not be notified.

QUESTION No.37
(Hansard 1/6/04, p.E20)

Senator Lundy asked about:

Does the WADA code provide for notification of Australian or international athletes or of any organisation? Are there any provisions within the WADA code that place additional obligations or responsibilities on the laboratory? If you conduct tests on behalf of a sporting organisation, the only obligation you have is to provide the results to that supporting organisation, you don't notify anybody else or you don't have a reporting mechanism which records positive results for the purposes of accountability or anything else? Is that correct?

ANSWER

The World Anti-Doping Code provides for notification of athletes of results but this is the responsibility of the Anti-Doping Organisations (ADOs), not laboratories. This is outlined in the World Anti-Doping Code, Article 7. The laboratory cannot contact the athlete because the laboratory has no knowledge of their identity. Positives are reported to the ADO, WADA and any relevant international federation.

A copy of the WADA Code has been provided to the Senate Economics Legislation Committee secretariat.

QUESTION No.38
(Hansard 1/6/04, p.E20)

Senator Lundy asked about:

Is there a document or an annual report or any type of record of the tests you do and for whom you do them and what the results are that is available either publicly or for scrutiny by WADA or ASDA or any overseeing body—the minister's office or anyone else? Are any reports that may or may not be compiled within the laboratory provided on a confidential basis to the Australian Sports Commission, the minister's office, the Prime Minister's office—anyone else at all?

ANSWER

No confidential reports are prepared by AGAL for the ASC or the Minister's office. All positive results are reported to the Anti-Doping Organisation (ADO) requesting the test and to WADA. ADOs such as ASDA regularly report their findings and are required under Article 14.4 of the WADA Code to at least annually publish a general statistical report of their doping control activities and provide a copy to WADA.

A copy of the WADA Code has been provided to the Senate Economics Legislation Committee secretariat.

QUESTION No.39
(Hansard 1/6/04, p.E21)

Senator Lundy asked about:

Could you provide the committee with the criteria for submission of applications to the DCITA Anti-Doping Research Panel, and your submissions for DCITA Anti-Doping Research Panel research funding over the years?

ANSWER

The following are the selection criteria for anti-doping research funding in the 2002-03 funding round, as taken from the DCITA Fact Sheet "Australian Anti-Doping Research Funding – Guidelines for Applicants".

"The following five criteria are mandatory, and must be satisfied for an application to be considered further.

1. The application must demonstrate that the proposed research project provides value for money.
2. The application must demonstrate that the research organisation:
   (a) has a clear knowledge and understanding of the proposed project, and the expertise and equipment to undertake it;
   (b) is financially viable;
   (c) is willing and able to comply with Commonwealth Government funding requirements (as evidenced in the Draft Funding Agreement).
3. The application must demonstrate that the proposed project has been cleared through, or has been submitted for consideration by, A National Health and Medical Research Council specified ethics committee.

4. The application must demonstrate that the research funds will be fully expended in Australia (applicants may, however, collaborate with international organisations).

5. The application must identify the International Olympic Committee accredited laboratory(ies) that they will communicate or collaborate with to ensure that the new or modified detection protocols and methodologies developed by their research can be implemented by IOC accredited laboratories.

Applications that do not satisfy the above mandatory criteria will not be considered further.

The ADRP will make determinations on the allocation of anti-doping research funding based on its assessment of the extent to which the remaining research applications address the following criteria:

6. a) The extent to which the application is consistent with, and will make a relevant and useful contribution to, the following priority anti-doping research areas (funding range $150,000 to $300,000):
   i. factors enhancing the oxygen carrying capacity of blood; and
   ii. factors regulating and enhancing growth; or

   b) The ability of the application to demonstrate an understanding of research priorities in another relevant area of sport anti-doping research, and detail an innovative and relevant proposal for research in that area which the ADRP considers could lead to new and/or improved detection methodologies (funding limit $50,000).

7. The ability of the application to demonstrate the scientific robustness of the proposed research project to the satisfaction of the ADRP and any independently appointed reviewers.

8. The ability of the applicant to demonstrate that other funds or "in kind" support have been committed to the project.

The ADRP will be selecting projects for funding in accordance with these Guidelines and Selection Criteria."

A copy of the DCITA Fact Sheet "Australian Anti-Doping Research Funding – Guidelines for Applicants" has been provided to the Senate Economics Legislation Committee secretariat.

AGAL has submitted several applications to the ADRP (in 2002-03 and 2003-04) as the Primary Investigator, and has been a minor party to several applications by other research laboratories. The projects for which AGAL has submitted applications to DCITA as primary investigator are listed in the following table. Note that the funding proposals in 2001-02 were submitted prior to the establishment of the Anti-Doping Research Panel in 2002-03.

Year	Project Title
2001-02	• Robust Test for Growth Hormone (Collaboration with Garvan Institute of Medical Research) • Mass Spectrometry of Peptide Hormones • Recombinant EPO in Urine • Extension of Statistical Profiling • Analysis of sports Supplements • CIRMS Interlaboratory Study • CIRM Profiling Study

Year	Project Title
2002-03	• Statistical Population Studies to Support New Analytical Methodologies using the EPO2000 Project Urine Samples. • Improved Method for the Detection of Erythropoietin Isoforms in Urine
2003-04	• Development of New Methodology to detect Corticosteroids • Detection of the abuse of exogenous peptide hormones - equine growth hormone and IGF-I analogues • Development of Certified Reference Materials for the detection of doping with nandrolone

Copies of the submissions to DCITA seeking funding for these research projects have been provided to the Senate Economics Legislation Committee secretariat.

QUESTION No.40
(Hansard 1/6/04, p.E22)

Senator Lundy asked about:

Can you provide a breakdown of the $700,000 grant from DCITA in 2001-02?

ANSWER

ASDTL received funding for the following projects in 2001-02 through an agreement with DCITA.

Project Title	Funding
Robust Test for Growth Hormone – Defining Interactions Between Anabolic and Peptide Hormones (Collaboration with Garvan Institute of Medical Research)	$188,000
Recombinant EPO in Urine	$142,000
Extension of Statistical Profiling	$122,000
Analysis of Sports Supplements	$117,000
Carbon Isotope Ratio Mass Spectromtery Interlaboratory Study	$116,000
Carbon Isotope Ratio Mass Spectromtery Profiling Study	$100,000
Total	**$785,000**

QUESTION No.41
(Hansard 1/6/04, p.E22)

Senator Lundy asked about:

What were the results of the research funded by DCITA in 2001-02?

ANSWER

ASDTL received funding from DCITA in 2001-02 for six projects. These were:

- Robust test for growth hormone- defining interactions between anabolic and growth hormones.
  This project is a collaboration between AGAL, the Garvan Institute of Medical Research, the Kolling Institute of Medical Research, the Anzac Research Institute, and the Japanese Institute of Sports Science which aims to develop a robust test for growth hormone doping in sport. The project started with funding from DCITA in 2001-02 and has since received most of its funding from WADA, with additional funding being provided by DCITA. The work carried out in this year involved the measurement of IGF-1 in 3000 serum samples collected around the world from elite athletes.

- Recombinant EPO in urine.
  This project aims to simplify the methodology used to detect recombinant EPO in urine by developing suitable immobilised pH gradient (IPG) gels in conjunction with Proteome Systems. It is also intended to modify the EPO method so that it can detect the new EPO replacement Aranesp. Methods for selectively extracting EPO from blood and urine will also be examined. A suitable IPG gel was developed which gives improved resolution of the EPO isoforms. The EPO method can now detect Aranesp.

- Extension of statistical profiling.
  The aim of this project was to extend the database to include the concentrations of EPO in serum and urine to provide a sound statistical base for EPO testing. Samples from the EPO2000 study were analysed to establish ethnic variations. It was found that serum EPO levels could not be correlated with urinary levels.

- Analysis of sports supplements.
  The aim of this project was to determine the extent to which dietary supplements freely available in Australia are likely to cause positive drug tests in athletes. Of the 43 samples tested two had very low levels of contaminants which were unlikely to lead to a positive drug finding.

- Carbon Isotope Ratio Mass Spectrometry (CIRMS) inter-laboratory study.
  This project intended to improve agreement between IOC laboratories on CIRMS measurements used for the detection of the abuse of endogenous steroids. Results showed differences in the numerical values obtained which appeared to be related to the type of instrument used and its method of calibration.

- Carbon Isotope Ratio (CIR) Mass Spectrometry profiling study.
  This project involves the measurement of the isotope ratio of the natural steroids found in the urines of athletes from diverse ethnic origins. This statistical data is needed to confirm and extend the applicability of CIRMS in doping control. 400 samples from four countries were analysed demonstrating significant differences between countries.

Further information on these projects can be found in the final report provided to DCITA, a copy of which has been provided to the Senate Economics Legislation Committee secretariat.

QUESTION No.42
(Hansard 1/6/04, p.E24)

Senator Lundy asked about:

Could you redo the table (provided in response to previous Estimates questions on notice) so that it more accurately reflects the year in which the funds were expended for each of those projects? Could you reconcile those sources of research funding against those allocations from DCITA that I read out ($785,000 for 2001-02; $735,000 for 2002-03; $705,000 for 2003-04; $675,000 for 2004-05)? As part of that table, could you also specifically identify individual research projects that are funded through WADA?

ANSWER

The year in which funding was expended for each project funded by WADA and DCITA is listed below. For DCITA funding, $785,000 was expended in 2001-02. In subsequent years, the DCITA funding allocations referred to in the question above cannot be correlated to the projects conducted by AGAL, as AGAL did not receive all of the DCITA research funding; research projects carried out by other organisations received some of the funding.

WADA-Funded Projects	**2001-02**	**2002-03**	**2003-04***	**TOTAL**
Detection of the Abuse of Haemoglobin Based Blood Substitutes in Sport		$179,309	$55,000	$234,309
Production of Pure Substance CRMs for the Detection of Doping with Testosterone Precursors and 19-Nor Steroids		$136,645	$187,071	$323,716
The effects of factors such as exercise and disease on the distribution of urinary EPO isoforms.			$138,844	$138,844
Mass spectrometry of peptide hormones.			$62,559	$62,559
Development of solution and urine matrix CRMs for the detection of steroid doping			$77,609	$77,609
TOTAL		**$315,954**	**$521,083**	**$837,037**

DCITA-Funded Projects	**2001-02**	**2002-03**	**2003-04***	**TOTAL**
Numerous Projects • Initial development of a test for growth hormone • Recombinant EPO in urine • Extension of statistical profiling • Analysis of sports supplements • Carbon isotope ratio mass spectrometry interlaboratory study • carbon isotope ratio mass spectrometry profiling study	$785,000			$785,000
Statistical population studies to support new analytical methodologies using EPO 2000 Project urine samples.			$264,853	$264,853
Improved method for the detection of erythropoietin isoforms in urine.			$145,530	$145,530
TOTAL	**$785,000**		**$410,383**	**$1,195,383**

* 2003-04 figures to May 2004

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QUESTION No.43
(Hansard 1/6/04, p.E24)

Senator Lundy asked about:

Could you provide a breakdown of your revenues from fees for services from ASDA and all other clients?

ANSWER

A breakdown of drugs in sport revenues from major clients has been provided in the response to Question 27 above.

QUESTION No.44
(Hansard 1/6/04, p.E24)

Senator Lundy asked about:

Can you provide documents that reconcile research expenditure with the specific outcomes of those research projects (i.e. could you provide project progress reports to the committee)?

ANSWER

A copy of the final report prepared for DCITA for projects funded in 2001-02, *Activities and Outcomes from Research into Drug Detection Procedures*, has been provided to the Senate Economics Legislation Committee secretariat.

There have been two progress reports submitted to date for projects funded following the 2002-03 application round (*Statistical Population Studies to Support New Analytical Methodologies using the EPO2000 Project Urine Samples* and *Improved Method for the Detection of Erythropoietin Isoforms in Urine*). Copies of these progress reports, submitted in December 2003 and March 2004, have been provided to the Senate Economics Legislation Committee secretariat. The final project reports are due on 31 July 2004.

QUESTION No.45
(Hansard 1/6/04, p.E25)

Senator Lundy asked about:

Has AGAL received any funding from DCITA outside of the Anti-Doping Research Panel process and procedure?

ANSWER

AGAL has received no funding from DCITA other than for anti-doping research funded through Backing Australia's Sporting Ability. The funding in 2001-02 was prior to the establishment of the anti-doping research panel in 2002-03.

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QUESTION No.46
(Hansard 1/6/04, p.E25)

Senator Lundy asked about:

Can you tell me the number of tests that you have done for each of your clients (2001-02, 2002-03, 2003-04)?

ANSWER

Tests here are taken to mean samples (blood and/or urine) collected from athletes at any one time for testing.

Financial Year	Client	*Number of Tests*
2001-02	ASDA	5985
	NZSDA	1378
	WADA	349
	Managed Athletic Testing Services	142
	Minor Clients	20
2002-03	ASDA	5628
	NZSDA	1297
	WADA	447
	International Doping Tests and Management (IDTM)	170
	Minor Clients	10
2003-04*	ASDA	5610
	NZSDA	1434
	WADA	373
	Rugby World Cup Ltd	291
	International Doping Tests and Management (IDTM)	31
	Minor clients	10

* to 25 June 2004

QUESTION No.47
(Hansard 1/6/04, p.E25)

Senator Lundy asked about:

Can you itemise the research results that have been published? Can you include the specific references as well, including for the ones that you are anticipating will be published?

ANSWER

AGAL has published extensively in the area of drugs in sport since 2000. A list of the publications that can be allocated to specific projects is provided below. Note that some publications can be attributed to more than one project.

The majority of these WADA and DCITA funded projects are partially completed (e.g. the two current DCITA-funded projects are funded for two years, and the first year is currently coming to completion). It is expected that any papers arising from these projects will be published over the next 2-3 years.

A complete list of AGAL drugs-in-sport publications since 2000 is also provided below.

Publications that can be allocated to specific projects

Paper	Project(s)
S.W. Westwood, S.R. Davies and G.J. Tarrant, Preparation of Certified Reference Materials for Use in Doping Analysis for Steroid Prohormones and 19-Nor Steroids, in *Recent Advances in Doping Analysis (11), Proceedings of the Manfred Donike Workshop, 21st Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2003, pp383-386.	Production of Pure Substance CRMs for the Detection of Doping with Testosterone Precursors and 19-Nor Steroids (WADA)
J. Grinyer, B. Herbert, N. Packer, C. Howe, G.J. Trout and R. Kazlauskas, Initial Development of an Imobilised pH Gradient Gel for the EPO Urine Test in *Recent Advances in Doping Analysis (10), Proceedings of the Manfred Donike Workshop, 20th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2002, pp249-252.	Recombinant EPO in urine (Part of DCITA 2001-02 projects)
C. Goebel, C. Alma, C. Howe, R. Kazlauskas and G. Trout, Methodologies for the detection of haemoglobin-based oxygen carriers, *J. Chromatog. Science*, accepted for publication.	Detection of the Abuse of Haemoglobin Based Blood Substitutes in Sport (WADA)
C. Alma, G. Trout, N. Woodland and R. Kazlauskas, The detection of haemoglobin based oxygen carriers in *Recent Advances in Doping Analysis (10), Proceedings of the Manfred Donike Workshop, 20th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2002, pp169-177.	Detection of the Abuse of Haemoglobin Based Blood Substitutes in Sport (WADA)
K.C. Keung, C. Howe, L.Y. Gui, G. Trout, J.D. Veldhuis, K.K. Ho, Physiological and pharmacological regulation of 20-kDA growth hormone, *Am. J. Physiol. Endocrinol. Metab.*, 2002, **283**, E836-43.	Initial development of a test for growth hormone (Part of DCITA 2001-02 projects)
A.T. Cawley, R. Kazlauskas, G.J. Trout, J.H. Rogerson and A.V. George, Isotopic fraction of endogenous anabolic androgenic steroids and its relationship to doping control in sports, *J. Chromatog. Science*, submitted for publication	Carbon isotope ratio mass spectrometry profiling study (Part of DCITA 2001-02 projects) and Statistical population studies to support new analytical methodologies using EPO 2000 Project urine samples. (current DCITA-funded project)
A. Cawley, J. Rogerson, K. Rahman, G.J. Trout and R. Kazlauskas, Preliminary Results on the Carbon Isotope Ratios of Ketonic Steroids in Urine Samples Collected from Different Countries, in *Recent Advances in Doping Analysis (11), Proceedings of the Manfred Donike Workshop, 21st Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2003, pp183-193.	Carbon isotope ratio mass spectrometry profiling study (Part of DCITA 2001-02 projects)

AGAL Publications Since 2000 (AGAL authors underlined)

General

1. G.J. Trout and R. Kazlauskas, Sports drug testing – an analyst's perspective, *Chemical Society Reviews.* 2004, **33**, 1-13.

2. G. Trout, J.H. Rogerson, A. Cawley and C.W. Alma, Developments in Sports Testing, *Aust. J. Chem*, 2003, **56**, 175-180

3. R. Kazlauskas and D. Cowan, WAADS QA Programme 2002, in *Recent Advances in Doping Analysis (11), Proceedings of the Manfred Donike Workshop, 21st Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2003, pp141-148.

4. S.W. Westwood, S.R. Davies and G.J. Tarrant, Preparation of Certified Reference Materials for Use in Doping Analysis for Steroid Prohormones and 19-Nor Steroids, in *Recent Advances in Doping Analysis (11), Proceedings of the Manfred Donike Workshop, 21st Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2003, pp383-386.

5. R. Kazlauskas, Analysing the Olympic Games: A case study within the Anti-Doping Programme: An Overview, *Clin. Biochemist Reviews*, 2002; **23(ii)**, 35

6. R. Kazlauskas and D. Cowan, WAADS QA Programme 2001/2002, in *Recent Advances in Doping Analysis (10), Proceedings of the Manfred Donike Workshop, 20th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed)., 2002, pp117-124.

7. R. Kazlauskas, Sydney Olympics 2000: An Overview, in *Recent Advances in Doping Analysis (9), Proceedings of the Manfred Donike Workshop, 19th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2001, pp167-178.

8. S. Westwood, D. Hancock, B. King, H. Wang, J. Makrynikolas and S. Starling, Stability trials of anabolic steroid Reference Materials, in *Recent Advances in Doping Analysis (9), Proceedings of the Manfred Donike Workshop, 18th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2000, pp275-279.

9. R. Kazlauskas and G. Trout, Drugs in sports: analytical trends. *Ther. Drug Monit.*, 2000, **22**, 103-109.

10. B. Corrigan and R. Kazlauskas, Drug testing at the Sydney Olympics. *Med. J. Austral.*, 2000 **173**,

EPO-related

1. C.J. Gore, R. Parisotto, M.J. Ashenden, J. Stray-Gundersen, K. Sharpe, W. Hopkins, K. Emslie, C. Howe, G.J. Trout, R. Kazlauskas and A.G. Hahn, Second generation blood tests to detect erythropoietin abuse in athletes. *Haematologica*, 2003, **88**, 333-344.

2. K. Sharpe, W. Hopkins, K.R. Emslie, C. Howe, G.J. Trout, R. Kazlauskas, M.J Ashenden, C.J. Gore, R. Parisotto and A.G. Hahn, Development of reference ranges in elite athletes for markers of altered erythropoiesis, *Haematologica*, 2002, **87**, 1248-1257.

3. R. Kazlauskas, C. Howe and G. Trout, Strategies for rhEPO detection in sport, *Clin. J. Sports Med.* **12**, 2002, 229-235.

4. G.J. Trout, K.R. Emslie, C. Howe, R. Kazlauskas and F. Lasne, An overview of testing for EPO at the Sydney 2000 Olympic Games and beyond, in *Recent Advances in Doping Analysis (9), Proceedings of the Manfred Donike Workshop, 19th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2001, pp191-200.

5. J. Grinyer, B. Herbert, N. Packer, C. Howe, G.J. Trout and R. Kazlauskas, Initial Development of an Imobilised pH Gradient Gel for the EPO Urine Test in *Recent Advances in Doping Analysis (10), Proceedings of the Manfred Donike Workshop, 20th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2002, pp249-252.

6. R. Parisotto, M. Wu, M.J. Ashenden, K.R. Emslie, C.J. Gore, C. Howe, R. Kazlauskas, K. Sharpe, G.J. Trout, M. Xie and A.G. Hahn, Detection of recombinant human erythopoietin abuse in athletes utilising markers of altered erythropoiesis, *Haematologica*, 2001, **86**, 128-137.

7. R. Parisotto, C.J. Gore, K.R. Emslie, M.A. Ashenden, C. Brignara, C. Howe, D.T. Martin, G.T. Trout and AG. Hahn, A novel method utilising markers of altered erythropoiesis for the detection of recombinant human erythropoietin abuse in sport, *Haematologica*, 2000, **85**, 564-572.

Haemoglobin-based oxygen carriers (HBOCs)

1. C. Goebel, C. Alma, C. Howe, R. Kazlauskas and G. Trout, Methodologies for the detection of haemoglobin-based oxygen carriers, *J. Chromatog. Science*, accepted for publication.

2. C. Alma, G. Trout, N. Woodland and R. Kazlauskas, The detection of haemoglobin based oxygen carriers in *Recent Advances in Doping Analysis (10), Proceedings of the Manfred Donike Workshop, 20th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2002, pp169-177.

Human Growth Hormone

1. K.C. Keung, C. Howe, L.Y. Gui, G. Trout, J.D. Veldhuis, K.K. Ho, Physiological and pharmacological regulation of 20-kDA growth hormone, *Am. J. Physiol. Endocrinol. Metab.*, 2002, **283**, E836-43.

Carbon Isotope Ratio Mass Spectrometry

1. A.T. Cawley, R. Kazlauskas, G.J. Trout, J.H. Rogerson and A.V. George, Isotopic fraction of endogenous anabolic androgenic steroids and its relationship to doping control in sports, *J. Chromatog. Science*, submitted for publication

2. A. Cawley, J. Rogerson, K. Rahman, G.J. Trout and R. Kazlauskas, Preliminary Results on the Carbon Isotope Ratios of Ketonic Steroids in Urine Samples Collected from Different Countries, in *Recent Advances in Doping Analysis (11), Proceedings of the Manfred Donike Workshop, 21st Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2003, pp183-193.

Other chemical analytical techniques

1. C. Goebel, G.J. Trout and R. Kazlauskas, Rapid screening method for diuretics in doping control using automated solid phase extraction and liquid chromatography-electrospray tandem mass spectrometry, *Analytica Chimica Acta,* 2004, **502**, 65-74.

2. C. Goebel, G. Trout and R. Kazlauskas, A Rapid Screening Method for Diuretics Using Automated SPE and LC-MS-MS, in *Recent Advances in Doping Analysis (11), Proceedings of the Manfred Donike Workshop, 21st Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2003, pp13-22.

3. T. Huynh, G.J. Trout and R. Kazlauskas, The Detection of Low Level Anabolic Agents in Bovine and Human Urine Using LC-ESI-MS-MS, in *Recent Advances in Doping Analysis (11), Proceedings of the Manfred Donike Workshop, 21st Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2003, pp271-276.

4. G.J. Trout, S. Soo and K. Kelly, Longitudinal Variability of T/E Ratios in Australian Athletes, in *Recent Advances in Doping Analysis (10), Proceedings of the Manfred Donike Workshop, 20th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2002, pp261-265.

5. B. Yap and R. Kazlauskas. Rapid HPLC screening of chlorothiazide, torasemide, xipamide and benzthiazide in the Sydney 2000 Olympic Games. in *Recent Advances in Doping Analysis (9), Proceedings of the Manfred Donike Workshop, 19th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2001, pp209-213.

6. A.T. Cawley, G.J. Trout and R. Kazlauskas, Quantitation of Urinary Caffeine by GC/MS using 13C Caffeine as Internal Standard, in *Recent Advances in Doping Analysis (9), Proceedings of the Manfred Donike Workshop, 19th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2001, pp229-232.

7. C. Fouracre and R. Kazlauskas, Diuretics screening and confirmation using LC/MS/MS, in *Recent Advances in Doping Analysis (9), Proceedings of the Manfred Donike Workshop, 19th Cologne Workshop on Dope Analysis.* W. Shanzer et al (ed), 2001, pp321-326.