



The State Laboratory  
An tSaotharlann Stáit



Annual Report 2010



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## 1. Introduction by State Chemist



This Annual Report sets out the approach the Laboratory has taken in order to continue to meet the analytical needs of its client departments and offices in 2010. The current stringencies in the public finances have had a direct impact on the Laboratory, notably through the restriction on recruitment and the consequent reduction in staff numbers. The negative impact of these enforced staff changes has been mitigated through the reorganization of the work and through the extensive use of new technologies. In fact, the Laboratory is achieving enhanced outputs from reduced inputs, through a combination of ongoing dialogue with clients, flexibility of staff and the use of advanced technology.

The Laboratory has cooperated closely with clients ensuring that it achieved the goals and targets agreed with them, while continuing to react dynamically to their changing requirements. Significant efficiencies were achieved in 2010 through the introduction of new technology, through the updating of analytical methods in use and through significant improvements in the data handling of analytical work.

The important role of the Laboratory as a source of expert scientific advice to government departments and other clients has been sustained and developed. This includes the work of Laboratory personnel attending scientific meetings in Ireland and internationally, representing the vital interests of the Irish state in relevant scientific forums. The list of meetings attended gives an indication of the range and importance of this work undertaken on behalf of clients.

The mix of staff expertise and advanced instrumentation provides an impressive resource for meeting the varied and specialized needs of the Laboratory's wide client base. Through the commitment, dedication and hard work of the staff, the Laboratory has continued to provide a quality analytical and advisory service to customers and has developed the capacity to meet their future needs.

A handwritten signature in black ink that reads "Dermot Hayes".

**Dermot Hayes**  
State Chemist

## 2. Efficiency and extended service to clients

In the current difficult economic circumstances the State Laboratory along with all other Government bodies continuously looks for ways to not only maintain the service provided to our Public Service clients but also to improve this service in spite of the constraints on staff numbers and budget.

These constraints are now worse than before but in fact for many years the staff numbers in the laboratory have remained constant while the numbers of samples and in particular the number of analyses requested on them have climbed inexorably.

This situation has been tackled by a three-pronged approach – firstly by a policy of continuing engagement with the laboratory's clients to ensure the most effective application of resources to their requirements, then by investment in modern equipment and transfer of many analyses from older techniques and finally by the introduction and increasing application of a computerised sample and data handling system to speed the collection and reporting of results.

### Engagement with clients for optimisation of resources

A basic principle of analytical chemistry is that the analyst needs to establish what the analytical problem actually is before beginning work. Therefore, when samples are submitted by an external client it is essential that both sides understand the reason for the analysis and to ensure that the available resources are directed to where they can be best used.

Animal feedingstuffs samples submitted by the Department of Agriculture, Fisheries and Food (DAFF) for analysis by the State Laboratory have traditionally required a sample for each section within the laboratory for which a particular range of analytes are requested. This was partly for practical reasons in the laboratory as it was simpler to keep track of samples submitted for a single section. For the client, however, with reduced availability of sampling staff, this was not ideal. Discussions were held among sections in the laboratory that receive samples from DAFF and a revised procedure was devised to allow multiple inter-sectional analyses on any single sample. This required revision of sample

reception, preparation and reporting procedures in the Laboratory which was handled by reconfiguration of the sample handling system (LIMS). It also required DAFF to agree to accept results on a 'by analysis' basis rather than 'by sample', but they are happy to do this in return for the greater flexibility in analyses they can request on a sample.

### Improved efficiency and updated methods

A trend in the laboratory has been to introduce modern techniques to replace current ones which, although modern when they were introduced, can now be replaced using different instruments which offer greater efficiency. The efficiencies can come from several different areas – the new instrument may offer greater sensitivity which can be used either to speed analysis by simplifying sample preparation or to allow analysis for components which could not previously have been detected. Another major advantage is that many of the new instruments being introduced allow simultaneous or parallel analysis for many components where the older procedures were sequential and this has obvious speed implications. Finally, modern instruments will have computerised data systems which when integrated with the LIMS sample management system can speed up the information transfer and calculations involved in analysing and reporting samples, saving transcription and checking time for staff.

The Animal Feedingstuffs section analyses feed samples for the presence of authorised and banned medicaments. Previously the analytical methods used targeted a single analyte at a time. Two new liquid chromatography/mass spectrometry (LC/MS) methods were introduced in 2010 that can test for the presence of 17 banned antibiotics or check for carryover levels of 11 coccidiostats simultaneously. These new methods have much lower detection limits (required for carryover levels) and allow a sample to be tested for a greater range of analytes in a significantly shorter timeframe.

The Contaminants and Plant Health section analyses feed samples for toxins such as mycotoxins. These analyses are, again, currently carried out by analyte specific methods which analyse for each possible contaminant in turn. These procedures are also being transferred to an

LC/MS method which will allow simultaneous detection of the contaminants without reconfiguration.

The length of the list of compounds to be looked for in samples analysed under the Coroners Act by the Human Toxicology section continues to grow every year. A project was put in place several years ago to transfer a variety of different analytical methods to a small number of methods using advanced LC/MS instruments. This project has been very successful and more and more analyses are being transferred over to these new instruments. While the instruments themselves are expensive, they allow greater efficiency in the use of staff time which makes them very good value.

### Improvements in data handling

The work of the State Laboratory continues to increase year on year. One notable aspect of this is that while the number of individual samples submitted to the laboratory has not changed greatly in the last few years, the number and complexity of analyses requested has continued to increase.

It was recognised many years ago that a potential bottleneck for any laboratory is the sheer quantity of information associated with analysis of a large number of samples and that as the level of automation increased, the risk that staff would simply not be able to cope with the amount of data produced also increased. In 1998 a Laboratory Information Management System – LIMS – was purchased and this initially simply recorded sample details and allowed tests to be assigned to the samples. At first, analytical results were entered manually onto the system which allowed them to be collated in reports. The system was gradually extended to provide for calculations and checking to be performed on data entered with, for example, automatic flagging of out-of-compliance samples for re-testing.

With the introduction of automated instruments with modern data systems it became possible to transfer results directly into LIMS, avoiding time consuming and error prone manual transcription steps. In many cases the information required to set up an analytical run can also be transferred from LIMS into the instrument data system. This is used for example to transfer individual sample weights for use in calculations in the data system

so that the results returned are complete and require no further correction. Also, modern automated instruments produce large amounts of data and in addition to the actual sample results there is a significant amount of quality control data with each analysis which must be checked and recorded. Management of this amount of data without tying up staff can be achieved by making full use of electronic data transfer.



Sample reporting can be done in many ways and some test results for statutory reasons must be reported on a form which accompanied the sample. Where this is not obligatory or where this can be changed, the State Laboratory is increasingly producing reports from LIMS which contain all the required information. Since these reports are produced electronically, they can be emailed to the client if appropriate.

Electronic transfer of sample data and results between the State Laboratory and its clients is an obvious area where efficiencies would seem possible. A pilot project has been proposed between the State Laboratory and a section of DAFF whereby sample information could be provided to the State Laboratory and test results returned to DAFF using web services. This involves computer to computer communication so that for example the LIMS system could use a sample reference number provided by DAFF to interrogate the DAFF database and download all the sample information. This is a proof-of-concept project but is an indication of things to come.

### 3. Unlicensed Medicines

The State Laboratory analyses seized pharmaceutical products on behalf of the Irish Medicines Board. While some counterfeit drugs may be essentially harmless, the potential dangers to health from using such products can be extreme. Some may contain only small amounts of the active ingredient, or they may contain an adulterated active ingredient that might not have the intended effect or that might have a detrimental or catastrophic effect on patients taking these medicines for a particular medical problem.

One of the most widely counterfeited drugs is Viagra, a drug taken for erectile dysfunction. This and other similar drugs should be taken under strict medical supervision, as they have a number of side effects like high blood pressure and cardiac problems. The State Laboratory analyses these counterfeit Viagra-type products for the active ingredients Sildenafil, Vardenafil and Tadalafil using HPLC-DAD. LC-MS has also been successfully used to identify some analogues of these products, such as Thiosildenafil and Hydroxythiohomosildenafil. The laboratory has recently acquired an accurate mass QTOF – LCMS instrument and will commence developing methods on this instrument which will allow higher throughput and faster turnaround times for the client.





## 4. Finn's Hotel

In addition to the samples that it routinely receives in the course of its work, the State Laboratory can be asked by clients to analyse unusual samples. State institutions concerned with the conservation of the national heritage, such as the National Museum and the OPW, have been sources of such samples in the past. The Laboratory has the technical resources and the expertise to be able to analyse a wide and disparate range of samples.

Among the more unusual materials submitted for analysis in 2010 were samples of paint from a commercial sign for "Finn's Hotel" on South Leinster Street in Dublin. The sign advertising Finn's Hotel has historical importance as a place referred to in James Joyce's *Ulysses*. It was also here that Nora Barnacle, Joyce's future wife, worked as a chambermaid in 1904, the year the novel is set.

The sign was handpainted onto the red brick west-facing gable end of No. 1 South Leinster Street. Finn's Hotel once occupied the buildings from Numbers 1 to 4 on the street. The sign is located on the exterior of the building at third floor level, and below a plastered string course. It would have been clearly visible from Nassau Street, over the grounds of Trinity College.

The State Laboratory analysed samples of the paint from the sign. Analysis showed that a lead-based paint was used in the lighter part of the lettering and that the darker-coloured paint used in the dark shadow outline of the lettering contained iron, which suggested that a clay containing iron oxide, such as umber had been used. The information provided by the laboratory assisted conservators in their work of preserving this interesting and historically important part of the city streetscape.



## 5. Numbers of Samples Tested

The tables below summarise the numbers of samples tested, set out in the three broad divisions of Agriculture samples, Revenue samples and samples from Coroners, the Department of the Environment and the Irish Medicines Board.

Agriculture		
Category of Sample	No. of Samples	No. of Analytes Tested For
Animal Feedingstuffs	942	5513
Fertilisers / Limestones	317	758
Plant Health	2686	3518
Mycotoxins in Feed and Food	323	1760
Dioxins in Feed and Food	322	4711
Veterinary Residues in Food	1110	9815
Veterinary Medicines	131	129
Nitrates in Vegetables	83	83
Heavy Metals in Vegetables	166	332
Poisons in Dead Bird Remains	20	83
<b>Sample Total:</b>	<b>6,100</b>	<b>26,702</b>

Revenue		
Category of Sample	No. of Samples	No. of Analytes Tested For
Customs / CAP	1206	1642
Hydrocarbon Oils	1329	7900
Alcohols	185	502
<b>Sample Total:</b>	<b>2,720</b>	<b>10,044</b>

Coroners / Environment / IMB		
Category of Sample	No. of Samples	No. of Analytes Tested For
Human Toxicology	3748	180704
Environment	81	910
Medicinal Products	116	175
Public Health	106	113
Heritage Protection	44	46
<b>Sample Total:</b>	<b>4,095</b>	<b>181,948</b>

## 6. New Analytical Methods

The following new analytical methods were developed in 2010:

- Bioassay Method to screen for Dioxins and Dioxin-like compounds in Feed and Food
- Method to determine 17 Banned Antibiotics in Animal Feedingstuffs by LC MS/MS
- Method to determine Lead and Cadmium in Vegetables by ICP MS
- Method to determine 5 Corticosteroids in Urine by LC MS/MS
- Methods to detect 11 medicinal compounds in Veterinary Products by LC MS/MS
- Methods to detect 8 medicinal compounds in Veterinary Products by LC PDA
- LC MS/MS methods for Drugs of Abuse in Urine and Blood were extended to include 15 new drugs, primarily 'headshop' type compounds
- LC MS/MS method for Prescribed Drugs was extended to include 5 new compounds
- HPLC DAD methods were developed and validated for identification of 6 new drugs in Medicinal Products

## 7. Administration & External Scrutiny

The administrative cohort of staff in the Corporate Services Section of the State Laboratory (9.3 Wholetime Equivalents / WTE) is made up of permanent and seconded staff. At the end of 2010 there were five staff (WTE) on secondment from Departments / Offices for periods ranging from three to five years.

The Corporate Services Section provides the full range of HR and Finance services to staff and management in the Laboratory – managing all types of leave; payroll; flexi-time; staffing; sanctioned recruitment and promotions; training; payments; Estimates; Appropriation Account; and internal audit requirements.

Under the Public Service Agreement 2010 – 2014, there is a requirement for all public bodies to focus more on the needs of the citizen and to be leaner and more effective. The challenge for the State Laboratory in future will be to ensure that quality service delivery is maintained in the context of reduced staffing and resources.

### Sick Leave

The Action Plan for the Civil Service and Non-Commercial State Agencies under the Public Service Agreement 2010 - 2014 tasks all public bodies with managing sick leave more effectively. A target has been set for a 10% reduction in the number of days lost due to sick leave by end 2011 thereby resulting in improved productivity and the provision of cover for reduced staffing levels. In 2010, there has been a 16% drop in the number of State Laboratory employees taking sick leave over 2009.

### Family Friendly Policies and Equality of Opportunity

State Laboratory staff have access to a wide range of family friendly policies, including career breaks; a shorter working year; work-sharing; flexi-time; and parental leave. However, since the moratorium on recruitment was introduced in 2009, shortfalls arising from staff availing of these measures have to be absorbed by the Laboratory.

Scheme	No. of staff availing of scheme over the course of 2010
Work-sharing	13
Parental Leave	7
Career Breaks	3
Shorter Working Year	4

The Laboratory is committed to an equal opportunities policy. At the end of 2010, the numbers of males and females in each grade is given in the table below.

Gender Breakdown in The State Laboratory		
Grade	Female	Male
State Chemist	0	1
Principal Chemist	1	1
Senior Chemist Grade I	4	3
Assistant Principal	1	0
Technical Information Mgr	0	1
Chemist Grade II	4	4
Chemist	9	10
Higher Executive Officer	1	1
Senior Laboratory Analyst	7	6
Laboratory Analyst	14	8
Staff Officer	1	1
Clerical Officer	5	0
Storekeeper	0	2
Head Laboratory Attendant	0	1
Laboratory Attendant	1	6
<b>Total</b>	<b>48</b>	<b>45</b>

## Financial Information

The table below summarises the State Laboratory financial expenditure in 2010. Figures for 2009 are provided for comparative purposes.

Gross Expenditure	2009	2010
	€ ,000	€ ,000
A1. Salaries Wages & Allowances	5,523	5,100
A2. Travel and Subsistence	39	33
A3. Incidental Expenses	342	195
A4. Postal & Telecommunications Services	74	72
A5. Apparatus & Chemical Equipment	1,967	2,448
A6. Office Premises Expenses	1,278	1,334
A7. Consultancy Services	11	13
<b>Gross Total:</b>	<b>9,234</b>	<b>9,194</b>

## External Scrutiny

### INAB Surveillance Audit

To ensure wide and international acceptability of our results, our key analytical procedures are accredited to ISO/IEC Standard 17025. Maintenance of this accreditation requires an annual surveillance by INAB, which was successfully completed in March 2010.

### Financial Auditing

The State Laboratory's Audit Committee met twice in 2010. Internal audits were carried out on the Payroll, Procurement and Inventory cycles.

The Comptroller and Auditor General's Office carried out the annual audit of the 2009 Appropriation Account in April 2010. No significant issues were raised during the audit.

### Customer Charter

The Laboratory has agreed specific performance targets with all its major clients. These targets include issues such as turn-around time; methods of analysis to be used; and reporting requirements. This is detailed below in the Progress Report on Customer Charter Objectives.

## Freedom of Information

The Laboratory received and processed one request under the Freedom of Information Acts in 2010.

## Staffing

Four staff left the Laboratory during 2010 – a Senior Chemist and a Senior Laboratory Analyst retired under the Incentivised Scheme for Early Retirement (ISER); a Clerical Officer left on completion of her secondment; and a Temporary Clerical Officer left on completion of her contract. One Staff Officer transferred to another Government Department. One Chemist returned from a career break.

In 2010, the Laboratory continued with the student placement scheme in association with Dublin City University (DCU); Dublin Institute of Technology (DIT); and Limerick Institute of Technology (LIT). Four students were placed in areas complementary to their academic discipline for a period of six months. One graduate was given a six month placement as part of the Willing, Able Mentoring Programme (WAM).

## Partnership Committee

The Partnership Committee met on two occasions during 2010.

## 8. Meetings attended

Much of the work of the State Laboratory is concerned with representing the interests of its client department and offices at external meetings, both in Ireland and internationally.

The State Laboratory services EU and other international committees at the request of its client Departments. Laboratory personnel also participate in the work of other international expert scientific bodies and conferences. This work depends on the availability in the laboratory of a range of expertise in the application of analytical science. This level of expertise is maintained through the participation by staff in international meetings and scientific conferences.

The listing below of meetings attended in 2010 gives an indication of the range, scale and importance of this aspect of the work of the Laboratory.

- Scientific Sub-committee of the World Customs Organisation
- Meetings of the EU Customs Code Committee, Tariff and Statistical Nomenclature Section (Agriculture/ Chemical sector)
- EU Project Group meetings concerning the Chemical Chapters of the Harmonized System /Combined Nomenclature
- EU training courses and workshops on ECICS-2
- Meeting of the EU Economic and Tariff Questions Group (Duty Suspensions)
- Meetings related to the European Customs Chemists Group (GCL)
  - Meeting of the Customs Laboratories Steering Group (GCL)
  - European Customs Chemists Conference
  - Meeting of the European Customs Laboratories Group (GCL) Working Group on Bio-components in Fuels
  - Meeting in relation to the GCL Proficiency Test on Animal Feed and Pet Food
  - Meeting in relation to the GCL (European Customs Laboratories Group) Proficiency Testing scheme on alcohol products (beverages and non-potable).
- Meeting of the European Network of National Experts on Textile Labelling
- Meetings of the Fiscalis Programme Working Group on Alcohol Denaturants
- World Congress and General Assembly of the OIV (International Organisation of Vine and Wine)
- State Claims Agency meetings
- Meeting of the Risk Management Network for State Authorities.
- 17th Meeting of the CCQM (Consultative Committee for Amount of Substance), BIPM (Bureau International Des Poids et Mesures).
- Codex Alimentarius meeting.
- EU coordination meeting on Codex Alimentarius,
- EU-RL Workshop on Dioxins/PCBs
- Thermo Scientific High Resolution GC/MS Meeting on Persistent Organic Pollutants
- Meeting on "Dioxins on the Island of Ireland", organized by the Irish Society of Toxicology (IST) and Centre for Assured Safe and Traceable Food (ASSET)
- Surveillance Visit concerning dioxin analysis to RIKILT, Institute of Food Safety,
- European Union Reference Laboratory for Residues, EURL-Workshops 2010, Federal Office of Consumer Protection and Food Safety,
- Sixth International Symposium on Hormone and Veterinary Drug Residue Analysis. (VDRA) 2010,
- The International Association of Forensic Toxicologists Annual Conference
- Irish Mass Spectrometry Society Annual Meeting
- UKFTNet (Forensic Toxicology Network) Quarterly meeting
- Early Warning Committee for New and Synthetic Drugs in the NACD (National Advisory Committee on Drugs)
- NACD advisory meetings on drafting legislation on New Psychoactive Substances
- Steering Committee for the National Drugs Related Death Index

## 9. Publications by Staff

Arising out of the high-level work that it is mandated to undertake for its clients, the State Laboratory develops analytical methods that are of potential value to others, both within the Civil Service and outside. By publishing articles in prestigious analytical science journals, the Laboratory has established a reputable path for the reuse of public sector information which it generated internally, and this is of benefit to external users of this information.

Cronly M. \*, Behan P., Foley B., Malone E\*, Martin S. \*, Doyle M. \*, Regan L\*. 2010. *Rapid multi-class multi-residue method for the confirmation of chloramphenicol and eleven nitroimidazoles in milk and honey by liquid chromatography-tandem mass spectrometry (LC-MS)*. **Food Additives and Contaminants. Part A**; (2010), Vol 27, pp1233-1246.

Cronly M. \*, Behan P., Foley B., Malone E\*, Earley S. \*, Gallagher M\*, Shearan P. \*, Regan L\*. 2010. *Development and validation of a rapid multi-class method for the confirmation of fourteen prohibited medicinal additives in pig and poultry compound feed by liquid chromatography-tandem mass spectrometry*. **J Pharmaceutical Biomedical Analysis**; (2010), Vol 53, pp 929-938

Dowling, G\*; Malone, E\*; Harbison, T\*; Martin, S\* *Analytical strategy for the determination of non-steroidal anti-inflammatory drugs in plasma and improved analytical strategy for the determination of authorised and non-authorised non-steroidal anti-inflammatory drugs in milk by LC-MS/MS*. **Food Additives and Contaminants**, (2010), Vol. 27 (7,) pp. 962-982

Dowling, G\*; Regan, L\*; Tierney, J\*; Nangle, M\*. *A hybrid liquid chromatography mass spectrometry strategy in a forensic laboratory for opioid, cocaine and amphetamine classes in human urine using a hybrid linear ion trap-triple quadrupole mass spectrometer*. **Journal of Chromatography A**, (2010), Vol 1217(44), pp 6857-6866

Gallo, P; Fabbrocino, S; Dowling, G\*; Salini, M; Fiori, M; Perretta, G; Serpe, L  
*Confirmatory analysis of non-steroidal anti-inflammatory drugs in bovine milk by high-performance liquid chromatography with fluorescence detection*. **Journal of Chromatography A**, (2010), Vol 1217 (17), pp 2832-2839

Malone, E\*; Elliott, D; Kennedy, D; Regan, L\* *Screening and Quantitative Confirmatory Method for the Analysis of Glucocorticoids in Bovine Milk Using Liquid Chromatography-Tandem Mass Spectrometry*. **Journal of AOAC International**, (2010), Vol 93(5), pp 1656-1665.

Malone, E\*; Elliott, D; Kennedy, D; Regan, L\* *Rapid confirmatory method for the determination of sixteen synthetic growth promoters and bisphenol A in bovine milk using dispersive solid-phase extraction and liquid chromatography-tandem mass spectrometry*. **Journal of Chromatography B**, (2010), Vol 878 (15-16), pp 1077-1084.

\* - Working in the State Laboratory in 2010.



## 10. Presentations at Conferences

Dowling, G\*; Malone, E\*; Regan, L\*

*Analytical strategy for the confirmatory analysis of basic non-steroidal anti-inflammatory drugs in bovine plasma by liquid chromatography tandem mass spectrometry.*

Poster at: **The Sixth International Symposium on Hormone and Veterinary Drug Residue Analysis (VDRA)**, Ghent, Belgium.

Malone, E\*; Elliott, D; Kennedy, D; Regan, L\*

*Rapid confirmatory method for the determination of sixteen synthetic growth promoters and bisphenol A in bovine milk using dispersive solid-phase extraction and liquid chromatography–tandem mass spectrometry.*

Poster at: **The Sixth International Symposium on Hormone and Veterinary Drug Residue Analysis (VDRA)**, Ghent, Belgium.

Regan, L\*

*Recent Developments in LCMS in State Laboratory Presented at Irish Mass Spectrometry Society (IMSS) meeting, Red Cow Hotel, Dublin.*

\* - Working in the State Laboratory in 2010.



## 11. INAB Accredited tests

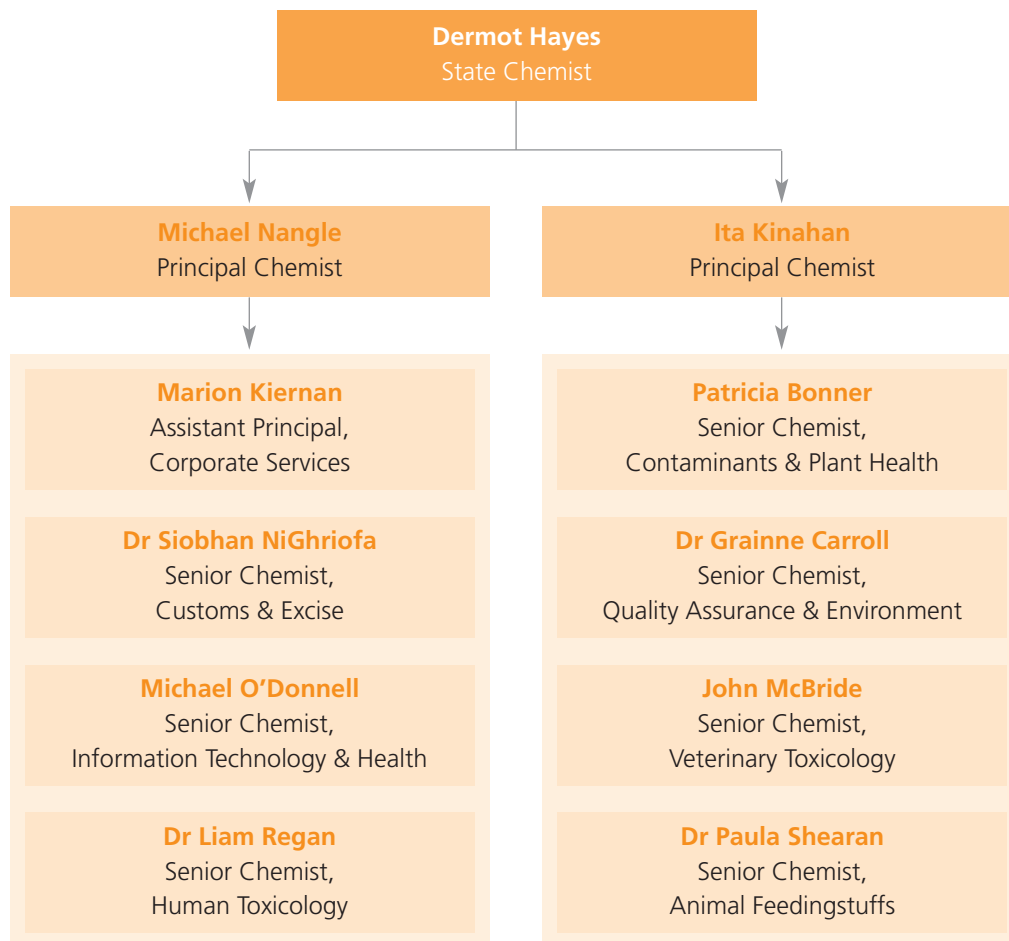
(Summary of Schedule of Accreditation, edition 13 of 25/06/2010)\*

Matrix	Measurand	Test Method
Animal Feedstuffs	Crude Protein	Method based on EU Commission Regulation 152/2009 Annex III (C)
Animal Feedstuffs	Crude Oils and Fats	EU Commission Regulation 152/2009 Annex III (H)
Animal Feedstuffs	Crude Oils and Fats & Crude Fibre	NIR Spectroscopy
Animal Feedstuffs	Crude Ash	Method based on EU Commission Regulation 152/2009 Annex III (M)
Animal Feedstuffs	Crude Ash	Gravimetric method using a Microwave Furnace
Animal Feedstuffs	Crude Fibre	EU Commission Regulation 152/2009 Annex III (I)
Animal Feedstuffs	Moisture	EU Commission Regulation 152/2009 Annex III (A)
Animal Feedstuffs	Nicarbazin	In House HPLC method with DAD, based on CANFAS-STM-4-CT94-2216
Animal Feedstuffs	Trace Elements: Copper, Manganese & Zinc	EU Commission Regulation 152/2009 Annex IV (C) (Atomic Absorption Spectroscopy)
Animal Feedstuffs	Trace Elements: Copper, Manganese & Zinc	Method based on EU Commission Regulation 152/2009 Annex IV (C) using Microwave Pressure Digestion and Atomic Absorption Spectroscopy
Animal Feedstuffs	Magnesium	In house method based on ISO 6869:2000 using Microwave Digestion and Flame Atomic Absorption Spectroscopy
Animal Feedstuffs	Arsenic	In house method using Dry Ashing and Hydride Generation Atomic Absorption Spectroscopy
Animal Feedstuffs	Lead, Cadmium & Cobalt	EN15550:2007 using Pressure Digestion and Graphite Furnace Atomic Absorption Spectroscopy for Pb & Cd. In house method based on EN15550:2007 for Co.
Animal Feedstuffs	Monensin, Narasin & Salinomycin	EN ISO 14183. HPLC method using Post Column Derivatisation.
Animal Feedstuffs	Crude Protein	EN ISO 16634-1:2008. Nitrogen Content by Consumption according to the Dumas Principle.
Milk (Liquid & Powder)	Aflatoxin M1	Based on an EU/STM method. Extraction and IA column clean-up. Determination by RP HPLC with Fluorescence Detection.
Straight and Compound Animal Feedstuffs	Aflatoxin B1	Based on an EU/STM method. Extraction and IA column clean-up. Determination by RP HPLC with fluorescence detection.

Matrix	Measurand	Test Method
Feed and Cereals	Ochratoxin A	In house method using IA column cleanup and RP HPLC with fluorescence detection.
Lettuce, Spinach & Cabbage	Nitrates	In house based on EN12014-2:1997-04. Determination by anion exchange chromatography following extraction and clean-up.
Pharmaceutical samples	Identification and / or quantification of pharmaceuticals samples: Flexible Scope (Analyte and Range)	In house method using HPLC –DAD.
Petrol and Diesel Fuels	Sulphur	ISO 20884:2004 Wavelength Dispersive X-Ray Fluorescence Spectroscopy
Cheese & Processed Cheese	Total Solids Content	EN ISO 5534:2004 (IDF 4:2004). Gravimetric following oven drying.
Cheese & Processed Cheese	Fat Content	EN ISO 1735:2004 (IDF 5:2004). Gravimetric following acid digestion, solvent extraction and oven drying (Schmid-Bondzynski-Ratzlaff principle).
Milk and Milk Products	Fat Content	IDF 1C:1987;(IDF 13C:1987;IDF 16C:1987;IDF 9C:1987 (Rose-Gottlieb Principle).
Pure starches, Animal feed, Foods	Starch	EEC Directive 72/199/EEC (Annex 1), determination by the Polarimetric Method (Ewers principle).
Alcoholic Drinks	Alcoholic Strength by Volume	In house using a density meter following distillation.
Gas Oil	C.I. Solvent Yellow 124	In house method. Determination by HPLC.
Meat and Meat Products	Nitrogen	ISO 937:1978 Kjeldahl Method
Meat and Meat Products	Hydroxyproline	In House Method based on ISO 3496-1994.
Blood & Urine	Amphetamine Class Compounds	In house method. Determination by Gas Chromatography with MS detection using internal standards following liquid-liquid extraction and derivatisation.
Blood & Urine	Ethanol	In house method. Determination by internal standard quantitation using Headspace Gas Chromatography with Flame Ionisation Detection.
Blood	Carbon Monoxide	Automated Spectroscopic Method using an IL682 CO-Oximetry Instrument

Matrix	Measurand	Test Method
Animal Plasma and Milk	Confirmatory Analysis of Non Steroidal Anti Inflammatory Drugs. Flexible Scope (Matrix, Analyte and Range)	In house method using solid phase extraction, and detection by LC-MS/MS.
Animal Urine **Animal Serum	Confirmatory Analysis of Hormones. Flexible Scope (Matrix, Analyte and Range)	In house method using solid phase extraction, detection by LC-MS/MS.
Animal Kidney Fat	Confirmatory Analysis of Gestagens. Flexible Scope (Matrix, Analyte and Range)	In house method using solid phase extraction, detection by LC-MS/MS.
Animal Serum	Confirmatory Analysis of Nitroimidazoles. Flexible Scope (Matrix, Analyte and Range)	In house method using liquid liquid extraction and detection by LC-MS/MS.
Animal Serum	Confirmatory Analysis of Hormones. Flexible Scope (Matrix, Analyte and Range)	In house method using solid phase extraction, detection by LC-MS/MS.
Eggs	Confirmatory Analysis of Nitroimidazoles. Flexible Scope (Matrix, Analyte and Range)	In house method using liquid liquid extraction, detection by LC-MS/MS.
Food and Feed	Dioxins and Dioxin like PCBs	In House GC/HRMS
Animal Feedingstuffs	Ash insoluble in HCl	EU Commission Regulation 152/2009 Annex III (N)
Animal Feedingstuffs	Macro and Trace Elements: Ca, Na, Mg, P, Fe, Mn, Cu, Zn, Co	ICP OES with Microwave digestion
Animal Feedingstuffs	Heavy Metals: As, Pb, Cd	ICP MS with Microwave digestion
Feed and Cereals	Aflatoxin B1 and Ochratoxin A	ROSA Charm Immunoassay based screening method
Liquid Fuel (Gasoline and Biogasoline)	Hydrocarbon Content: Aromatics, Olefins and Benzene	Multidimensional GG. ISO 22854:2008

## 12. Organisational Structure – Management Advisory Committee and Section Managers



## 13. Energy Use Statement

### Overview of Energy Usage in 2010

In 2010, The State Laboratory consumed 8,396.17 MWh of energy, consisting of:

- 2,549.21 MWh of electricity;
- 5,846.96 MWh of fossil fuels (Gas);

### Actions Undertaken in 2010

In 2010 the State Laboratory undertook a number of initiatives to improve our energy performance, including holding an energy seminar attended by all staff. Laboratories by their very nature are energy intensive buildings. To maintain a safe and healthy work environment for staff it is necessary to ensure the air is free from dangerous and toxic chemicals. This is done by maintaining a very high number of air changes per hour in the laboratory areas. At the time of the construction of the laboratory in the early 2000s, there was no economic and safe technology to recover heat from heated exhaust air in particular because of the risk of contaminating the incoming air supply.

To conserve energy the laboratory has instigated a programme where it only operates the air handling and extraction systems during working hours. In addition, fume cupboards which are one of the main sources of air extraction are being reconfigured with individual switches so users can manage their use.

The Laboratory in conjunction with the OPW and the Facilities Management Company have set up an energy conservation group to address energy conservation issues within the laboratory, such as switching off lights, computers and equipment when not in use.

Management will also investigate alternate options for the safe and economic retro-fit of energy recycling systems to the laboratory's spent heat exhaust.



## 14. Progress Report on Customer Charter Objectives

The State Laboratory's mandate is to provide Government Departments and Offices with an analytical and advisory service that supports their policies and regulatory programmes. The State Laboratory is committed to providing a quality analytical and advisory service to all its customers and to meeting the challenges presented by changing regulatory customer needs and new and emerging technologies. The goal of the Customer Charter is customer satisfaction through the delivery of a quality service. The State Laboratory is committed in this Charter to:

1. Provide a top quality analytical and advisory service for its customers in an efficient and effective manner appropriate to the customer's needs and commensurate with the principle of fitness for purpose.

Service level agreements with clients are in place for the analytical work of the laboratory.

2. Provide adequate Service Level Agreements to customers detailing the standard of service to be provided including specific targets for sample turn around times.

The service level agreements in place deal with all aspects of the service provided to clients, including quality of service, range of service, timeliness, advice, helpfulness and flexibility.

3. Meet the commitments given in the Service Level Agreements.

Client satisfaction ratings with the service provided ranged from 100% very satisfied or fairly satisfied with the Quality of Service, Advice, Helpfulness and Flexibility, 99% very satisfied or fairly satisfied with the Range of Service and 86% very satisfied or fairly satisfied with the Timeliness of the Service.

4. Hold regular meetings with customers to review the quality of the service provided, to identify future legislative trends and their impact on customers' requirements and to manage customers' expectations where these are unreasonable.

Meetings are regularly held with clients.

5. Operate in accordance with a documented quality system based on an international standard for

competence of testing laboratories (ISO/IEC 17025) and obtain and hold accreditation from the Irish National Accreditation Board for specific areas of work where required by the customer or by regulation.

The Laboratory is accredited for 44 test procedures to ISO/IEC 17025. Internal audits conducted by a team of trained auditors ensure compliance with the international standard.

6. Provide competent and impartial expert witness testimony in courts of law on issues relating to its analytical and advisory services.

Staff attend court as expert witnesses where required.

7. Provide advice and information as requested within an agreed timescale.

Performance is monitored against agreement made in Service Level Agreements and reviewed at least yearly. The Output Statement is available on the Department of Finance website [www.finance.gov.ie](http://www.finance.gov.ie)

8. Continuously adapt the analytical service to technical progress and develop greater analytical capacity through the evaluation of emerging technologies and the introduction of new methods and new instrumentation.

This is in the main section of this Annual Report.

9. Ensure that the expertise and analytical capability is developed to provide for the anticipated future analytical and advisory needs of customers.

Extensive analytical training is carried out.


10. Remain current with developments in relevant analytical and regulatory areas by attending meetings of EU and other international organizations and by representation on relevant scientific working groups.

Staff attend the relevant meetings.

11. Contribute towards the development of international documents & guides concerned with chemical and bio analysis.

Relevant contribution made at meetings attended.

## 15. State Laboratory Staff List by Grade - 31 December 2010

<b>State Chemist</b> Dermot Hayes					
<b>Principal Chemist</b> Michael Nangle		Ita Kinahan			
<b>Senior Chemist</b> Patricia Bonner Grainne Carroll		John McBride Siobhan Ní Ghriofa	Michael O'Donnell Liam Regan		
<b>Chemist Grade II</b> Joseph Foley Yvonne Kavanagh		Eileen McCarron Sean McGowan	Frances Mahon Edward Malone		
<b>Technical Information Manager Grade II</b> Michael O'Gorman					
<b>Chemist</b> Jonathan Carroll Eleanor Dixon Michael Doyle Sean Earley Pierrick Fevrier					
John Fields Niamh Fitzgerald Joseph Fitzsimons Myra Keogh Una McArdle		Mark McDonald Edward McGrath Sharon O'Keeffe Mandy O'Keeffe John Reilly	Ruth Reilly David Savage Julie Tierney Claire Timbs		
<b>Senior Laboratory Analyst</b> Sheevaun Cody Angela Cunningham Geraldine Dowling Bernard Hanratty Tom Harbison		Sean King Neil Lucey Marian Lyons Noreen Monahan Fiona Noonan	Aengus O'Briain Keith Pearson Mairead Rowsome		
<b>Laboratory Analyst</b> Sinead Bermingham Judith Boyle Ann Marie Bragason David Canny Patricia Carter Simon Daly Laura Flynn Marella Gallagher		Madeleine Gibbons Carol Gleeson Anita Heffernan Ray Kelly Sheila Martin Ciara McDonnell Alan Murphy Olivia O'Connor	Keith O'Sullivan Colm Reid Denis Ryan Dennis Sheehan Johanna Skelton Fiona White		
<b>Head Laboratory Attendant</b> Paul Hirtes					
<b>Laboratory Attendant</b> Brendan Doyle Simon Chiu				Tom Gaule Mary Greene	Syl O'Neill Declan Powell
<b>Storekeeper</b> Ciaran Brown				Damien Duffy	
<b>Corporate Services</b> Marion Kiernan – Assistant Principal Officer Nuala Talty – Higher Executive Officer Hugh Drumm – Higher Executive Officer Phyllis Barry – Staff Officer John Clancy – Staff Officer					
Anne O'Dwyer – Clerical Officer Geraldine Gaffney - Clerical Officer Ciara McDaid - Clerical Officer Rachel Kelly - Clerical Officer Liz Ellard - Clerical Officer					